Investigating the Intersection of Urban Agriculture and Urban Planning Concerning Urban Governance and Elements in Victoria, Canada

by

Abdolzaher Ghezeljeh
BSc, University of Guilan, 2011
MSc, University of Allameh Tabatabai, 2014

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Supervisory Committee

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Co-Supervisor

Abstract

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The world is home to predominantly urbanized populations that continue to grow. In an increasingly urbanized world, cities suffer from various challenges, including urban poverty and food insecurity, which result in unsustainability, health concerns, and crime increase. Many reasons affect urban poverty, including controversial government policies, an imbalance between existing resources and demands, and inefficient urban management and planning. Integrating urban agriculture (UA) into development policies can alleviate urban poverty and food insecurity in cities. Therefore, a line of research seems necessary to gain a better understanding of various ways to boost food production and improve sustainability in cities. To this end, the present study attempts to investigate the role of urban planning and governance in community gardens in Victoria to examine how urban planning and governance can support food production. A qualitative research method with semi-structured interviews and community mapping workshops were used within three groups of governmental, non-governmental, and residential actors in Victoria, Canada. Eighteen participants were interviewed, and eight participants took part in workshops held in the James Bay and Fernwood neighbourhoods. The three proposed research questions in this study were analyzed by thematic analysis using NVivo 10 software. The findings

revealed that nine themes should be considered to improve food production in Victoria. The themes include improving UA economic efficiency, increasing awareness, gaining community satisfaction, effective landuse policies, productive partnership, improving the long bureaucratic procedure, offering grants, providing resources and facilities for gardeners, and changes in existing zoning bylaws. In addition, the findings of the workshops show that the City of Victoria plays the most crucial role in UA projects. Study results reveal that the compost education center, residents, and community centres should create an active partnership with the City towards improving community gardens.

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Acknowledgments

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Dedication

A special thanks to my parents, AnehGol and Khalil, who are an invaluable source of inspiration in my life. My brothers Majid, Ghadir, and Danial have never left my side during my life. I dedicate the thesis to my friends, Vahid Bagherbeigi and Hossein Ghanbari, who have supported me for my research.

Chapter 1

Introduction

1.1 Introduction and Research Scope

The global population is growing, resulting in increased damage to the environment. Following this, the number of urban dwellers is rising as well as those who live in peri-urban areas (Van Veenhuizen, 2014). As per the United Nations (UN) report (UNDESA, 2013), the global urban population went beyond 50 percent in 2007 for the first time. Urban inhabitants are estimated to reach 70 percent in 2050 (Frantzeskaki, Broto, Coenen, & Loorbach, 2017), which would lead to an upsurge in food consumption and resource demands (Deelstra & Girardet, 2000).

Khan (2013) states that when the population growth rate exceeds the capacity of the environment, it disturbs a balance of nature. Although urbanization has provided financial growth in some cities, it has been accompanied by poverty, food insecurity, food injustice, and climate change, which have culminated in severe food insecurity that is transmitted from rural toward urban areas (Khumalo & Sibanda, 2019).

According to the United Nations (2020), about one in eight people suffer from food insecurity at the moderate and severe level and around one-fourth of global population experience inaccessibility to safe and healthy food, including 20 percent in Africa and eight percent in Europe and North America.

Walsh and Walsh (2018) claim that about 12.7 percent of people who live in the U.S. experienced hunger in 2015. According to Food Secure Canada (FSC) (2020, March 27), around 12.5 percent of Canadian households have been experiencing food insecurity, which has not declined up to now. For example, the Indigenous people, who “are living

off-reserve," have experienced food insecurity that is estimated to be three times greater than the national average in Canada (Desmarais & Wittman, 2014, p. 1165). Consequently, scholars have been placing a premium on a state-of-the-art ecological approach to establish a sustainable food system in cities, a solution to social and economic change adoption, and reducing the environmental footprint.

Urban agriculture is one way in which cities address current challenges associated with food insecurity (CoDyre, 2013). As a recognized food insecurity alleviation method, UA has considerable potential for communities. It could lead to increases in the household's food quality and beneficial ways to reduce the urban poverty level, ecological footprint, and foster social and economic development (Bryld, 2003). Urban agriculture is practiced by various types of stakeholders in the world and is divided into three main groups, including aquaculture, livestock, and plants (De Bon, Parrot, & Moustier, 2010). This research emphasizes plant-based urban agriculture activities in general and community gardens (CG) in particular and focuses on the role of urban planning, urban governance, and stakeholders in community garden projects in Victoria, Canada.

1.2 Role of Urban Planning, Urban Governance, and Stakeholders in Urban Agriculture

Urban agriculture, as an ongoing movement, is intertwined with urban planning. In turn, urban planners play a well-recognized role in urban agriculture projects and need to consider UA in their professional attempts (Rosa, Barbarossa, Privitera, & Martinico, 2014). Urban planners perform a crucial role in enabling urban agriculture practices by creating appropriate zones and regulations to integrate planning into the UA. They also build up a network among producers, consumers, markets, and related organizations toward an efficient transportation system and accessibility (Lovell, 2010).

Moreover, urban agriculture engages stakeholders at various governance levels, necessitating effective governance structures and elements to enhance food production (Prové, Dessein, & Krom, 2016). However, some local governments and policymakers claim that urban agriculture is a non-urban activity and suggests that the benefits would not outweigh the challenges for implementing UA projects in cities (Redwood, 2009). In the same vein, a lack of governance and institutional support has produced a "policy vacuum" that might result in theft, monetary loss, and an ineffective food system (Bryld, 2003, p. 84). Structured governance approaches, central to the entire relations of stakeholders, can integrate political actors, authorities, and other actors into establishing an efficient system (Mok et al., 2014). Therefore, urban agriculture should focus on finding appropriate governance structures by properly integrating the actors to reach effective outcomes, as can be seen in Vancouver, Toronto, London, and Amsterdam. These cities encourage locally grown food through established councils, which build a bridge between different politicial actor in the municipalities and with local communities and residents (Redwood, 2009).

Stakeholders are defined as those who can play key roles in an organization or project survival and work within a harmonious relationship (Fontaine, Haarman, & Schmid, 2006). Stakeholders' views need to be taken into consideration in all phases of urban agriculture activities and governance structures (Sanye-Mengual et al., 2015), which could lead to an efficient outcome. They also can support policymakers in creating a viable governance system through identifying challenges and presenting them to related organizations, broadening relevant knowledge, seeking solutions, and new ideas (Cohen & Reynolds, 2014). In UA projects, stakeholders include gardeners, residents, community

centers, markets, NGOs, land-owners, city councils, municipalities, and others according to geographical and governance contexts (Specht & Sanye-Mengual, 2017).

1.3 Importance of the Study

Food insecurity has been recognized as one of the main concerns in cities at present and future alike. It is negatively associated with social, economic, and environmental indices in cities (Leitz, 2018). Therefore, cities should localize their food demands due to future food shortages and decrease food miles, which is playing a vital role in energy consumption and greenhouse gases (Lam, 2007).

1.3.1 The State of Food Insecurity in the World

In the Global South, approximately 220 million people in Africa and 600 million in Asia are living in slums located in city boundaries. They live under the poverty line and suffer from food insecurity and violence (Orsini, Kahane, Nono-Womdim, & Gianquinto, 2013). Additionally, in Latin America, almost 134 million people are living in slums and suffer from hunger (Orsini et al., 2014).

In the Global North, in the US, the number of people who were living under the poverty line vary from 11% in the Northern States to 16% in the Southern States (Semega, Kollar, Creamer, & Mohanty, 2019). Also, Americans experiencing food insecurity reached 41 million in 2016, of which 13 million were children (Leitz, 2018). In Canada, the food insecurity rate touched roughly 12 percent in 2014 in Ontario, of which a high percentage were immigrants. Also, around one-third of Black households were living in food insecurity circumstances in Ontario, Canada (Tarasuk, Mitchell, & Dachner, 2016).

1.3.2 The State of Urban Agriculture in the World

As poverty has become widespread in the world, the demand for food has risen at the global level, too (Koc, Macrae, Mougeot, & Welsh, 1999). Around 800 million urban inhabitants are engaged in UA projects in the world (Wakuru, 2013), producing 15-20 percent of global food (Ikerd, 2017).

In the Global South, investigated research in fifteen countries in Asia, Africa, and Latin America show that they achieve a different income level from UA projects ranging from 11 percent in Indonesia to about 70 percent in Vietnam (Orsini et al. , 2013). Also, approximately one million migrants are involved in UA projects in Beijing, 13 percent in Accra, over 15 percent in Dar es Salam, and 20 percent in Lima (De Zeeuw, Van Veenhuizen, & Dubbeling, 2011). In the Global North, in the U.S., a study depicts that Detroit produces one-third of its vegetable demands (Beniston & Lal, 2012). The United States has set up an array of remarkable agriculture projects, with over 500 community gardens in New York and 200 in Boston (Gittleman, Farmer, Kremer, & McPherarson, 2017; Kaufman & Read, 2016). In the same vein, urban agriculture has been involving people in Canada's major cities of Toronto and Vancouver with remarkable results. For example, more than a hundred UA projects were created by 2014 in Vancouver, which includes 4166 community gardens parcels (Wittman & Valley, 2018). In Vancouver's 2020 sustainability plan, it is estimated that the facilities for improving the food system should grow by 50 percent in comparison to 2010 (Walker, 2016). About 13 percent of inhabitants in Victoria, located in Vancouver Island, suffer from food insecurity (Li et al., 2016). However, the Official Community Plan (OCP) has emphasized a need for growing more food in the city. Concerning the existing seven community gardens, the City of Victoria attempts to increase the number of community gardens by creating a land inventory and

providing grants (Victoria Urban Food Table, 2018). However, there is a planning and governance vacuum that needs to be filled with all stakeholders being able to participate in the planning and establishment of appropriate policy (Bryld, 2003).

1.4 Objectives and Research Questions

The principal objective of the thesis is to investigate the current role of urban planning and urban governance in UA to set up initiatives towards a stable food system.

To attain the aims of this study, I attempt to answer the following three questions:

- How can urban planning in Victoria improve food production?
- What governance structures and elements are required for UA to thrive?
- What is the role of local stakeholders in planning and policy-making for urban agriculture?

1.5 An Overview of Methodology

I utilized a qualitative method to obtain the research objective and answer the research questions stated in section 1.4. Hence, the data from stakeholders involved in community gardens will be collected to investigate their experiences concerning the potential benefits and challenges of community gardens in Victoria.

A combination of interviews and community mapping workshops yield a rich source of data whose analysis promotes an in-depth understanding of the current challenges of UA in Victoria and to provide insights for future directions in UA practices. In so doing, as a primary data collection tool, semi-structured interviews were carried out to document ideas and explore issues, needs, and suggestions from the recruited participants selected by snowballing. A total of eighteen interviews were conducted with three groups of representatives from among governmental (the City Council, the city staff – planning and

park offices, and Ministry of Agriculture), non-governmental (the compost education centre and community centres), and residents sectors (consumers, gardeners, and local interest groups).

Community mapping workshops were used as the next tool of data collection to obtain a general picture in the context of UA from skilled and knowledgeable people who are working in the study areas. Community mapping has been argued to be a way of participatory learning and storytelling in which participants can conceptualize their lives and communities (Lydon, 2003). It allows participants to explain their experience in their own words that might not be obtained by other tools (Lam, 2007). It is an "interactive technique for local knowledge production, moving from data description to map-based representation, through discussion and visual output (Fang et al., 2016, p. 228)". Therefore, as many as four representatives from each community were selected, those who are more than 20 years of age, including both male and female participants. The workshops were held in Fernwood Community Garden on Chambers Street, and the James Bay Garden on Montreal Street.

The interviews and community mapping notes were manually transcribed and imported into NVivo 10 software. Following this, the initial codes were generated by setting the nodes and cases developing the patterns and themes. Then, a comparison among interview groups and community mapping workshops was facilitated.

1.6 Definition of the Key Terms

There are several key terms specific to this research, which are presented as follows:

Community Garden: As defined by Egli, Oliver, and Tautolo (2016), "Community gardens are section of land collectively gardened for the specific purpose of growing fruits,

vegetables and herbs for self-consumption; and include allotments, school gardens as well as teaching gardens (p. 348)."

Sustainable Development: This term has many interpretations and cannot precisely be defined. Notably, according to Duran, Artene, Gogan, and Duran (2015), it refers to "a development model aiming at a balance between economic growths, quality of life and environmental preservation medium and long term without increasing consumption of natural resources beyond the capacity of the Earth (p. 812)."

Resilient City: "A resilient city is a sustainable network of physical systems and human communities that is able to withstand an extreme natural event without suffering devastating losses, diminished productivity, or quality of life and without a large amount of assistance from outside the community (Godschalk, 2003, p. 137)."

Urban Planning: As per Mubvami, Mushamba, and De Zeeuw (2006), "urban, city or town planning is the discipline of land use planning which deals with the physical, social, and economic development of metropolitan regions, municipalities and neighbourhoods. Land use planning is the term used for a branch of public policy which encompasses various disciplines which seek to order and regulate the use of land in an efficient way (p. 56)."

Urban Governance: The term 'urban governance' has many interpretations and dimensions, and cannot precisely be defined. Notably, from the point of sustainable development, it "focuses on the role of local partnerships which can allow residents to improve their socio-economic and political development regarding interactive process impacting policy (Meyer & Auriacombe, 2019, p. 2)."

Urban Agriculture Stakeholders: All those who are interested in growing, consuming, and making the decision about food systems, either as an individual or collectively (Hemmati, 2012).

Community Mapping Workshop: "It is a process of capturing, visualizing, and analyzing community network relationships and interactions and applying the resulting insights for community sensemaking, building, and evaluation purposes (De Moor, 2017, p. 37)."

1.7 Chapter Overview

This thesis is organized into five chapters. Chapter One provides the introduction to urbanization, global challenges, food insecurity and methodological overview to offer a clear view over further chapters.

Chapter Two contains a review of the relevant literature, which has focused on four main topics. First, it investigates the relevant theories, such as sustainable development and resilient city. Then, it introduces UA as an alternative way in the food system and provides the attributes of UA, benefits, potentials, approaches, and barriers against proposing, strategizing, and practicing the UA projects in the city area. Moreover, this part describes UA in Victoria's context. Lastly, the role of urban planning and urban governance in UA projects are explained.

Chapter Three presents the methods employed in this research, notably the applied approaches to the study, including methodologies, tools, and samples. It discusses the tools used for collecting and analyzing the data as well as the process of coding the transcripts and generating the themes using NVivo 10 software.

Chapter Four analyzes the data collected in the interviews and during the community mapping workshops to obtain results related to the research questions. By

interpreting the research findings and a discussion, this chapter attempts to find the deficiencies of the current food system in Victoria and the necessary changes and appropriate structures required to improve the situation. The chapter provides discussed contents to show how the objectives and research questions are answered. Additionally, suggestions are provided to a food system with the perspective of urban planning and urban governance.

Lastly, chapter five seeks a review of the main results, ideas and approaches on productive community gardens in Victoria and concludes with future study directions, and limitations.

Chapter 2

Literature Review

2.1 Introduction

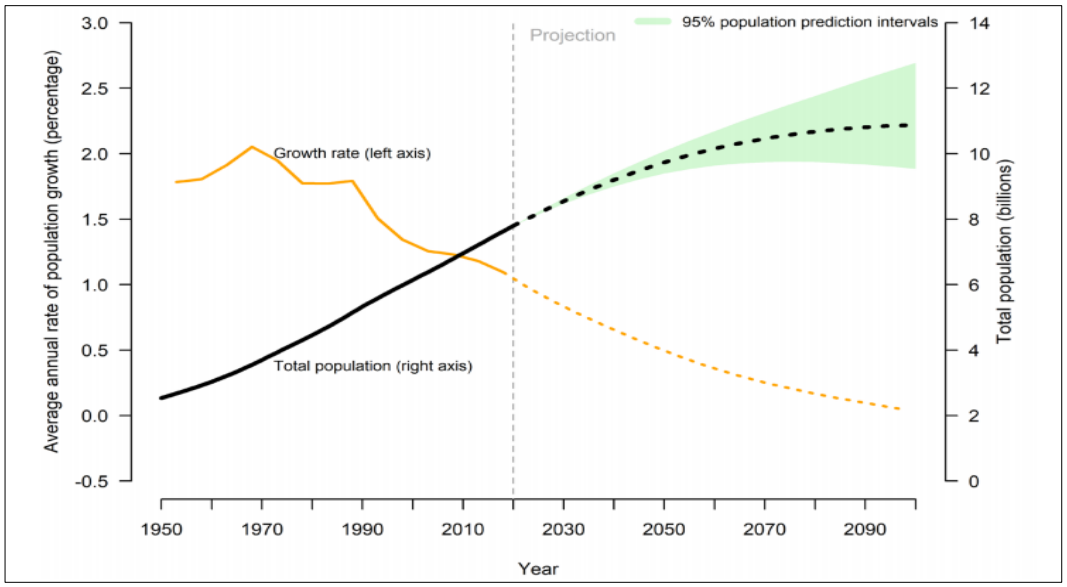
This chapter starts with an overview of urban agriculture followed by the key concepts central to better understanding the importance of UA in cities. The benefits of UA within four areas, including economic, social, environmental, and cultural are presented to focus on the role of UA in Victoria. Then, the importance of urban planning and urban governance in urban agriculture projects are depicted.

2.2 Overall Context to Urban Agriculture

The number of people who live on Earth is increasing rapidly. Parallel to the global population increase, urban dwellers jumped from 30 percent to 50 percent within 57 years' time span (1950-2007) and are estimated to stand at about 70 percent in 2050 (Frantzeskaki et al., 2015). Also, over 2 billion people will be added to existing urban cities in the global South by 2050 in comparison with 130 million who will be added to the global North (Shilomo, 2017). As can be demonstrated in Figure 1, it is anticipated that the global population could reach 11 billion in 2100.

Figure 1

Population Projection (Billion, 1950-2100) and Annual Growth Rate

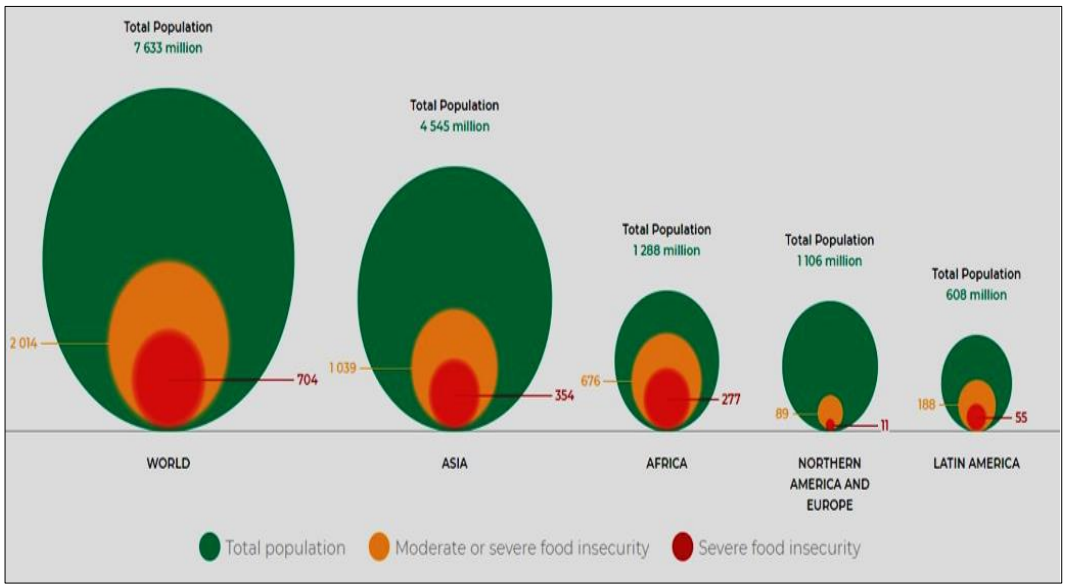


Source: (The United Nations, 2019)

Consequently, rapid urbanization has resulted in urban environmental challenges that led to just over 820 million people experience food insecurity in 2018, and around two billion people experience food insecurity at a moderate to severe level.

Figure 2

The Distribution of Food Insecurity by Severity in the World in 2018 (Millions)



Source: (FAO, 2019)

To alleviate the mentioned concerns, the sustainable development agenda, Goal two, seeks to achieve food security and end hunger by refining sustainable agriculture (Dias et al., 2019). Sustainable development is " an ability to make development sustainable to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs" as Brundtland commission states (Robert, Parris, & Leiserowitz, 2012, p. 11). Therefore, given concerns with the rights of upcoming generations, the conservation of our planet and the SDG's goals, scholars should emphasize the city conditions toward sustainability and zero hunger in the world.

Scholars attempt to accompany transition by sustainable approaches of urban development to achieve a balanced development at multi-levels. These levels include macro, meso, and micro scales. However, there are enormous problems such as scale, form, and cultural contexts, which has driven the cities to obtain a fruitful transition towards sustainability (Næss & Vogel, 2012). Hence, sustainable development goals have been proposed to shed light on the way to make a sustainable transition.

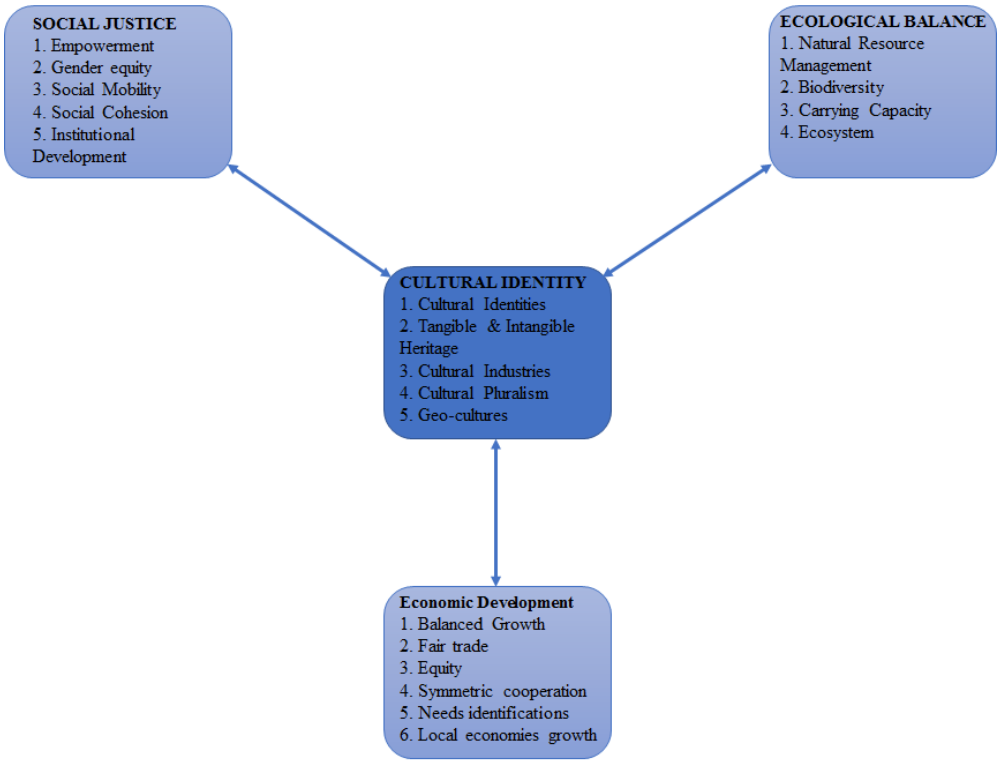
2.2 Sustainable Development

Various human activities threaten our planet, and our environment is at stake. Concerning posed challenges, the concept of sustainability was formulated after the UN's world commission on the environment, which resulted in the "Brundtland Report" (Tornyie, 2011). In 1972, a conference on the human environment, focusing on economic development and ecological challenges, led researchers to investigate the profound impact of development on our planet, thereby resulting in the report published in 1987 (Robert et al., 2012). Subsequently, the world conference in Copenhagen in 1995 focused on social development, which was added as a third pillar to the earlier proposed sustainable development dimensions (Hak, Janouskova, & Moldan, 2016). Therefore, social

development, economic growth, and environmental conservation have comprised the three main areas of the theory (Mårtensson, 2017). Even so, following the United Nations conference on the sustainable development of Small Island Developing States in Barbados in 1994, the fourth pillar, cultural identity, was added to the other three pillars (Nurse, 2006).

Figure 3

Pillars of Sustainable Development



Source: (Nurse, 2006)

Concerning the concept's evolution, sustainable development goals (SDGs) developed in New York in 2015, including 17 goals and 169 targets and 330 indicators.

Although cities are most vulnerable to the crisis, living in cities and towns is becoming an aim for the sake of various reasons (Deelstra & Girardet, 2000). Cities are in

transition, which should be navigated towards achieving sustainable development goals (Newton & Bai, 2008). A sustainable city development attempts to balance the sustainability pillars while improving the quality of life for humans. Therefore, cities seek to provide adequate services to urban inhabitants and effectively distribute them, which not only does not threaten the environment, but it also improves social and economic indices (Tornyie, 2011).

Furthermore, cities can be responsible for two leading roles, including actors and facilitators, to encourage sustainability through deliberate policy and efficient governance structures (Loorbach, Shiroyama, Wittmeyer, Fujino, & Mizuguchi, 2016). Sustainable development work has been implemented at various governmental levels, while it can be more assertive at the community-level in comparison to the regional level (Dale, Ling, & Newman, 2010). Table 1 depicts sustainability at various levels (Connelly, Markey & Roseland, 2011, p. 310).

Table 1

Comparing Levels of Sustainability

	Sustainability from a national /regional perspective	**Sustainability from a local perspective**
Worldview Characteristics	Anthropocentric Rational individuals	Biocentric Collective action
Role of the Economy	Economic growth Centralized	Qualitative development Community-based
Source of Problem and Solution	Supply problem Technocratic Use of Environmental Impact Assessments, Cost/Benefit analysis efficiency	Demand Problem Social relationships Small scale decentralization Self-sufficiency

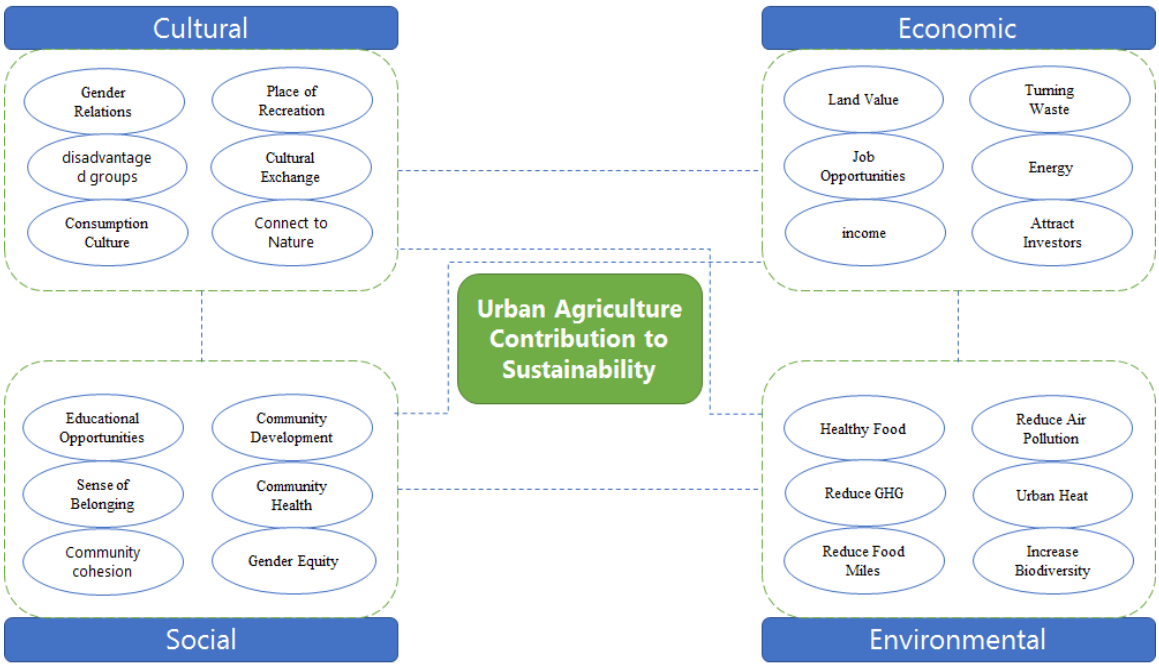
Source: (Connelly, Markey & Roseland, 2011)

According to the 2030 agenda for sustainable development (Desa, U.N., 2016), urban agriculture directly impacts goals 1 (No poverty) and goal 2 (Zero hunger), and goal

12 (Responsible consumption and production) and has potential to make an impact on goals three, five, eight, eleven, thirteen, and sixteen. For instance, UA can contribute to sustainability by providing women with valuable services, resources, and economic opportunities to obtain geneder equality in gardening (The United Nations, 2018). Thus, all four pillars of sustainable development are affected by UA projects. Urban agriculture contributes to social and economic development by providing food security, feeding urban populations. Also, it supports all groups in the community to improve social cohesion and community development and educational aims as well (Tuijl, Hospers & Van den Berg, 2018). It may be undertaken for recreational, tourism and psychological purposes. Finally, it attempts to reduce the ecological footprint and improve biodiversity, which all culminate in a sustainable city (Tornyie, 2011), as can be seen in Figure 4.

Figure 4

Contribution of Urban Agriculture to Sustainability



Source: (Tuijl et al., 2018)

2.3 Resilient City

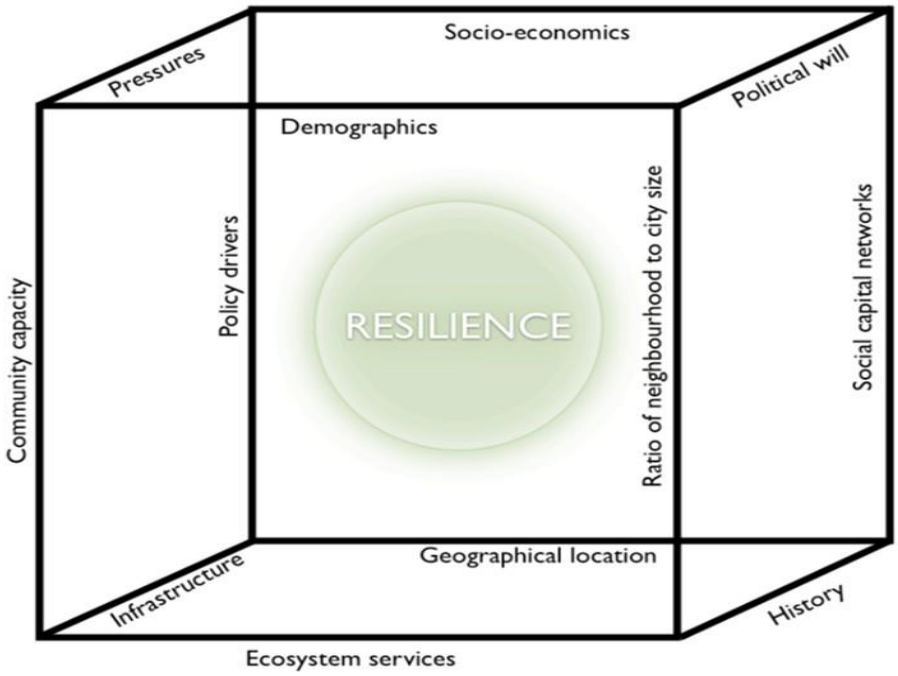
Cities are always changing in response to the residents' demands. Growing concern over urban population growth rates, climate change, fossil fuel consumption, greenhouse gas emissions, food crises could create further challenges in our cities. In turn, the problems mentioned above have led to an increasingly unsustainable system in cities (Dubbeling & Campbell, 2009), which needs to be directed toward resilience and sustainability (De Zeeuw, Van Veenhuizen, & Dubbeling, 2011).

To obtain the goal mentioned above, cities should be resilient in urban systems. Resilience is defined as "the degree to which cities can tolerate alteration before reorganizing around a new set of structures and processors (Alberti et al., 2003, p. 1170)" toward sustainability. Despite sustainability, which targets to make a balance among the system's elements, resilience supports systems in a transition period to think toward creating a comprehensive system (Petcou & Petrescu, 2015) after an environmental disturbance. Hence, cities should improve public services, infrastructure, and ecosystems through efficient governance approaches, appropriate resource consumption, financial investment, removing policy vacuums as well as a fruitful collaboration among stakeholders (Satterthwaite & Dodman, 2013).

A resilient urban system makes alignment between social and economic functions, where proper resource consumption is available (McPhearson, Hamstead, & Kremer, 2014). A resilient city that is environmentally friendly, satisfied residents, and provides an efficient transport system, leisure activities, energy-saving system, self-feeding community, low crime rate, and viable place to live (Dubbeling & Campbell, 2009). Figure 5 shows the relationship among dimensions of a resilient concept.

Figure 5

The Dimension of the Resilient Concept in an Urban Setting



Source: (Collier et al., 2013)

To make a more resilient city, one of the proposed approaches is to re-localize food production. The local food production system could alleviate climate change consequences and adapt well to the urban transition and needs. The local system includes community gardens, green rooftops, vertical farming, boulevard gardens, school gardens, and agro-tourism (Dubbeling & Campbell, 2009). Here, urban agriculture could improve the urban environment and adapt to the local context changes by growing local food and decreasing the large scale food production projects and the need for food imports (De Zeeuw et al., 2011). For example, in Berlin (Germany), the table projects support those in need of food towards decreasing hunger and poverty in times of community vulnerability (Rosol, 2012). Also, unused backyards, in Guelph (Canada), are offered to those residents interested in

gardening to grow plants and sell them considering the Guelph- Wellington Food Round Table charter. In Vancouver, people share their backyard with those who have no backyard to grow food, achieving self-sufficiency (CoDyre, 2013).

2.4 Urban Agriculture

Global urbanization produces various environmental footprints, including important natural resource use and loss of natural ecosystems. Urban citizens are experiencing various forms of challenges caused by consumerism and inappropriate approaches to resources (Moglia, Cork, Boschetti, Cook, & Bohensky, 2018). Also, enormous urban population growth has created hunger, severe climate change, and degradation of natural resources (Brugmann, 1997). In this regard, scholars have investigated the sustainability of the urban environment, which has resulted in a sustainable transition in cities to feed themselves and meet the needs through a local-based scale of UA (Moore, De Haan, Horne, & Gleeson, 2017). The locally grown way is more sustainable rather than growing food in remote locations that are inevitably accompanied by high-rate CO_2 emissions which leaves negative impacts on climate (Specht et al., 2014).

Several studies have been carried out on the concept of UA in different disciplines. Urban agriculture has been employed in new business models in farming technologies, community gardens, food planning in different ways, which have created a broader concept again without an agreed upon definition (Tuijl et al., 2018). A survey conducted from 22 U.S. planning agencies shows that planners perceive agriculture as rural activities in which the private sector is the main stakeholder. However, other stakeholders and the public sector have been engaged in UA activities in recent years (Shumate, 2012).

Several studies explain the potential benefits and context-based barriers of UA (Brune, Whitney, Kathryn, Elke & Carla, 2018). However, a small body of research was conducted to explore what governance structure and planning regulations lead to the desired implementation of UA. To investigate the current gap, we need to understand the definition of UA. One of the definitions of UA arises from Smit, Nasr, and Ratta's (2001, p.1):

> *An industry that produces, processes, and markets food (…) and other outputs, mainly [largely] in response to the daily demand of consumers within a town, city, or metropolis, on many types of privately and publicly held land and water bodies found throughout intra-urban and peri-urban areas. Typically, urban agriculture applies intensive production methods, frequently using and reusing natural resources and urban wastes, to yield a diverse array of land, water, and air-based fauna and flora, contributing to the food security, health, livelihood, and environment of the individual, household, and community.*

Therefore, it is concluded that UA is a broader concept, including commercial and non-commercial activities. It is not only a food production phenomenon, but also includes non-food products such as ornamental plants which are diverse in function, form, scale, and context (Lin, Philpott, & Jha, 2015). Tuijl et al. (2018, p. 8) show a prevailing view of UA in different types of UA.

Table 2

Different Types of Urban Agriculture

Type	Description	Reference(s)
Community Gardens	Broad term covering various types of gardens, including demonstration gardens,	Turner *et al.*, 2011 Guitart, *et al*., 2012

	horticultural therapy gardens, job-training gardens, neighbourhood gardens, inter-cultural, etc. Those diverse gardens can play a role for various purposes, such as promoting urban health, social inclusion, and active civic participation.	
Institutional Gardens	Food production management by institutes, such as schools, hospitals, prisons, and other non-profit organizations	Pulighe & Lupia, 2016
Guerrilla Gardening	Gardening public space with or without permission, in the latter case also known as 'illegal gardening.'	Tracey, 2013
Urban Farm	Commercial food production by professional farmers using intense and advanced growing systems	Pulighe & Lupia, 2016
Vertical Farming	Indoor farming based on hydroponic and aquaponic technologies.	Despommier, 2010
Plant Factories with Artificial Lighting	Indoor farming combined with resource utilization efficiency and closed plant production system.	Kozai, 2013
Zero-Acreage Farming	Specific forms of food production that are characterised by the non-use of land, covering various forms and technologies.	Thomaier *et al.*, 2014
Agro-park	Clusters of agro-activities in which various links of the food chain is located in one place. The concept has been developed to apply industrial ecology in the agro-sector	Smeets, 2009 Metze & Van Zuydam, 2013
Agro-tourism	Farming in agro-recreational parks in peri urban locations combined with the provision of facilities and services for urban tourists (e.g. food, accommodation, guided tours, and horse riding).	Yang *et al.*, 2010

Source: (Tuijl et al., 2018)

Urban agriculture can be implemented in open spaces, backyard, balconies, rooftops, unused areas through non-profit organizations or entrepreneurs in a single category or a combination of them. There are diverse types of community gardens that are organized by a group such as gardeners, school boards, and councils towards different purposes, including community building, sharing resources and food, and creating community hubs (Looy, 2015).

One of the most widely used types is a community garden on private or public parcels to grow plants (McVey, Nash, & Stansbie, 2018). Glover, Shinew, & Parry (2007, p. 79) define community gardens as organized initiative(s) whereby sections of land are used to produce food or flowers in an urban environment for personal or collective benefits. The involved people share specific resources such as space, tools, and water by gardening in community gardens (as cited in McVey, Nash, & Stansbie, 2018).

A community garden – as a type of UA – is a shared space, includes significant advantages that can be categorized into three types. First, individual plots which are controlled by all gardeners and plants mostly grown on the ground. In the second type, all gardeners and steering committee members grow their crops through teamwork and also maintain them collectively. Shared or individual plots, as the third type, where gardeners are responsible for their plots and share resources and tools (Drake & Lawson, 2015).

2.5 Benefits of Urban Agriculture

The benefits of UA will be discussed under four headings: economic, social, environmental, and cultural advantages.

2.5.1 Economic Benefits of Urban Agriculture

Cities gain economic benefits from urban agriculture in different ways. Ackerman, Conard, Culligan, and Plunz (2014) point out that food, financial security, and community outreach are the principal reasons to support involvement in urban agriculture. Serving the commercial purpose of UA by firms such as Lufa Farms in Montreal (Canada) is a way for earning income, which has been implemented in large scale rooftop gardens for the sake of the economic benefit of UA (Tuijl et al., 2018). Also, it is estimated that the local economy in Vancouver (Canada) supports around 13 million dollars per year through farmer's markets (Valley & Wittman, 2018). Households could decrease their food expenses through growing plants and selling products through farmers' markets. For example, to produce a kilogram of vegetables, one needs around 7.5 dollars in Guelph (Canada). This amount is much lower than the cost of those same products in a grocery store (Looy, 2015).

Moreover, growing plants on vacant land can be associated with an increase in property values (Prain, Karanja, & See-Smith, 2010). Urban agriculture provides sources of income, including compost producing, marketing, transporting, and job position availability for those who could involve in jobs directly or indirectly. For instance, according to Central Havana Municipal Housing Office in Havana, about 8000 households have been involved indirectly in jobs by 2002, which are defined by UA activities (Premat, 2010). Ward and Lewis (2002) claim that one pound spent in community-scale urban agriculture projects is worth approximately twice the value to the local economy. A Canadian study showed that 71 percent of Canadian households believe that local food supports the local economy (Pearson et al., 2011). Also, UA decreases energy consumption in food transport by locally growing and selling products (Pearson et al., 2011). Food scraps

in a local food system could be used as a potential source of fertilizer to support economic savings and sustainability (Gutberlet, 2016). Therefore, urban agriculture offers financial benefits to city inhabitants by different types of UA according to the cities' potential to cultivate.

2.5.2 Social Benefits of Urban Agriculture

Urban agriculture provides social benefits to communities. Gardens in cities are social places that encourage people of different ages to participate in social networks and citizens to work together (Ackerman et al., 2014). Okvat and Zautra (2011) claim that common green spaces increase social ties, which results in community building and ensures safety in those communities. In turn, Immigrants make up a sizeable portion of gardeners' society in Canada. Thus, many of these immigrants might face problems to reach out to people in the community which could be resolved through community gardens (Datta, 2016).

Additionally, as a place for participation, community gardens support community well-being and human health of all types (mental, physical, and nutritional), community empowerment (Pearson et al., 2011) and social capital by engaging residents in gardens. It is beneficial for people who experience mental illness, and the activity helps to decrease stress. By way of illustration, 'Sole Food Street Farm' in Vancouver attempts to employ those who face mental and physical health concerns to empower them and decrease inequity (Valley & Wittman, 2018). Therefore, despite engaging in fruit growing and gaining income, gardeners and direct participants in UA projects can experience other benefits that improve their self-confidence, self-reliance, and self-sustenance (De Zeeuw et al., 2011).

Also, urban agriculture plays a significant role in creating information flows in community cohesion by skilled individuals in communication (Säumel, Reddy, & Wachtel, 2019). It could provide an educational center for gardeners to learn from each other and share first-hand knowledge associated with the cultivation system. In addition, visitors can bring their children to gardens, so that growing plants would remain uppermost in their mind (Caruso et al., 2016). In this vein, Drake and Lawson (2015) show that around 99 percent of 445 respondents in Canada and the U.S. strongly believe in the social benefits of UA projects rather than other advantages.

Moreover, urban agriculture is a movement towards gender equity in lower-income countries. It provides a place for all genders and age groups to work together and acquire the awareness of governance structure and elements (Horst et al., 2017). To sum up, urban agriculture is a social activity that uses public space for people interested in gardening to not only create long-term relationships among people with different backgrounds but also to support teamwork to reach personal and common goals.

2.5.3 Environmental Benefits of Urban Agriculture

Urban agriculture has been identified as a vital contributing factor to support healthy environments. Urban Agriculture has considerable potential to provide a favourable urban environment (Frantzeskaki et al., 2017) and achieve urban resilience through small-scale agricultural projects (FAO, 2008). It offers environmental equity and health education among different age groups and upcoming generations through improving sustainability.

Growing locally decreases food miles and mitigates greenhouse gas emissions (Gutberlet, 2016), as a way to tackle air pollution in cities (Ackerman et al., 2014). Urban agriculture decreases urban heat island effects by 4-5 Celsius over the agricultural projects

and also reduces noise pollution through agroforestry or community gardens along streets (Obe, Pearson, Sumner, Mair, & Nelson, 2010). Moreover, UA can be a reserve of trees and fruits to reduce the amount of dust, and supply fuelwood to meet consumer demands (Bryld, 2003). Urban agriculture could make our cities more resilient by increasing the level of green space coverage. Then, lands located in an earthquake zone or with a potential of risk could be opportunities to grow food instead of being used as construction sites (De Zeeuw et al., 2011).

Moreover, UA could be more water-efficient and improve waste system quality by considering the three Rs of reuse, reduce, and recycle. For example, the Intercontinental New York Barclay Hotel transmits its food leftovers to UA sites to reuse them as compost (Ackerman et al., 2014). Also, vegetation can improve biodiversity and minimize soil erosion in cities by providing plants and biodiversity in fragmented areas in communities (Lin et al., 2015).

2.5.4 Cultural Benefits of Urban Agriculture

Several studies have examined the three aspects mentioned above that are associated with UA. To date, little is known about the cultural dimension. Cultural area, as the fourth pillar of sustainable development theory, gains benefits from UA and plays a central role among the pillars (Nurse, 2006). Culture shapes people's thoughts to understand their role, act, and shed light on the pathway for the future generation. Urban agriculture could be a recreational and educational place for visitors towards promoting agriculturalism (Barbieri, Sotomayor, & Aguilar, 2019) and artistic activities. In all stages of gardening, UA plays a vital role in the production and consumption of culture. Gardens and visitors improve gardening awareness through sharing information, teaching children and decreasing food

waste by gardening locally towards improving consumption culture (Gaglio, Aschonitis, Gissi, Castaldelli, & Fano, 2016).

Furthermore, research in Berlin shows that UA can stimulate feelings of love for nature among residents and encourage them to protect the cultural landscape. It, also, provides a place for people from a different cultural backgrounds to meet each other and create a sense of place for them (Riechers, Barkmann, & Tscharntke, 2016). It creates an opportunity for protecting agricultural, cultural heritage among people and the next generations (Benxue & Kun, 2018).

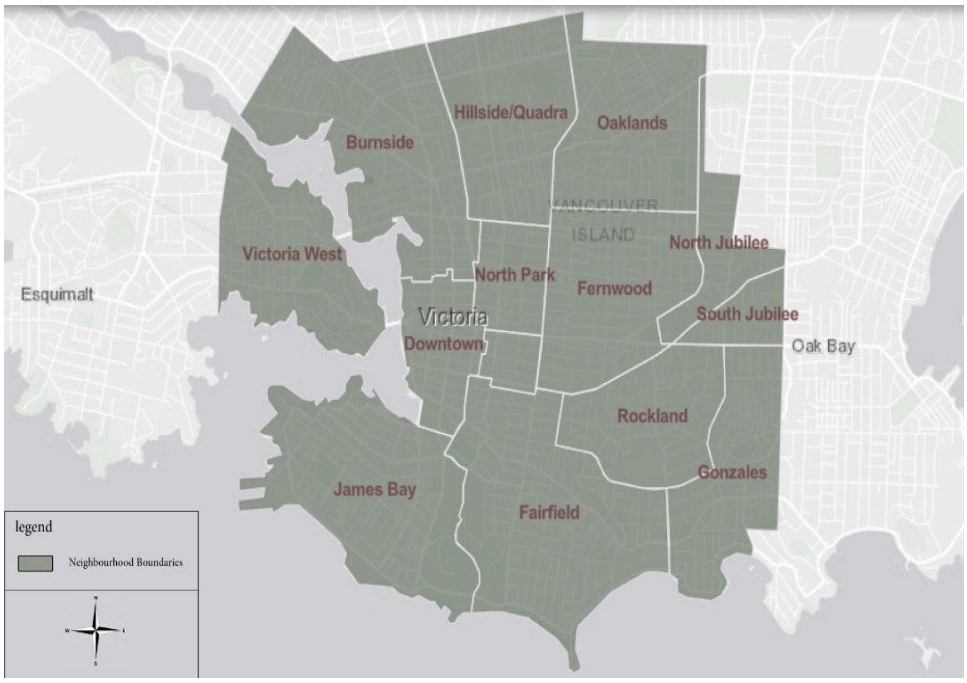
2.6 Contextualizing Urban Agriculture in Victoria

Agricultural development increased significanlty from the 18th to the 19th Century, adressing the local food demands with the expansion of farms on Vancouver Island. Before the arrival of first European explorers, fur traders and later settlers, indigenous peoples across the continernt had diverse, productive, and robust place-based food systems prior to colonization. For example, indigenous peoples had planted two types of beans in the future lower Great Lakes and St. Lawrence regions, before the arrival of Europeans (Government of Canada, 2018). The city of Victoria has made substantial contributions to the food system ranging from soup kitchens to growing native genera of Canadian plants (Bouris, Masselink, & Geggie, 2009). The city of Victoria, the capital of British Columbia, is located on the southern part of Vancouver Island and has a total population of around 86,000 people, which reaches 383,360 within the Capital Regional District (CRD) surrounding Victoria (Statistics Canada, 2016). The CRD is made up of the city of Victoria (central residential node), combined with 13 municipalities and three electoral areas. Victoria has a cool-Mediterranean climate with the mildest winter in Canada and receives

88.3cm of precipitation on average in a year (Sauter, 2014). A map of the neighbourhood boundaries and the location of Victoria in the CRD are shown in Figure 6.

Figure 6

Neighbourhood Boundaries within the City of Victoria



Source: (City of Victoria, 2019)

In 1870, Victoria was changed to a farming center of BC through establishing farms by the Hudson Bay Company. During the first World War, Victorians grew food on unused land to alleviate food shortages by transferring products overseas. More recently, two centers (Lifecycle and the compost education) were created in 1995 to streamline the food system in Victoria (Bouris et al., 2009).

However, the CRD contains 991 farms (Bouris et al., 2009); 140 farms decreased them from 2011 to 2016 (Lavallée-picard, 2018). Regarding community gardens and

allotments, people also grow their food in backyards, on balconies, and in community gardens in Victoria (Lavallée-picard, 2018). The groups and plant-based activities in CRD and Victoria, which improve food systems, are shown in Table 3 (Bouris et al., 2009, p. 26).

Table 3

Agricultural Activities in CRD and Victoria

Food Production Activities	Description	Key Stakeholders
Agricultural Land Conservation (regional)	2819 ha of regional farmland lost since 2001. Loss of farmland has slowed since 2005	Agricultural Land Commission The Land Conservancy CRD Roundtable
Agricultural Production (regional)	991 farms in CRD in 2011	South Island Organic Producers Association Island Farmers Alliance Private farm businesses Direct Farm Market
Community Commons Gardens	Three Commons Gardens in the city are Wark Street, Banfield and Spring Ridge. These Commons Gardens are permaculture sites with food and flower planted that are for the public to harvest freely. Commons located on Parks land and School District and land maintained by community groups through Agreement.	Blanshard Community Ass. (CA) LifeCycles Vic West Community Ass. (CA)
Community (Allotment) Gardens	Victoria has five community allotment gardens: Michigan St. (20 plots); James Bay (54); Chambers St. Allotments(34); EarthBound (20); Rayn or Shine (12) These gardens grow food and flowers in plots, usually for the personal use of gardeners.	Fernwood Michigan Street Garden James Bay Allotment Garden Vic West NA (Banfield & Rayn or Shine)
Demonstration Sites	Three public sites demonstrate urban agriculture Compost Education Centre Children's Petting Zoo St. Anne's Academy	Compost Education Centre Children's Petting Zoo St. Anne's Academy

Edible Landscaping	Three public sites are landscaped with food plants: Banfield Commons, Wark St. Commons and Spring Ridge Commons. The vegetable garden outside City Hall. Private homes also have edible landscaping. Several Victoria companies specialize in edible landscaping	City of Victoria LifeCycles Blanchard CA Private edible landscaping businesses (e.g. Edibella) Vic West CA
Fruit and Nut Trees	Hundreds of fruit trees on private and public property, many of them remnants from colonial orchards. Fruit Tree Project picks surplus fruit from private land and donates to food access programs.	LifeCycles' Fruit Tree Project. Private arboriculture businesses.
Home Gardens – (Back)Yard & Balcony	An unknown but significant number of gardens in rented and owned housing. Gardens built-in raised beds, plots and containers and demand for seeds and seedlings up by 30% in 2009 at area nurseries. The gardens supported by a range of local nurseries and garden stores. Sharing Backyards Program (LifeCycles) matches those with unused garden space to those looking for garden space. Now a model for other North American cities.	LifeCycles (Sharing Backyards) Private nursery and garden businesses
Home Gardens - Boulevard	Several examples where adjacent property owners/ tenants cultivate the boulevard in front of the home. Plantings include food and flower gardens, edible shrubs, fruit trees. Most gardens located on boulevards where residents have opted out of the City Boulevard Maintenance Program.	Individuals

	The city currently conducting a review of Boulevard Maintenance Program	
Home Vertical Gardens - Rooftop	Examples of rooftop food gardens on some private homes and a few apartment buildings (including Dockside Green); Exact numbers unavailable. Rooftop food gardens use raised beds or containers. Different from "green roofs" that feature low maintenance plantings for temperature regulation and water cycling rather than food production	Developers Individuals
School Gardens	Several Victoria pre-, elementary- and high schools have schoolyard food gardens; Exact number unknown; however, four Victoria schools have garden plots (total of 12) supported by LifeCycles'.	LifeCycles (Growing Schools) School District 61
Urban Farms (includes all commercial activities)	Victoria has two properties licensed for home-based urban agriculture (2009). Several properties participate in Small-Plot. Intensive (SPIN) gardening, where small and the company uses several yards to grow food and sell it locally. Small greenhouses on the residential property used for commercial production of seedlings. of honey	Private Urban Farms (e.g. City Harvest, Mason St. Farm)

Source: (Bouris et al., 2009)

The approved community garden policy in Victoria in 2016 was revised towards the more productive shape, including changes in the license for use, finding an appropriate site to garden, and city support for a community garden. Non-profit societies created community gardens in Victoria within a three-year agreement with the municipality on city

lands. Figure 7 shows the main community gardens in Victoria, which have individual plots and harvested by gardeners (City of Victoria, 2016).

Figure 7

Existing Community Gardens in Victoria

Source: (City of Victoria, 2012)

The highlighted community gardens began to be implemented by residents in 2005, which allowed people to apply distinct guidelines. In this regard, Sauter (2014) claims that the policies used in Victoria offer productive guidelines to residents to be involved in

community gardens. Table 4 depicts the applied regulations and bylaws in Victoria (Bouris et al., 2009, p.40).

Table 4

Applied Regulations, Bylaws, and Policies to Urban Agriculture in Victoria

Food System Activity	Regulation	Description
Food-related Bylaws, Zoning and Regulations		
Community Gardens Home Gardens Edible Landscaping UrbanFarms	Pesticide Use Reduction Bylaw No. 07-094	Protects the natural environment by regulation and reducing the non-essential (ie. cosmetic) use of pesticides on outdoor trees, shrubs, flowers, plants or turf. Commercial, institutional or industrial properties are exempted from the bylaw, as is land used for agriculture.
Food-Related Policies		
Community Allotment and Commons Gardens	Community Gardens Policy (2005)	Encouraging the development and retention of community gardens in partnership with nonprofit groups on public and private lands. The policy outlines policy goals, site selection guidelines, and differentiates the conditions of use on private, park and City-owned property. The emphasis is on retaining existing gardens and working with community groups to identify and establish new ones. Gardens are encouraged as a public amenity in land use redevelopment.
Community Gardens, Fruit and Nut Trees, Edible Landscaping (anticipated)	Parks Master Plan (Under development)	The plan will provide an overall vision, integrate parks planning with other City plans and initiatives, and identify public and ecological needs and priorities. Existing urban agriculture activities in parks (e.g. community commons gardens, edible landscaping)

		will be considered and addressed by the Plan.
Policy & Planning	Official Community Plan (1995) Sustainability Framework (Draft) (2009)	Official Community Plan (1995) mentions the need to support a "wide range of human services" but does not mention food, specifically. OCP encourages corner stores, small shopping centres and neighbourhood pubs. Sustainability Framework (Draft) will guide corporate decision-making and operations and includes food security elements.

Source: (Bouris et al., 2009)

2.7 Urban Agriculture and Urban Planning

The role of urban planners is a crucial component in a food system. The contribution of planners to urban agriculture has increased over the last 15 years, which has resulted in a reduction of barriers, and an increase in supportive policies (Horst et al., 2017). Therefore, UA is expected to proceed quickly in the future by being embedded in the practices of urban planners in their professional endeavours (Rosa et al., 2014).

The role of planners has changed during the years. At the end of the 18th century, in England, Ebenezer Howard proposed the idea of Garden City to address existing problems by integrating agricultural features into urban areas (Luokkala, 2014). Subsequently, many cities considered UA in their plans to grow food in and around the city from the 1900s to the 1950s. Then, in the 1970s, community gardens were proposed to control the pace of urbanization, leading to a better understanding of UA by planners and authorities in improving sustainability (Horst et al., 2017).

Today, urban planners need to comprehend the meaningful role of UA in cities and where, how, and for what reason UA has to be developed alongside guidelines of

multifunctionality (Aubry et al., 2012). Urban planners attempt to determine actions that could improve sustainability towards the SDGs by solving challenges such as poverty, pollution, crime rate, waste of energy, and global warming (Contesse, Vliet, & Lenhart, 2018). They engage in creating a favourable environment by implementing bottom-up UA projects according to geographical contexts to boost biodiversity and food production (Rosa et al., 2014).

According to Caldwell (1976), in Ontario, planners believe that they should be involved meaningfully in the communities and large-scale food system projects to plan for a wide range of products. Concerning the planner's collaboration with food system actors, they can contribute to food networks by creating effective planning strategies among food system stakeholders to promote the multifunctional aspects of regulated land use (Lovell, 2010). For example, zoning creates an obvious way for communities to know where UA is permitted and which type could be applied (McClintock, Wooten, & Brown, 2012). Thus, urban planners improve socio-economic values and ecological levels by identifying new forms of urban agriculture (NFUA) in communities and imposing statutory regulations and policies (Rosa et al., 2014).

They can control the expansion of city development by using urban agriculture zones as buffers across urban boundaries (Lovell, 2010). Also, urban planners can set up urban agriculture zones in zoning bylaws, which can promote residents to grow plant-based food in their lots (Luokkala, 2014).

Land use, moreover, is affected by planners. Planners could provide land availability, funding, and protecting resources to citizens. For instance, urban planners

offer proposals, zoning and make land inventories to determine ideal parcels and creat land inventories (Contesse et al., 2018).

On the other hand, there is a keen competition among gentrification advocators, developers, and environmentalists to possess potential land to their own goals (Soderholm, 2015). As long as urban planners understand the advantages and barriers of UA, it is expected to regulate efficient structures and policies to tackle related problems. Urban planners regulate UA by land tenure and general zoning regulations (Meenar, Morales, & Bonarek, 2017). For example, UA projects usually are applied to low economic value lands and thereby, the tenure conflicts are created among groups, people and organizations. Here, urban planners could address the challenges of temporary lease alternatives (Luokkala, 2014; Lavallée-picard, 2018).

Hence, urban planners should collect all stakeholders' voices to choose an appropriate place for UA projects and other food processing stages, following, for example, the case of Vancouver in BC, which is well-known for a collaborative UA project, involving multiple stakeholders (Dubbeling & Merzthal, 2014). In this vein, Habitat III was held, in 2016, in Ecuador where effective integration among urban policies, action plans and sustainable development strategies has been focused and UA was introduced as a way towards sustainability (Alliance, 2015). The above conference on sustainable urban development in Ecuador,

2.8 Urban Agriculture and Urban Governance Structure

Involving stakeholders at different levels of governance requires an effective planning approach and governance framework (Prové et al., 2016). Governance elements affect UA activities in that the food system, and urban governance structures are interconnected

(Nicholas, Nevin, Janet, & Craig, 2018). While several investigations have been conducted on food systems in large cities, we need to focus on the role of urban governance processes in smaller cities as a collaborative engagement approach in UA projects to offer productive urban food systems (Smit, 2016).

A research study conducted in 84 Canadian and American cities across 251 stakeholders' groups shows that half of the respondents consider that the government policy can be hindrance in UA projects (McClintock & Simpson, 2016). However, governance structures and elements, which consist of both horizontal and top-down models, are essential components of community gardens. The former focuses on providing benefits to the main groups, and the latter is employed by authorities and policymakers (Fox-Kämper et al., 2017).

As per Andrews (2016), the forms mentioned above should be taken into account in their geographical contexts to improve the outputs of UA practices. In a different vein, Kingdom and Thurbur (1984) believe that UA is deemed, to some extent, a symptom-based approach to deal with challenges, which have their own characteristics in different locations. Hence, I believe that UA is not without faults such as noise pollution, soil erosion and etc., and needs its context-based governance structure and policy formulation.

A good governance structure offers assistance to gardeners and all stakeholders through strategic planning and developing applicable policies to community-supported programs (Depasquale, Sarang & Vena, 2018). Regarding good governance, Kearns and Paddison (2000) posit that conventional governance frameworks could not collect all actors' ideas; thereby, new forms of policies, system relationships, and governance level collaboration are required to strengthen the food system. Hence, urban governance should

attempt to facilitate UA activities and bring order and bottom-up thinking to the food system and provide an accurate understanding of the relationship among all actors as well (Pearson et al., 2011). In so doing, creating governance and policy directions could result in flows of power from authorities and policymakers towards UA non-governmental and local actors to participate actively in UA activities (Smit, 2016).

Another challenge affecting urban agriculture outputs is inequity in land accessibility and product distribution. Urban governance could organize programs for gardeners and actors to grow efficiently, sell economically, and manage safely (Freudenberg, Cohen, & Poppendieck, 2018). Thus, the urban governance structure should provide equal benefits for all people. In this respect, enhanced visibility of the food system and inclusion of governance challenges in UA areas have forced political leaders to address policy vacuums (Soderholm, 2015). However, the connection among all integrated features such as governance elements, planning, and policy guidelines are not desirable in many countries (Meenar et al., 2017). An urban framework should suggest an appropriate physical layout of a city that includes the right land use attitudes (Prové et al., 2016). The proper land should consist of desirable soil character, land use compatibility, sun, and water accessibility.

Moreover, according to Haysom (2015), it seems that UA needs a participatory governance transition to reach a pluralistic policy, including all voices such as civic society, institutional centers, governmental organizations, and private sectors. Therefore, it is mandatory to consider policy and governance structures in a city-centred manner, due to the soaring urban population and their challenges in the urban environment as a result (Moragues-Faus & Morgan, 2015).

2.9 Conclusion

While many forms of urban agriculture are proposed, community gardens in Victoria are the focus of this research. Community gardens are regarded as a source to improve the sustainability and resilience of our cities.

Community gardens – a type of UA –aim to reduce food insecurity and poverty in communities towards more sustainable cities. Community gardens are places for practice, socialization, learning, and empowerment concerning environmental, economic and cultural benefits. Notably, cities are in transition; thereby, community gardens target answering proposed questions associated with urban agriculture projects concerning the change to move towards sustainable cities. Community gardens face challenges, including urban planning regulations, bylaws regarding urban governance structures, and policy barriers. Therefore, this chapter has discussed sustainable development theory and urban resilience, which culminate in building community gardens to reach these theories' goals.

Sustainable development goals (SDGs) attempt to improve the quality of life of individuals by providing the necessities for people to meet their current and future generations' environmental, social, and economic needs. To guide this process in the right direction, urban agriculture goals seek to provide an alignment among all sustainability pillars to establish a resilient urban system with a low crime rate and energy consumption, viable places to live, an efficient governance framework, and financial investment.

Furthermore, it is argued that urban agriculture needs to include the role of urban planning, urban governance, and stakeholders in community garden projects to explore the potentials of community gardens in the city towards urban sustainability and food production improvement. Therefore, the chapter further emphasizes the contextualization of community gardens in Victoria and describes ongoing community gardens activities to

explore how the existing and future community gardens can be improved concerning urban planning and governance needs in Victoria.

Chapter 3

Methodology

3.1 Introduction

This chapter explains the methodology and tools employed in the research process. The chapter begins with a discussion of the qualitative method followed by specific ethical considerations, the description of the sample selection (i.e., the two community gardens under study), data collection tools, including semi-structured interviews and community mapping workshops, the procedure applied for data analysis, reflexivity and positionality, reliability and validity, and limitations of the research which are presented below.

3.2 Qualitative Research Methodology

Defining a research methodology is an essential part of the research. It is formulated in line with the investigation of a specific subject concerning the research questions (Denzin & Lincoln, 2005). The research methodology should provide an effective plan of explaining, procedures, and data analysis to address the researched questions (Langkos, 2019). In the same line of argument, this research used qualitative methodology to offer a picture of urban agriculture in Victoria and to gain a more in-depth understanding of the current barriers and potentials associated with community gardens towards boosting food production. Therefore, applying a qualitative approach in urban agriculture can result in a deeper understanding of a subject to illuminate the perceptions of people about UA and find out the existing limitations and assets (Scharf, Wachtel, Reddy, & Säumel, 2019).

According to the research goal and existing research gaps, three research questions were developed, and two neighbourhoods were selected to make the area of research in this

study. Then, an ethical consideration review was completed to provide the researcher with further data collection and analysis steps.

Two methods were adopted, including semi-structured interviews and community mapping workshops to gather data on urban planning and governance role in UA from three groups of governmental, non-governmental, and residential. The collected data by the mentioned tools were transcribed to be analyzed by thematic analysis method (Bricki & Green, 2007). Thematic analysis is a flexible method to find themes of data through initial codes to obtain a final pattern (Maguire & Delahunt, 2017). Notably, the data were analyzed through NVivo 10 software, which offers data transcribing, analyzing, and report producing opportunities for researchers (Jones, 2018).

In addition, in qualitative research, particularly in the text interpretation stage, the judgement of a researcher is a significant concern (Langkos, 2019). To improve the reliability and validity, the researcher considered his role within the selection of community gardens, the recruitment of participants, the data collection instruments, and data analysis tool.

3.3 Ethical Considerations

The thesis considered ethical issues throughout the research. The ethical process entailed the participant's approval of all research details in all research stages. Based on the Research Ethics, approved by the University of Victoria, I informed all the participants of their voluntary participation in this research and was told that they would have the right to withdraw from the study at any stage if they deem it necessary. Therefore, participants were fully informed about the research contexts and objectives by the provided information sheets to understand the data collection procedures and how the data will be collected

through the interviews and workshops. They were informed that their answers would be anonymous, and the results only would be used for academic purposes. Then, they have reported their approval by signing the consent forms. Also, they were informed that the transcriptions and maps would be kept for two years in a locked cabinet after the thesis defence. In this research, participants were in a low-risk context in terms of social, economic, and physical considerations.

3.4 Investigated Community Garden Cases in Victoria

The city of Victoria was chosen as the location of this study, where the considered community gardens provided the researcher with actual examples to study.

Fernwood Community and James Bay Community Gardens are located in two different neighbourhoods and were chosen as practice-lead samples in this study. These two community gardens were selected because they grow edible products and are located within the city of Victoria's boundaries. Also, the gardens were available choices based on the community garden's definition as per Glover et al. (2007, p. 79). Fernwood Community garden, managed by Fernwood Community Association (FCA), is situated on 1855 Chambers Street on city land. James Bay Community Garden, in James Bay Neighbourhood, is located on Montreal Street- between Simcoe St., and Dobinson St., - on city land. The mentioned community gardens are presented on next page.

Also, the gardens in Victoria, are operated by the same non-profit organizations and are managed by their own coordinators, volunteers, and people who grow their crops into the plots. Notably, the compost education center plays a significant role in the Fernwood Neighbourhood to support the community garden and those interested people in

growing food productions. Figure 8 shows a map produced by the researcher, which includes the location of the chosen neighbourhoods in Victoria and the community gardens.

Figure 8

The Location of James Bay and Fernwood Community Gardens

3.5 Description of Participants

The data for this study was collected by two methods: semi-structured interviews and community mapping workshops. Table 5 shows the methodology information in this study.

Table 5

Methodology Information on the Research

Methods	Involved groups	Study Areas	Number of Participants	Main Subject of Questions
Semi-Structured Interviews	Government	James Bay and Fernwood Neighborhoods	5	General information about urban agriculture Urban planning

	Non-Government		6	Urban governance and policy Stakeholders roles General information about urban agriculture Urban planning
	Residents		7	Urban governance and policy Stakeholders roles General information about urban agriculture
Community Mapping Workshops	Gardeners and Residents	James Bay Neighborhood	4	Stakeholders roles and barriers in UA
	Gardeners and Residents	Fernwood Neighborhood	4	Stakeholders roles and barriers in UA

Originally, twenty-two participants were selected to be interviewed through a snowball sampling method. However, according to their interest and time, only eighteen participants were able to be involved in this study. Descriptive information for participants is captured in Table 6.

Table 6

Participants Information

Methods	**Groups**	**Number of Participants**	**Gender**	
			Male	**Female**
Semi-Structured Interviews	Government	5	3	2
	Non-Government	6	2	4
	Residents	7	3	4
Community mapping Workshops	James Bay	4	1	3
	Fernwood	4	1	3

The qualitative data were collected and imported into NVivo 10 for analysis. To elucidate, the analysis procedure was divided into three steps:

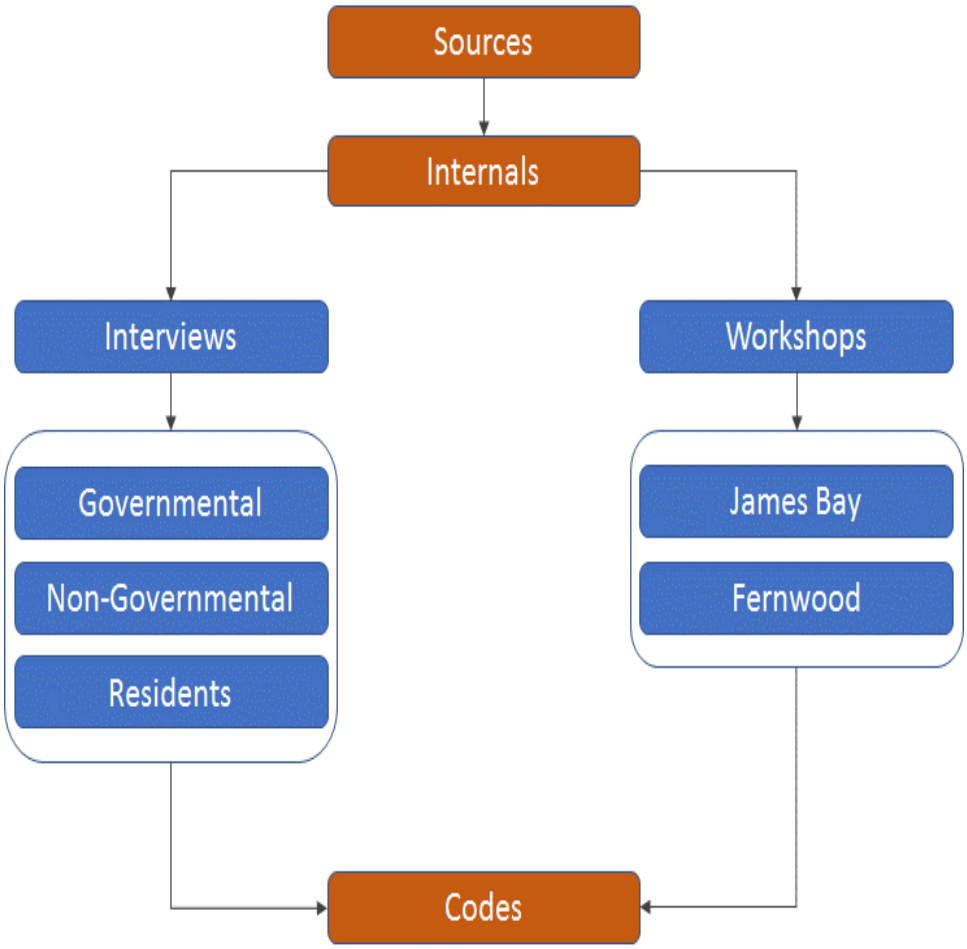
- Analysis of findings on each group

- Comparison of the three different groups perspectives collected by the interviews
- Comparison of the two different groups perspectives collected by the workshops

The first step indicates a comparison of the participant's answers in each group separately and includes three interview groups and two workshop groups. Concerning the collected data within each group, the initial codes were generated manually on NVivo 10 to compile an inventory of codes towards emerging themes. Step two aims at code generating from each interview group participants (governmental –Ministry of Agriculture, City of Victoria, and City Council-, non-governmental – the compost education centre and community centres-, and residents). The codes were generated separately and were compared across three interview groups for developing ideas within each group. In step three, a similar procedure, like that in phase two, was adopted for the data that were presented by participants in community mapping workshops. In the following part, the flow from internal imported documents into NVivo 10 is shown.

Figure 9

The Flow of Imported Sources into NVivo 10

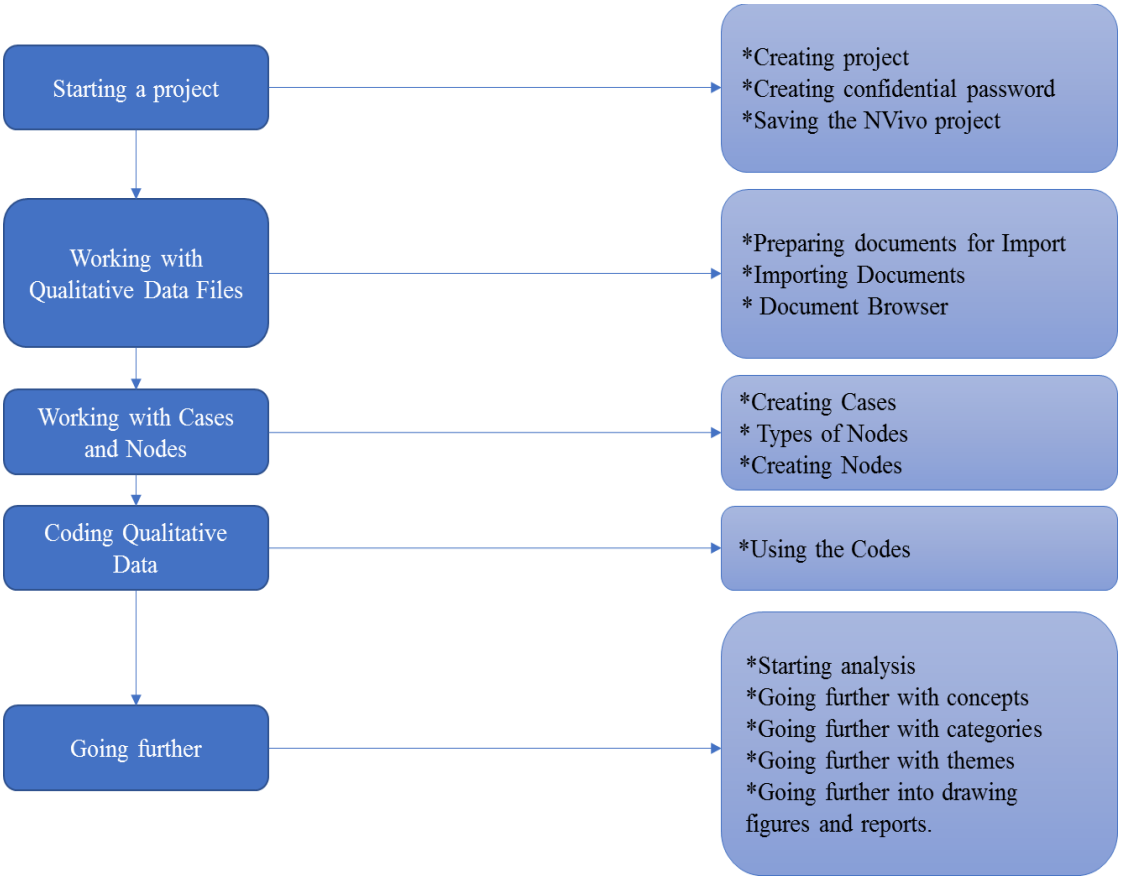


3.6 Applying NVivo 10 Software in the Research

NVivo, a qualitative data analysis (QDA), was used in this study. The software is a time-reducing package in analyzing qualitative data that decreases manual tasks (Wong, 2008). As per Bazeley (2007), qualitative analysis using NVivo should consider five central tasks of managing data, managing ideas, querying data, modelling visually, and reporting. Therefore, in-depth knowledge of using the software was gained by the researcher to use the following five-step procedure, which is demonstrated in Figure 10.

Figure 10

Procedures in Using NVivo Software



Source: (Hilal & Alabri, 2013)

It is argued that computer programs offer convenient ways to code data, although they cannot provide a reliable and unique analysis (Martin, 2016). Therefore, I used NVivo 10 to set up the transcripts and get queries while I coded the transcripts manually to improve creativity and confidence in results.

3.7 Coding Process

All transcripts were set up on NVivo 10 and coded manually using the software. The imported data (called internal sources) were organized in batches of two main groups of interviews and workshops. The below thematic analysis steps were taken in a recursive

process to explore themes and produce a report at the end of the analysis (Braun & Clarke, 2008).

Table 7

The Steps of Thematic Analysis

Steps	Description of the process
Familiarizing with the data	Transcribing data, reading and re-reading the data, and noting down the initial ideas.
Generating initial codes	Coding exciting features of the data according to the research questions.
Searching for themes	Reducing data without losing the meaning of the data. Then, collating codes into potential categories and themes.
Reviewing themes	Checking in the themes work concerning the coded extracts.
Naming themes	Generating clear definitions and names for each theme.
Producing the report	The final opportunity for the analysis and producing a scholarly report of the analysis.

Therefore, three steps were taken to set up the transcripts in NVivo 10, which are illustrated below. Following the creation of internal sources within the mentioned two groups, a case node was created for each participant and community. A case is defined as a node that represents undertaken participants and neighbourhood attributes in the research (Edhlund & McDougall, 2019); therefore, as many as participants (eighteen) cases were created on NVivo 10.

Secondly, a central container (node) was created under the title of “codes,” and an inductive coding method was employed to code participants’ notes. Line-by-line coding was used, and the generated codes moved into the central node, which has provided an effective way to get further queries. Lastly, all the sources (transcripts) were associated with the participants’ codes, and the same way was applied for associating sources with code nodes. Given that, the first coding results were produced, presented in chapter four.

3.8 Data Collection Procedures

In this research, qualitative methods were used, including semi-structured interviews and community mapping workshops. The methods were employed to identify all participants' opinions and experiences regarding current barriers and potentials about the two chosen community gardens in Victoria. The procedure of the data collection by the methods is indicated below.

3.8.1 Semi-Structured Interviews

Semi-structured interviews were applied to collect data from the three groups mentioned earlier. Semi-structured interviews were conducted only once with a group or individual and covered thirty minutes minimum using an interview guide and questions (DiCicco-Bloom & Crabtree, 2006). It provided an opportunity for the participants to understand the questions deeply (Langkos, 2019). Face-to-face interviews helped me to gain in-depth information so that the data would be able to answer satisfactorily to the research questions.

The following stages were taken to conduct the interviews. In alignment with the research objectives, three groups directly-engaged with UA were selected to be interviewed. These groups represented three areas: government presentatives (including city councillors, the Ministry of Agriculture, and the City of Victoria), non-governmental organizations (gardeners, community centers, and the compost education center), and residents. Sonwball sampling started from the planning department in the cIty of Victoria and only those participants who had background information about UA – within three mentioned groups- were selected to be interviewed. To minimize sample bias and generate diverse viewpoints; participants were comprised of males and females, with an age range

of mid-twenties to mid-seventies, including different social and economic classes, and coming from various ethnic backgrounds.

I applied the following steps to choose the participants. First, the key informant participants from the community development department, in the City of Victoria, were selected. The planning and park departments play a central role in a gardening network in Victoria, and there is a direct connection between the departments and garden coordinators (City of Victoria, 2012), which encouraged me to start the snowball sampling process from the planning department. Then, the department introduced potential participants within the City of Victoria, the City Council, Ministry of Agriculture, community centers, gardeners, and residents who had background information about UA. The invitation was sent through email to willing participants to contact them directly. Following this, other potential participants were recruited through previous participants using snowball sampling.

Through the mentioned procedure, a total of eighteen participants were chosen to be interviewed face-to-face, including five officials from the City of Victoria – palnning and park offices-, Ministry of Agriculture, and the City Council; six participants from community-based organizations such as community centers and the compost education center; and seven participants from the community residents. Notably, specific interview questions were designed for each group: eleven questions for officials, twelve questions for non-governmental organisations, and seven questions for residents, separately based on the various perspectives and knowledge of participants. Each set of interview questions included four main sections of introduction and general questions, urban governance, urban planning, and questions about stakeholders.

Subsequently, the interviews were held between July 1st and August 30th at a convenient place for the participants, including official workplaces, community centers, the compost center, coffee shops or gardens. The length of interviews, which were tape-recorded, were from 15 to 40 minutes, with the average being about 30 minutes. The interviews started with greetings, and then a consent form and information sheet were provided that included the details about the right of participants throughout the research and research objectives to inform the participants about the research process. Next, the consent forms were completed by interviewees if they agreed with the process of the interview. The consent form included the risk and benefits of the research, the nature of participation, and the procedure applied to maintain data confidentiality (Groenewald, 2004). The interviews continued with general questions in a non-judgemental way, and it was attempted to keep it that way until the end of the interview. The data were recorded to be transcribed manually for data analysis.

3.8.2 Community Mapping Workshops

Many stakeholders contribute to UA directly and indirectly. I attempted to collect all involved people's perspectives in this research to provide a realistic picture of community gardens in Victoria. Therefore, a combination of tools was used to collect data.

Parallel to the interviews, community mapping workshops were applied because they provide an opportunity for a range of different participants to express their ideas about the role of stakeholders and how they can support the community gardens in Victoria through reflecting on their stories (Amsden & Vanwynsberghe, 2005). Community mapping is a qualitative method where participants can share their geographical, socio-cultural, and ecological experiences in line with the projects located in the communities

(Corbett & Lydon, 2014). Additionally, as a CBR (Community-Based Research) pedagogical tool, it provides a place for both participants and learners to learn collectively, represent their ideas graphically considering what is happening in the community.

Intending to collect data through community mapping, the researcher selected two communities in Victoria, James Bay and Fernwood neighbourhoods. Approximately 12,000 people live in the James Bay neighbourhood, of which 57 percent is between 25 and 64 years old. The neighbourhood, with its historic homes and apartments, is also a tourist attraction and has been surrounded by water on three sides. James Bay is a walkable neighbourhood with many important attractions such as Parliament Buildings, Royal BC Museum, Beacon Hill Park, and Fisherman's Wharf (City of Victoria, 2012). Fernwood neighbourhood, historically known as Fernwood Farm, is a highly populated neighbourhood in Victoria with about 10,000 residents. There are historic buildings built in the 1950s, along with new buildings. The neighbourhood's heart is a square area (Fernwood Square) at the geographic centre of the community that is a host for many celebrations in Summer (Neighbourhood Association of Fernwood, n.d.).

The community development department of Victoria introduced two community centres and provided the contact information of interested members to me. As the study area was small (neighbourhood scale), six community members were contacted to create a team of four to six members. Next, four participants who were familiar with the study area and gardening skills were selected (Bodeen & Hilliker, 1999; NCVO, 2010). Thus, eight participants across the two communities were contacted to organize two community mapping workshops. The first workshop was held on the 9th of July, in 2019, at the James Bay Community Center and the next one on the 15th of July, in 2019, in Fernwood

Community Garden at the participants' convenience. Participants drew their ideas on a B1 size blank sheet to answer two questions in line with the stakeholder's roles to identify the most important stakeholders in the gardening network in Victoria and the ways they can support the community gardens. The generated data was transcribed manually and imported into Nvivo 10 to be analyzed by the software.

3.9 Data Analysis

Data were analyzed using a thematic analysis method. The thematic analysis is comprised of transcribing the interviews, organizing the data, and analyzing them by identifying the codes and themes within the qualitative data that aim at responding to the research questions (Sauter, 2014). As a flexible method, it is not tied to a specific epistemological approach and has a wide range of benefits in teaching and learning work (Maguire & Delahunt, 2017).

I used a six-step framework of reading and becoming familiar with transcripts; generating codes by creating small chunks of meaning; searching for themes and developing preliminary themes; reviewing the explored themes and generating secondary themes; defining and interpreting the themes; and writing the final refinement of themes (Braun & Clarke, 2014.).

Thereby, I manually transcribed all the recorded interviews and mapping notes and arranged the information based on the questions in NVivo 10. Following this and to generate codes and preliminary themes, the responses were examined paragraph by paragraph. An initial list of codes was created using the transcripts and making notes on research questions. Then, similar sub-codes were merged to produce the main codes. For example, the first participant's transcript was coded manually, and preliminary codes were

generated, and the transcripts were re-read to develop the second list of codes. Then, the similar codes were merged to produce final codes to develop main themes. The mentioned cycle was completed for each participant separately, and all principal generated codes were transferred into NVivo software. The notes in workshops were coded manually in two cycles, and the final codes were moved into NVivo 10.

Coding the transcripts and the notes in workshops allowed me to develop the main themes to understand the participants' major focus on the research questions. However, re-reading the transcripts is required to identify sub-themes that fix the categorizations, ensuring whether the themes and the data are congruent. Then, NVivo was used to create as many code nodes as the codes generated manually. Therefore, I created the hierarchal nodes to develop further queries in line with the research questions. It is notable that each code was aggregated to where it was generated (participants' notes) to prevent further predictable challenges in the analyzing stage. Lastly, text, word, and coding queries were used to produce the results to answer the research questions, which will be presented in chapter four.

3.10 Reflexivity and Positionality

Researchers play a significant role as a tool during a research process accomplishing tasks ranging from setting up the data collection tools to data interpretation (Xu & Storr, 2012). Therefore, researchers must reflect upon the proceeding ways towards research objects and understand how the research would lead to results (Corlett & Mavin, 2019). Ancher (2009) argues that reflexivity includes the feature of "subject-object-subject" and self-monitoring of the researchers' thoughts (p. 2). Reflexivity is "the constant awareness, assessment, and reassessment by the researcher of the researcher's contribution/influence/shaping of inter-

subjective research and the consequent research findings (Patnaik, 2013, P. 102).” Researchers can deeply understand the meaning of an undertaken research phenomenon by reflexivity (Burns, 2006).

Researchers, also, must understand their positionality and biases in a research project (Hamilton, 2007). Therefore, I conducted this study through an interpretive perspective to reflect on understanding of the community gardens' reflections as undertaken objects. The researcher in this research is a professional urban planner who has worked four years in community-based projects in Tehran, Iran. He has worked with different stakeholders to implement small-scale urban agriculture projects in southern neighbourhoods in Tehran. His four years of experience have resulted in an awareness of interview and workshop participants’ expectations and tendencies to know how a researcher can elicit the required information effectively from the participants. Also, I experienced common expectations of stakeholders and their barriers and potentials about agricultural projects. I held meetings with residents and community centres to have their ideas towards growing food on potential lands and to know the appropriate places to grow food. Also, my parents grow some portion of their required vegetables in the backyard of their house located in the peri-urban area of their hometown. Given this background, my experiences enable me to understand the participant’s voices better and explain how we move throughout this research and what the researcher looks for in this study. Therefore, it was pivotal for me to reflect on my positionality and reflexivity during the study and to continue to do this until the last stage of the research.

3.11 Reliability and Validity

Qualitative researchers provide a different definition of validity and reliability based on various aspects. To begin, Polit and Hungler argue (1993) that 'reliability' refers to consistency in examining an object throughout the research. In this study, I (the researcher) play a pivotal role in improving reliability by avoiding bias within questions designation, data collection, and data analysis stages. For example, I asked five participants to go over the transcriptions of the interviews and the workshop's comments to reflect upon the data they provided.

It is also postulated that a researcher wishes to improve validity to ensure that the data collected are able to address the research questions, i.e., to obtain data suited to what the study set out to explore (Polit & Hungler, 1993). In this research, I used the appropriate methodology according to the research questions and considered an effective design of instruments to ensure an acceptable level of validity. In a similar vein, Bricki and Green (2007) provide four goals of reproducible, systematic, credible, transparency in qualitative research to boost the validity and reliability of research. It is also argued that researchers could obtain a satisfactory outcome through a "multiple sourcing approach" (Triangulation) (Shumate, 2012, p. 54): Also Golafshani (2003) elaborates this by saying *"Triangulation has risen as an important methodological issue in naturalistic and qualitative approaches to evaluation [in order to] control bias and establishing valid propositions because traditional scientific techniques are incompatible with this alternate epistemology (p. 603)."*

In this research, I used a methodological triangulation strategy to collect data through two tools to support the cross verification of data. In so doing, I conducted semi-structured interviews and community mapping workshops to ensure trustworthiness.

Therefore, I chose the participants from all the stakeholders involved in community gardens in Victoria. Both male and female participants were selected for interviews and community mapping workshops, and multi-racial participants were recruited. Finally, to maximize the quality of the collected data to address the research questions, I selected participants who had background information associated with urban agriculture.

3.12 Research Limitations

Providing the methodology and the data collection tools, I intend to explain how the research process proceeds in practice. Also, I encountered challenges during the implementation of the research as follows:

1. The first limitation refers to the fact that participants who work in an organization may refuse to share the information that speaks against their organization.
2. Although projects can play a significant role in children's future, children's perspectives were not included in the research.
3. There was a lack of interest among participants because their expectations had not been met as promised by the authorities and concerning their required facilities.
4. There was a low rate of interest among invited participants to take part in the workshop owing to the two hours wokshop time period.

3.13 Conclusion

This chapter described the methodology used in this research study: research samples, ethical considerations, data collection instruments, participants sampling, analyzing methods, and validity and reliability during the research. I employed a qualitative method and triangulation tools, which are semi-structured interviews and community mapping

workshops for improving the validity of the study. Also, I chose two neighbourhoods, where community garden projects have been implemented. Community mapping workshops were held in the community gardens, and eight people were asked to attend each workshop, and their ideas were recorded graphically. Additionally, semi-structured interviews were administered – the other data collection tool- across three areas: governmental (five participants), non-governmental (six participants), and residents (seven participants). The interviews were audio-recorded with the permission of interviewees and manually transcribed to be analyzed.

To generate the initial codes, I used thematic analysis to extract the dominant themes within two code generating cycles. The generated codes and themes were transferred into NVivo 10 to analyze. To improve the reliability of the research, five participants were selected randomly for reflection and to comment on the transcriptions of the interviews. The provided comments were compared with the transcripts, and the differences were settled.

Chapter 4

Findings and Discussions

4.1 Introduction

This chapter presents the participants' responses to the research questions as well as the data analysis and an in-depth discussion of the research findings. This chapter starts with a description of the participants. Then, I demonstrate the development of the codes, categories, and themes in this study. Lastly, the findings and discussions are presented in three main parts. In part one, the analysis of findings in each group, including governmental, non-governmental, and residential, will be presented separately. Part two includes a comparison between interviewed groups. Finally, the data from the community mapping workshops will be depicted.

To review, this research aimed to address the following three research questions:

- How can urban planning in Victoria improve food production?
- What governance structures and elements are required for urban agriculture (UA) to thrive?
- What is the role of local stakeholders in planning and policy-making for UA?

4.2 The Overview of Transcripts Coding Coverage

A general overview of coding coverage in all sources is presented in Table 8. The coverage expresses the percentage of the total source coded. The coverage ranges from 2.75% to 38.75%, meaning that the volume of coded sentences changes in the interval mentioned above.

Table 8

The Highest and Lowest Coding Coverage

Hierarchical Names	References	Coverages
Interviews\\Governmental	234	39.09%
Interviews\\Governmental	137	32.13%
Interviews\\Governmental	56	14.24%
Interviews\\Governmental	68	31.90%
Interviews\\Governmental	91	17.77%
Interviews\\Non-governmental	27	19.11%
Interviews\\Non-governmental	72	24.46%
Interviews\\Non-governmental	75	19.00%
Interviews\\Non-governmental	41	11.25%
Interviews\\Non-governmental	22	8.37%
Interviews\\Non-governmental	11	5.69%
Interviews\\Residents	63	17.44%
Interviews\\Residents	25	16.48%
Interviews\\Residents	10	15.38%
Interviews\\Residents	29	13.52%
Interviews\\Residents	10	12.16%
Interviews\\Residents	34	7.58%
Workshops\\James Bay	52	16.98%
Workshops\\Fernwood	30	9.51%

The data were coded, and the coding results included 91 first-round parent and child codes, which were used to explore nine themes. The list of codes has been presented in Appendix D.

4.3 Themes Exploration

There are many techniques for exploring themes in texts. An analysis of words technique was used to discover the themes through two ways of word repetition and keywords in contexts techniques. The latter way has been implemented by manually coding, which resulted in generating 91 principal codes from all transcripts in the first round. Then, I used word repetition by looking at the initial codes list to find the associations and produce final codes by following broader ideas. The parent and child codes were merged into a single category, and redundancies were removed to detect consistency to develop 61 final parent

nodes and 17 main categories, as are presented below. To remove redundancies, the codes were re-read, and some initial codes were combined, while some were dropped considering further creation of categories.

Table 9

Final Codes and Themes

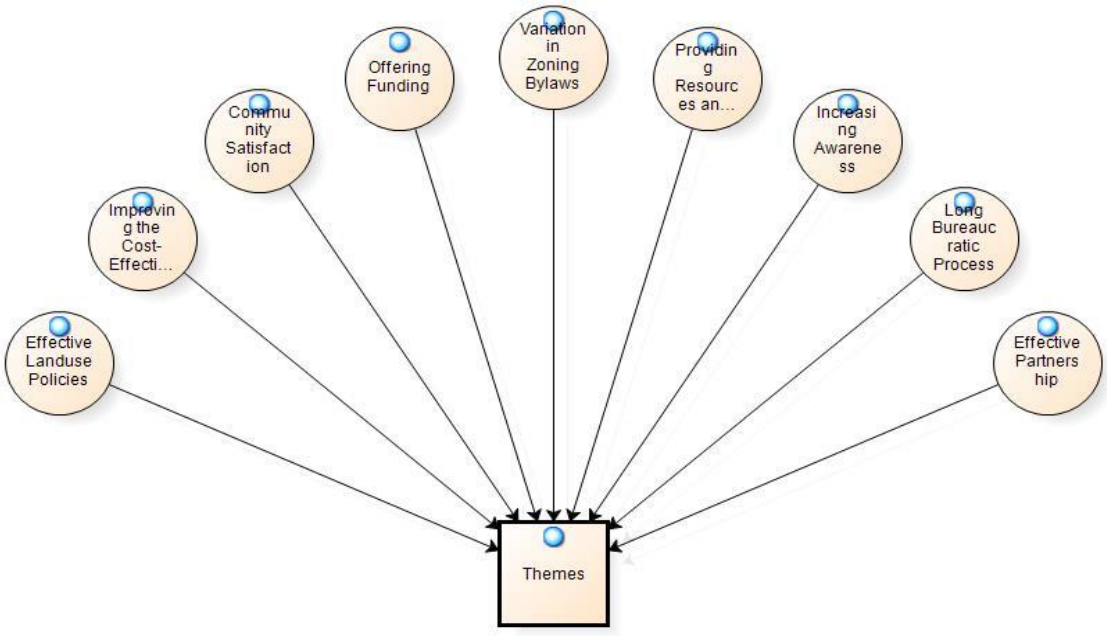
Codes	Categories
Dedicating plots to The Inter-Cultural Association (ICA)	Creating a partnership with schools, refugee center, and the compost center
Dedicating plots to the school district (No 61)	
Organizing workshops at schools	
Working with Refugees	
Building a new community garden for The Cool Aid Center (CAC)	
A partnership between municipality and developers to develop a green guideline	
Establishing Victoria's UA Board of gardeners	
An incorrect assumption about city staff	
Asking staff and the Council directly to an effective connection with gardeners	
Organizing workshops at (and by) the compost center	
Community garden (CG) support by media	Media attention
Local newspaper's attention to community gardens	
Changes in zoning bylaws	Zoning variation
Zoning permission to UA	
Making new regulations	
Developing green building guidelines	Permission to a new type of garden in the city
Developing multi-purpose building design guidelines	
Formulating gentle planning policies	
Legalizing new type of UA	
Gardening permission in apartments	
Adding a new chapter in neighbourhoods plans	Official chapter in the plan
Lack of space for house renters	Identifying spaces for useful land use
Best use of land	
Gardening on private lands	
Growing in apartments yards	
Considering the size of the lot	
Preventing to garden in a park	No gardening allowed in parks
Funded position; one who has UA and UP skills	
Offering garden coordinator grant	Offering a funded position
Calling for volunteers	
Increasing grants	Offering grants
Conducting more research about UA	Increasing awareness

Encouraging youth to UA	
Workshops for students	
Organizing campaigns to support UA	
Organizing gardening celebrations	
Site visiting by staff and councillors	
Lack of knowledge among city staff	
Reaching the neighbour's agreement	Reducing complaints
Supporting UA proposal by neighbours	
Reducing neighbour's complaints	
Keen competition inland- using	Not cost-effective
Distribution mechanism	
Objective-Based projects	
Approving UA proposal by the municipality	Long approval process
A long proposal approval process	
Long waitlist	Long waitlist
Facilities and infrastructure\Water and fence	Providing facilities
Offering gardeners, the facilities by the City of Victoria	
Preventing theft from gardens (due to lack of a fence)	Facilities for gardeners
Bicycle for gardeners	
Offering insurance to all gardeners	
Offering coffee maker and bench for visitors	
Gardeners commitment to protect the products	
Gaining business license	
Free garbage bins and mulch	
Providing resources	Facilities at gardens
Improving safety by police	
Offering free water charge for private land gardeners	
Removing shades	
Producing organic fertilizer	

All interviews and workshops' findings were analyzed to explore the above-mentioned final codes and categories. The identified categories were named, and they were compared for differences and similarities according to their focuses. Therefore, the nine main themes were developed by conceptualizing the data. To provide an overview of the themes, Figure 11 shows the nine produced themes after data analysis.

Figure 11

Explored Themes from the Data



The above-cited themes were emerged through analyzing the data with NVivo 10. and in the following sections, codes and themes in each group will be discussed, answering the research questions. Afterward, a comparison among the interviewee groups and then between the two workshops will be discussed.

4.4 Interviews Conducted with Government Stakeholders

Local government stakeholders were one of the groups chosen to be interviewed. Five interviewees, who have been working in the following governmental organisations: the City of Victoria, the City Council, and the Ministry of Agriculture, were selected for the research. I have presented the produced data by NVivo 10, and the applied queries include frequently used words, text search, and coding results within each group.

Word frequency query was applied to identify the words and concepts which were frequently used in governmental sources. In this research, the word frequency query shows the top 30 frequent words, which include words with a minimum of four letters. Also, the researcher adjusted the slider to include similar words, and as a result, they were grouped

in one category. Lastly, the researcher went over the frequent words and excluded the words which were not related to research questions. The unrelated words were grouped into a stop word category, and the rest of the words were used to be analyzed. The following word cloud figure shows 30 words in varying font sizes, where the words in larger font display more frequently occurring words. It is notable that the mentioned process was employed to get the queries in each group.

Figure 12

Word Cloud Codes Generated from the Governmental Participants

As all principal codes and themes were presented earlier (Table 9), I intend to discuss each group's ideas according to those generated themes and research questions. As per Figure 11, it is observed that participants in this group focus on various concerns, including planning policies, proposal process, governance structure, neighbourhood support, changing the current system, regulations, stakeholders, and land. The words as

mentioned above includes the essential items that have been generated by word frequency query and presented by participants in the governmental group.

According to that, four participants notably captured the essence of effective planning policies in Victoria. They claimed that the current zoning policies need to be updated to include green spaces or agricultural zones in zoning regulation bylaws. One of the participants stated:

> *"I think we have got about 700 zones in the city and that comes out of a practice of, umm, I think probably for the last 30 years or so, and have not been in the practice of significant zoning changes as a part of the planning process."*

Therefore, the existing zoning is outdated and need changes toward sustainability such as a zone called "urban agriculture" in zoning regulation bylaws to permit gardening in city.

A zoning regulation bylaw describes how a property can be used considering regulations and policies (City of Victoria, 2012). Zoning must explain how the property can be used, what type of UA may be used, and also explains the size of lots and the construction regulations. Also, all official urban plans have to be consistent about regulations in a city. Thus, when the proposed zone (urban agriculture zone) is added to the zoning regulation bylaw, the urban agriculture zone has to be considered in the official community plan (OCP) and neighbourhood plans. An official community plan is a 30-year plan that is used for future city growth, and a neighbourhood plan provides people with detailed development policies and changes over 20 - 30 years in a neighbourhood (the City of Victoria, 2012).

Given that, the city of Victoria plans, which has been produced in 2012, not to include UA as an official zone, thereby, residents cannot directly submit UA project applications to the

planning committee located in the City Hall. However, the City has developed a land inventory with a potential of community garden implementation. Thus, interested people can consult with the city staff about the existing land to find an appropriate site to create a community garden.

This finding is in accordance with results reported by Lavallée-Picard (2018), who has expressed the need to increase small-scale commercial food production in Victoria. A similar finding was reached by McClintock et al. (2012) highlighting that UA zoning plays a key role in stimulating food production in cities. In Oakland in California, in 2011, UA zoning was proposed to expand the activities of growing plants, which was approved in 2014. Given that, Victoria also needs a considerable change in its official documents with a broad attitude to consider an "urban agriculture" zone to contain community gardens, small-scale commercial productions, and possible new forms of UA in the future. Moreover, the results cast a new light on the new forms of UA projects in Victoria, such as a balcony, boulevard, apartment, and school garden. Urban agriculture is employed in various types and scales in the world such as vertical, rooftop, school garden, hydroponic, aeroponic, misophonic, and aquaponic gardening (Looy, 2015). There are a few community gardens and orchard gardens in Victoria, and it is expected that different UA initiatives will be required in Victoria in the future.

Adding a "food system" chapter in the city official documents can help interested people and officials to move forward. Only one of the participants believes that a new detailed "food system" chapter in the official community plan (OCP) could be a way to focus intensely on various forms of UA in Victoria. He claims that the chapter should include existing and possible UA projects in the city, considering policies and strategies to

implement. Currently, there is a chapter titled “food system” in the official community plan, which includes broad goals and all food system elements, including production, processing, distribution, consumption, and recovery. Nonetheless, I believe that the current food system chapter does not include production challenges, concerns, and coherent policies and needs detailed information and specific policy for each food system components, including resource, production, transport, consumption, and outputs. Also, it is pivotal that the food chapter should be added to the neighbourhood plans because some current neighbourhood plans date back to the 1990s. This is confirmed by Bouris and et al. (2009), who state that existing programs and policies are not able to fully support gardening in cities that need to be considered in the municipal agenda. A national survey conducted by the American Planning Association (APA) from directors responsible for planning in local levelgovernment level shows that 91 percent (763 participants) confirms the need for changes in the official plans to address food system deficiencies with adequate policies and goals (Hodgson, 2012).

Interestingly, three participants in the group also posited that legalizing a new type of UA should be required in Victoria. However, others claimed that a massive construction regulation and policy change is needed for new forms of gardening, which requires significant changes in governance structure and the official plans. One of the participants said:

> *“Well, I think a permeable design is essential, so if the community garden is completely fenced off, sends a message that this is a private space, and you are not welcome. If it is easy to walk through and check it out, it is a lot more inviting space. You know, especially if it is, can be integrated with a good cafe or be a public*

space where you have got people already going to hang out, and it is easy for them to expand into space and hang out."

Currently, around 60 percent of people in Victoria live in apartments. Therefore, it is crucial to design a place for those who cannot garden in their home, although they are interested in gardening. Two of the participants in this study claimed that gardening in apartments could be an essential alternative. However, I perceive that it needs its own regulations and facilities and should be considered in development permit applications and construction bylaws. In this regard, another participant stated:

"I think the most important thing is that many people live in apartments. We say that you cannot have a garden at home. A community garden is for people who do not have other places to garden, and it is a beautiful thing to do to get her hands in the Earth to grow things and to do it in community. I think new development needs to be planned with some food-producing space from the beginning, and I think that any of urban planners need to be thinking about these as productive spaces."

This finding is consistent with this research showing that restrictive food production ways will fail to bring invaluable benefits to the city, thereby; a food system should offer various ways for growers, communities, and consumers (Lovell, 2010). This finding is also seen in the case of Vancouver, where the city provides residents in multiple dwellings with shared garden plots, balcony and rooftop gardens (City of Vancouver, 2020).

Another participant's mentioned concern is the lack of land to garden in the city. The city of Victoria has created an inventory of city-owned land, although I think that they

have not been designed according to the gardening requirement features such as neighbour's agreement and the Council approval. A participant expresses:

> *"Well, usually the focus of our city has been on the new development of buildings. So, most private landowners, when they think of their parcel of land, they do not envision creating a garden as they purchased the land to make money by developing it and selling it or holding it in renting or leasing. So, this land using can conflict with the goal of food security."*

As per one of the participants' claim, and my experience, an appropriate vacant land for building a community garden needs a budget ranging from one to three million dollars to purchase. Given that, land purchasing expense is a significant barrier to the municipality and the City Council, where the budget allocation is approved. Hence, the City Council's perspectives in the creation of land inventory are vital to select the potential lands based on the City's budget.

Likewise, those interested in gardening on city lands should move through three stages: neighbour's agreement, councillor's approval, and non-profit society's partnership. Some neighbours are not interested in supporting a community garden arguing that it creates noise pollution and traffic volume. The finding is directly in line with what McClintock et al. (2012) found regarding the potential nuisance issues which can be reduced by controlling the UA activity scale and by establishing more flexible schemes. Hence, there are necessities to alleviate above-cited challenges by considering a buffer zone surrounding garden parcels by streets.

It is worthwhile to mention that one of the participants referred to a lengthy bureaucratic process, including three earlier mentioned steps, to obtain a proposal approval

and access a plot for gardening. He claimed that the current proposal approval process might be assumed as a long process for the gardeners, although the city council attempts to support all gardeners through a convenient process. Currently, an interested person should pass seven steps in order to build a garden, starting with building a team and ending with making the garden, which is presented below.

Figure 13

Community Garden Building Steps in Victoria

According to the parks department of the City of Victoria (2012), gardeners are not allowed to build a garden without obtaining approval of the city councillors. They need to receive approval from the councillors in stage two (gardening site) and step six (proposal approving). Also, they have to consult with neighbours and adjacent owners to reach their agreement on building a community garden. Therefore, it seems that the current stages must be updated according to governance structures and neighbours' expectations. On the

other hand, one participant was disagreed with the mentioned ideas and claimed that the current process is convenient for gardeners, as he states:

> *"They may not have experience in going through the city approval process, and so that is a fair assumption in terms of what could be perceived as a barrier, but what we are doing here is not creating barriers."*

Having said that, the process can be shorter if an effective partnership between the planning department and the city councillors could be established. Thus, making the final decision by a committee in the planning department can be an alternative way to accelerate the approval process in consideration of intradepartmental proposal approval. However, this is contrary to the existing application process in Vancouver and Victoria, where community garden projects are approved by the city council (City of Vancouver, 2020; City of Victoria, 2016).

Another finding is achieved with the analysis of interviews conducted with the government that shows a long waitlist for taking a garden plot, which also demonstrates a considerable interest in gardening in Victoria. This finding is directly in line with previous findings, where Sauter (2007) states that small scale garden sites engender a long waitlist for interested people. Nevertheless, when comparing the finding to those of previous studies, I propose an alternative way of offering more production through various types of UA. I suggest that the number of community gardens and plots should be increased in the city, or alternative suggestions can be considered, such as legalizing other types of gardening in the city to offer more opportunities for residents to grow food.

The participants were asked about stakeholders' engagements in policymaking, as an important finding in the understanding of a fruitful collaboration among stakeholders.

They believe that there are providing fully participating opportunities for all stakeholders to offer their concerns and suggestions to the city staff or the councillors. According to one of the participants, there is a monthly round table meeting in the City Council, which is open to the public and societies. The City of Victoria also receives feedback through an online survey. Therefore, there are opportunities for everybody to participate in meetings to express their concerns and to offer suggestions to improve the current community garden circumstances. A participant stated:

> "*So, we have a committee to a group of stakeholders that meets monthly. It is a committee that I formed with my colleagues. We pushed a lot of these issues, so it is called the urban food table, so it has been meeting for about four years once a month at the City Hall, and it is a basic open meeting to the public and particularly to people involved."*

The present study confirmed the vital role of stakeholders in gardening projects and the importance of providing them with opportunities to present their concerns and suggestions to the City. While Sanye-Mangual et al. (2016) went beyond this research and demonstrated that opportunities for collaboration should be offered after gaining the perceptions of stakeholders about UA, to explore their attitudes and agricultural knowledge.

4.5 Interviews Conducted with Non-Governmental Groups

Non-Governmental Organisations (NGOs) were selected to be interviewed. Six participants were chosen, including the compost education centre and community centres.

In this research, the word frequency query reveals the top 30 frequently used words with a minimum of four letters. The following word cloud figure presents 30 words in varying font sizes, where the words in larger font display more frequently occurring words.

Figure 14

Word Cloud Codes Generated from Non-Governmental Participants

According to the principal codes and themes generated from this groups, it is observed that the participants in this group highlighted some different elements compared to the planners' perspectives on gardening in the city, policy formulation, land accessibility, inadequate funding, ethical diversity in gardens, youth involvement, effective partnerships, and green design guidelines. Two of the participants stated that some urban planners do not believe in gardening in the city, although urban planners have to focus on growing plants in the city as long as it is a resident's demand. One participant states:

> *"I think the main barriers are not all planners thinking about that or having it in their consciousness. But they should be thinking about gardening space, food production space, organic waste recycling space. When they think about neighbourhood planning, about development planning any of that sort of thing, I think it is more shifting the mentality because I know that some planners have that in mind."*

However, the rest of the participants state that the city of Victoria is interested in expanding community gardens in the city, whereas there is no adequate funding to support those coordinators and volunteers working in community gardens. They believe that each neighbourhood needs a community garden with a paid coordinator that can be guaranteed by the City Council. Fox-Kamper et al. (2017) have verified that paid professionals and volunteers can improve managerial outputs leading to good governance and effective collaborations among stakeholders. Also, Contesse et al. (2018) state that generally, planners adopt UA's potential benefits as a way to boost social coherence and sense of place in communities by offering a safe space to residents. Such ideas support the above-cited participants' viewpoint.

Moreover, the participants posited that the existing governance structure about approving a community garden application should be changed to meet the needs of residents. For instance, a participant postulated that some city councillors do not have a rich knowledge of gardening but that they need training in this area. It is argued that an increase of unawareness among professionals can be created by having different goals for experts and gardeners (Fox-Kamper, 2017). Also, a participant claimed that the city staff directly affects the councillors' decisions on a community garden, particularly during the

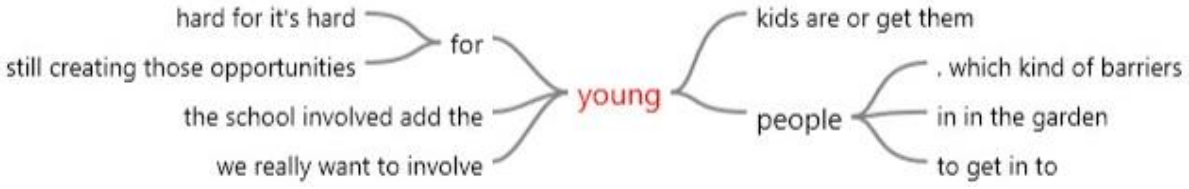
proposal approving stage. Therefore, the current structure needs to be changed according to a participant:

> *"They are not going to have the time and space like learning really about that project. So, my understanding of it was that the current bureaucratic process is symbolic, and the city staff affect the councillors to approve a proposal or not. However, I know that the city councillors have power, and so in a way, it is kind of beneficial to have them involved in the process as well."*

Moreover, participants state that a large percentage of current gardeners are more than 50 years old and there is not a considerable number of young people in gardening. They also expect that the city of Victoria should encourage youth by offering workshops in academic places and motivation to engage in community gardens. Below are some excerpts that highlight youth involvement:

Figure 15

Expressions about Youth Involvement in Gardening



The treemap shows that the youth are interested in gardening in the city and need to be encouraged by providing opportunities to address the existing barriers. This argument can be derived from excerpts such as "opportunities for young", "want to involve young", "young people in the garden", and "hard for young people to get into".

In addition, a participant believed that the community gardens are not ethnically diverse in Victoria, and the gardens need to be available for all people with different cultural backgrounds, which can strengthen the group outputs. Community garden coordinators can organise workshops in the Victoria Immigrant and Refugee Centre Society to encourage them to grow their food by obtaining plots in the community gardens. Although, the Refugee Center has a program called “Welcome Gardens” that provides opportunities for newcomers, which needs to be collaborated with community centers. Universities also can ask to have their own plots in the garden to offer food growing opportunities for international students towards an improvement in cultural diversity in gardens. A similar conclusion was reached by Linton (2017), who explored community gardens in Toronto, offering an opportunity for immigrants to socialize and integrate into Canadian society. Horst et al. (2017) also confirm that UA can provide immigrants with a place to share their knowledge culturally and create multicultural connections.

Another highlighted gardening element is land accessibility. With regard to that, one of the participants claimed that as purchasing land is a challenge for the city of Victoria, the existing parks can provide an opportunity for gardening. This is consistent with what was reported by McClintock et al. (2012) that parks could offer land to those interested peoples’ needs for growing food, and required policies and processes should be developed for resident’s convenience. Contrary to the finding of McClintock et al., (2012), from my point of view, parks are set up with a recreational purpose, while gardens are places mainly for gardening with beauty or consumption purposes. Also, each landuse has its own attributes in zoning and regulation bylaws, which is why locating gardens in parks can create new challenges to the existing cities' regulations and policies.

Furthermore, evidence was found in this analysis for the necessity of a stable partnership between local governments and gardeners. I believe that gardeners need a consistent relationship with the planning department where they support the gardeners in submitting the proposal to councillors, and they do not play any role in later stages. Having said that, I perceive that the zoning and bylaws are central elements of landuse, and then gardeners need to be informed about new amendments and gardening potential spaces.

4.6 Interviews Conducted with Residents

The collected data were analyzed by NVvivo 10 and the applied queries include frequently used words or concepts, text search, and coding results within each group. As in other sections, the word frequency query was examined, and the following 30 words in varying font sizes were produced.

Figure 16

Word Cloud Codes Generated from Residents

In Figure 15, the residents present their main ideas: namely land accessibility, productive partnership, long waitlists, plant protection from damage, and lack of knowledge.

Also, six participants were concerned about land accessibility for new community gardens in the city and expressed the view that the city needs to identify new spaces for gardens. I believe that the city can invest in private land and encourage people to grow on their lands so that the city does not require to purchase land for creating gardens. The finding is in line with what the City of Vancouver implements with private land gardening, providing residents with shared plots to grow plants (City of Vancouver, 2020). Meanwhile, growing on private property needs to comply with zoning and designation guidelines. Also, the City of Victoria can offer free resources, including water, mulch, fertilizer, to gardeners on private land. In this regard, one of the participants states:

> *"I know the land is expensive here, but they need to think and find effective ways. Food coming to Victoria from around and even other provinces, which take many miles and that is not good in terms of economy and environment.*

The second word most commonly expressed by participants is the "barrier." They claimed that there are many barriers to grow plants in Victoria, in which the most mentioned barriers are: a lack of knowledge, lack of land, ineffective partnerships, and plant damaging.

A participant posited that the current governance structure should be changed, and results are seen for the needs of a specific organisation where all food systems range from production to recovery stages to be managed. This goes beyond what is currently accepted owing to new organizations that can deeply focus on self-sufficiency in producing food leading valuable environmental benefits by reducing food miles. However, the Ministry of Agriculture is responsible for the production, trade, and merchandise of food and

agricultural products, although it does not focus intensely on gardening and gaining social benefits in cities. A participant stated about a Food Ministry:

> *"People like to grow and have their food. Nevertheless, growing in cities need facilities and good governance. I believe that we should have a Ministry of food, a national ministry of food. We have a ministry of agriculture, but it is not a ministry of food, and so which is quite a different thing. So, my experience is that the ministry of agriculture has not been a strong proponent of urban gardens, and I believe that it should be changed. Also, in Victoria, the Municipality provided the required things for gardeners to grow, although there is a long waitlist. So, it is necessary to improve our current situation, which needs efficient management. To do that, they should get the voice of gardeners and all other people involved in gardening to remove barriers and generate new ideas in our context."*

4.7 Fernwood Neighborhood Workshop

Four residents were invited to attend a workshop to collect their ideas about the current community garden in the Fernwood Neighbourhood. The participants were asked to present their ideas to explore main stakeholders who can engage in gardening and discuss how they could support community gardens in Victoria. Figure 16 shows the organised workshop in Fernwood Neighbourhood.

Figure 17

The Community Mapping Workshop in Fernwood Neighbourhood

Ideas were collected on a large sheet, and the data were analyzed by NVivo 10 to be examined by frequently used words and text search queries. The following word cloud presents 30 words in varying font sizes, where the words in larger font display more frequently occurring words.

Figure 18

Word Cloud Codes Generated from Fernwood Workshop

According to Figure 17, the workshop participants state that stakeholders' involvement plays a significant role in increasing awareness in a community. They indicated that the City of Victoria, the compost education centre and the community center play the most crucial role among stakeholders. This finding is in line with the statement by Walker (2016), that local political changes and planning styles could improve interest in gardening in cities, for example taking political shifts in Vancouver that have resulted in environmental reforms in 2003. This has brought the City Council commitment to creating a new action plan targetting an efficient food system to tie nonprofit organizations, gardeners and the community centres under "Vision Vancouver" together which is called Greenest City 2020.

I postulate that the community centres play a central role to organise a seasonal meeting by inviting all stakeholders to share their concerns and suggestions in order to improve the

current community gardens situation. Following that, the center can share all collected stakeholders' ideas with the City of Victoria and the City Council to be investigated. The results are in line with Bryld's (2003) research that believes in all stakeholder's involvement in policy formulation, management, and garden operation. Also, Yussof, Hussain, and Tukiman (2017) confirm that local community involvement strengthens partnerships among stakeholders and that community organizations can share information and power to play a greater role in decision making.

Participants also expressed the view that community gardens should be a place for all people with different cultural backgrounds. Hence, the Victoria Immigrant and Refugee Centre Society could establish a direct connection with community gardens to grow plants and share their international experiences. Table 10 shows the most important stakeholders in a community garden network in Victoria from the point of Fernwood's participants.

Table 10

The Most Important Stakeholders as Generated by Fernwood Workshop Participants

Stakeholders	The Ways to Community Garden Support
The City of Victoria	Appropriate zoning regulation bylaws A green building design guideline Offering grants Allocating land
The Compost Education Center	Organizing Workshops Organizing meetings for all gardeners in Victoria
Community centers	Organizing Workshops Creating an effective partnership among stakeholders Organizing meetings for all gardeners in Victoria Celebrating products with gardeners
Schools	Establishing a partnership with community gardens Organising "Grow Locally, Be Healthy[1]" workshops for students
Social agencies	Asking garden coordinators to dedication plots for the societies Encouraging society members to engage in gardening
Developers	Requesting green design guideline from the City Council

[1] Refers to a workshop that presents the benefits of agriculture products that are grown in a city area.

Therefore, in Victoria, we need to improve cooperation among all stakeholders to empower themselves to seek out opportunities in boosting healthy food in their communities. Stakeholders need to be guided by a central leader in establishing an effective partnership among those who engage in gardening in the city. Hence, the neighbourhood community centers can play a central role among stakeholders to connect the residents to the Council and the City of Victoria.

4.8 James Bay Neighborhood Workshop

Four residents were invited to attend the workshop to present their ideas about the current community garden in James Bay Neighbourhood. The participants were asked to present their idea about those stakeholders engage in gardening and the ways they can support community gardens in Victoria. The organised workshop is shown in Figure 18.

Figure 19

The Community Mapping Workshop in James Bay Neighbourhood

The presented ideas on a large sheet were analysed by NVivo 10, and the results of frequently used words and text search queries are presented below.

Figure 20

Word Could Codes Generated from The James Bay Workshop

According to Figure 19, the participants state that schools and universities play a significant role in increasing awareness about having more community gardens in Victoria. Universities and schools could contribute to increasing awareness by conducting research and organising workshops, meetings, and celebrations to encourage people to grow their food in community gardens. Mawonde and Togo (2019) confirm that universities play a vital role in reaching SDGs goals through community involvement, teaching, a new approach, and knowledge generation as well. I believe that holding a product celebration

by community centers, gardeners, and researchers could spread awareness in Victoria to support current gardens. More research could help dig deeper to find initiatives to improve the community gardens in Victoria in particular and BC in general. A finding by Murphy (2017) confirms the result that programs and campaigns increase awareness in neighbourhoods, which results in a positive impact on community improvement.

Participants also stated that implementing a garden needs residents and the owners' agreement. Thus, neighbours can support interested people by providing their agreement and writing letters in support of more planting in their communities. Also, the City of Victoria was asked to offer free garbage bins, mulch, coffee maker, bench, and smart bikes access for gardeners. Smart bikes could help gardeners to commute to the gardens so that the neighbour's complaints and noise pollution could be reduced. Table 11 shows the essential stakeholders in a community garden network in Victoria from the point of view of James Bay's participants.

Table 11

The Most Important Stakeholders as Generated by James Bay Workshop Participants

Stakeholders	The Ways to Community Garden Support
The City of Victoria	Providing information for residents by brochures Offering grants Allocating land Offering bike access
Residents	Supporting proposal Sharing information
Habitat	Organising workshops in cities Creating more effective partnerships with Media to support gardening in cities
Schools	Organising classes and workshop at schools
CRD	Owning and allocating land to garden Offering grant Offering scholarship for researchers

As per the table, the participants postulate that the City of Victoria plays the most important role among all stakeholders, and the municipality is responsible for allocating gardener's needs. Providing free resources (e.g., water, qualified mulch, tools, fencing, bins) to garden and services to gardeners (e.g., coffee maker, bench, smart bicycle) can encourage residents to be interested in gardening in the city. The results confirm the claim of McClintock and Simpson (2014) that UA activities heavily rely on the government to provide funding and gardening resources to gardeners. Therefore, I believe that the city should offer services to gardeners because they will encourage them to garden and share information among residents. Also, I think the benefits mentioned above (e.g. providing bicycles) improves the gardeners' physical health and reduces traffic noise pollution in the garden area.

4.9 Comparing and Contrasting the Interviews Findings

All 61 generated codes were reduced down to nine overall themes in order to examine all participant's attitudes. Thus, all themes were examined among the three interviewed groups (governmental, non-governmental, and residents), to explore their various attitudes.

The matrix query, a query to ask a wide range of questions about patterns in the data, was used to develop patterns within the ideas of the three groups. The emerged results are presented below, which shows the number of coding references for each participant separately. Notably, the participants have been named with two-digit numbers, with the first digit referring to the groups (governmental, non-governmental, and residential), and the second digit referring to the participants. Digits one, two, and three were used for groups, namely governmental, non-governmental, and residents, respectively.

Table 12

Coded References Comparison within Three Groups

Participants	Community Satisfaction	Effective Land use Policies	Effective Partnership	Improving Cost-Effectiveness	Increasing Awareness	Long Bureaucratic Process	Offering Funding	Providing Resources and Facilities for Gardeners	Varies in Zoning Bylaws
P11	9	18	27	9	18	13	17	19	12
P12	3	12	15	11	9	6	8	8	17
P13	2	8	5	2	3	3	5	3	4
P14	2	11	8	3	3	4	4	1	12
P15	2	8	9	5	6	3	5	6	13
P21	1	3	5	2	3	2	1	1	2
P22	0	0	1	0	2	2	0	1	0
P23	1	2	2	1	2	0	2	3	4
P24	0	9	4	2	4	2	2	3	8
P25	3	5	8	2	6	4	7	5	6
P26	2	9	8	1	7	4	3	4	8
P31	3	2	3	2	2	2	1	1	0
P32	2	1	1	1	0	3	0	1	0
P33	2	5	3	1	5	1	1	1	2
P34	1	3	2	3	1	4	3	1	1
P35	0	0	2	0	2	0	1	2	0
P36	2	3	7	1	7	3	2	7	6
P37	1	3	1	0	1	1	0	0	0

A comparison among groups based on the themes is presented.

Community satisfaction: According to Table 12, the governmental group focuses on community satisfaction, while it was expected that this theme would be highlighted by the residents' group. The community satisfaction theme includes “neighbour’s agreement” and “supporting the proposal by neighbours” codes. Therefore, it can be concluded that there are complaints from some neighbours in the proposal approval stage. Gardening activities generate noise pollution and traffic, which are the most highlighted complaints by residents. I believe that the City of Victoria and the City Council can reduce noise

pollution by encouraging green transportation such as walkability and using bicycles in neighbourhoods by residents and gardeners in particular.

Effective land use policies: Effective land use policies were another highlighted theme by the participants. Governmental participants believe that there is a need to define new guidelines for new types of UA in Victoria. They express that the boulevard garden might work in Victoria, although they need to provide deer protection in boulevard gardens. The participants also claimed that parks are an opportunity to grow plants. However, non-governmental and residents seem to have opposing views on growing food plants in parks. Participants in the mentioned groups believe that parks have a recreational purpose and suggest a guideline for growing food in apartment yards. Also, they postulated that there are plenty of owners who are interested in growing food (private garden) on their private lands. Even though they need permission and free charge resources from the City of Victoria to develop a garden on their private land.

Effective partnership: The table shows considerable support for establishing effective partnerships among all stakeholders. The government group expresses that there is a need to create an effective partnership among all stakeholders, and the community centers play a significant role in creating the partnership. They claim that schools can help increase student's awareness by organising workshops for students in community centers. They also suggest that the gardeners should create a board, including all gardeners and coordinators in order to share their concerns and ideas with each other and the City of Victoria.

The other two participating groups (non-governmental and residents) posited that the City of Victoria should provide a benefits package for developers and consider a space

in building sites for future food growing. They ask the staff and councillors to drop in and visit the gardens so that the gardeners can share their concerns with the Council. Resident participants also claim that the gardens should be ethnically diverse, which needs a productive partnership with social agencies. They also state the importance of support from the local newspapers to share information about the gardens and encourage residents to grow healthy food in the city.

Cost-effectiveness: Land is one of the main requirements for gardening in Victoria. As per Table 12, the government participants highlight land necessity, which is a challenge to the city. They believe that land purchasing for building a community garden is not cost-effective, and we need to examine a new type of UA without land purchasing. On the other hand, this challenge has not been highlighted by non-governmental and residents groups in comparison with the governmental group because they believe that the land provision is the city of Victoria's responsibility. Moreover, as it was suggested by one of the participants, high tech UA can be a solution for growing food in the city, whereas I believe that the type cannot bring all gardening benefits to the city and residents. Indoor high tech UA might be a more cost useful type to grow food, but social and environmental benefits are minimized in this type of UA.

Increasing awareness: Increasing awareness is the second coded theme that has been highlighted by participants. All participants stated that there is a need to increase awareness of all actors and residents in growing food. Surprisingly, a resident did not seem to highlight this necessity, while other participants claim that increasing awareness encourages people to grow their food. In addition, the non-governmental participants state that the youth groups need to be encouraged to grow in community gardens because the

current gardeners are more than 50 years old, although the governmental group did not raise this concern.

Lengthy bureaucratic process: Many participants from the residents and non-governmental groups believe that there is a lengthy bureaucratic process to build a garden in the city. They claim that we need to achieve the Council's agreement two times over the garden site and the proposal approval, and they suggest that the city staff should approve site evaluation, and there is no need to obtain the City Council approval. However, the city staff believes that there is a lack of governance knowledge among gardeners and the staff attempts to support gardeners during the process.

Offering Funding: Urban agriculture projects suffer from funding barriers in Victoria. The Table 12 shows that the participants stated the funding necessary to support gardening in Victoria. Notably, three of the participants in non-governmental and resident groups did not mention funding challenges. I believe that the community gardens need funding support to provide their requirements to organise workshops, publish brochures, and hire coordinators. One of the residents stated that each garden needs a funded position due to the fact that current volunteers cannot allocate considerable time to support gardens. Interestingly, while all participants in the governmental group believe that gardens should be monetarily supported, other participants expect that the City Council should address the funding challenges.

Providing resources and facilities: Another theme, providing resources and facilities for gardeners, has been stated by the participants, although non-governmental participants are most concerned about resource provision. They claimed that gardens need fencing to protect the plants against deer and theft. However, some resident participants

stated that the gardens are a place to visit and should not be surrounded by fencing. Residents ask the City of Victoria to provide resources including benches, garbage bins, and grants to gardeners. I believe that the city of Victoria can offer membership cards for gardeners to use the bikes. In that respect, the City Council could provide membership cards to those who grow their food in community gardens. Offering a smart bicycle, accessed by tapping the membership card, can be a suggestion to the City Council to support gardeners and garden coordinators to work the gardens.

Zoning bylaw changes: The last examined theme is the zoning bylaw changes, which have been highlighted by non-governmental and residents' participants. They believe that the current zoning restricts gardening in the city, and we need to have flexible zoning regulation bylaws and land use policies. They also suggested that the City of Victoria should create a green design guideline and encourage the developers to use the guidelines. Interestingly, the staff also expresses that the current bylaws need to change, and the amendment will be added in the annual revision of zoning. Therefore, I believe that the garden coordinators and gardeners should send their comments to the City Council and participate in the public meeting at the City Council to suggest their ideas in order to improve the current food growing situations.

4.10 Comparing and Contrasting the Community Mapping Workshops Findings

All themes were examined among the two community mapping workshops, conducted in Fernwood and James Bay Neighbourhoods, to explore the participants' attitudes. Thus, all generated codes were aggregated to nine produced themes, and as a result, all codes to each theme were considered in the matrix coding query. The matrix query was used to assist with understanding the patterns within the ideas of the two groups. The produced results

are presented below, which shows the number of coding references for each workshop separately.

Table 13

Comparison of Coded References for the Two Workshops

	Fernwood CG	James Bay CG
Community Satisfaction	1	2
Effective Land use Policies	1	1
Effective Partnership	6	5
Improving the Cost-Effectiveness	1	2
Increasing Awareness	2	6
Long Bureaucratic Process	1	2
Offering Funding	1	2
Providing Resources and Facilities for Gardeners	2	5
Varies in Zoning Bylaws	2	1

According to the table, the referenced codes from the James Bey neighbourhood workshop outweigh those obtained by the Fernwood neighbourhood. Both groups stated that creating an effective partnership among stakeholders is the most crucial element in improving the community garden. They believe that there needs to be a direct partnership between community gardens and schools, social agencies, the City of Victoria, the City Council, community centers, the compost education center, and developers. They also expressed that a strong partnership between developers and the City of Victoria should be created to allocate new garden space in new construction sites.

In addition, gardens need multicultural gardeners who share their experiences with each other. Thus, community centers and coordinators should encourage gardening among ethnically diverse people and social agencies.

In James Bay, the participants stated that the first essential element is increasing awareness among the people to grow their food. Thus, I believe that residents need to be supported by media (the local newspapers and news channels) to encourage gardening in

cities specially young people. However, the participants in Fernwood stated that zoning bylaw, gardening resource, and increasing awareness perform vital roles in boosting products. Therefore, they claimed that the above mentioned three elements are an essential priority to increase food growing outputs in Victoria.

James Bay participants claimed that organisations should support the gardens by providing facilities to gardeners. The gardeners need a benefits package to be encouraged to grow their food in community gardens, which has communal benefits to the city and residents. The participants also express that the gardens need to be cost-effective for the City of Victoria to offer funding to gardeners. They are also concerned about the lengthy bureaucratic process and some neighbour's complaints, which limit gardeners in moving forward to have more food production in the City.

4.11 Learned Lessons from Victoria's Community Gardens

In general, participants were interested in having more community gardens in Victoria to grow their food locally, to eat fresh food and gain the social, economic, and environmental benefits of community gardens. The participants were aware of the advantages the gardens bring, and they expressed an overall ambition to have a community garden in each neighbourhood in Victoria. However, they recognized some barriers to the establishment of gardens and had recommendations to alleviate the challenges considering the rights of future generations. Regarding the analyzed data, answers to the research questions are presented below.

4.11.1 Question 1: How can urban planning in Victoria improve food production?

Urban planning is an area in this research under which the challenges to gardening in cities can be discussed. The participants, mainly government interviewees, expressed their

concerns and ideas about the current role of urban planning in community gardens in Victoria. Considering existing urban planners' endeavours, generally, the participants stated that the current planning regulations in the city should be changed to having more sustainable food production and to respond to the current and future residents' demands. This confirms the finding stated by Moneer et al. (2017) that policy-makers and planners should examine the existing regulations to formulate specific policies to expand growing food in cities while providing people an opportunity to engage in the zoning approval process. The participants' main concern was a lack of plant-based urban agriculture zoning bylaws in the existing official documents. Nonetheless, the governmental participants stated that the food system chapter in the official community plan supports the City of Victoria and the City Council to make their decision about community gardens. Thus, detailed zoning needs to determine the land use for gardens in the city and drive people to inform about the standard and the requirements of applications for new gardens. Notable efforts have been taken in Vancouver, New York, and Boston, where UA zoning was applied to support growing food in the city regarding the provision of the zoning ordinance, municipal support, and distribution mechanism (Saha & Eckelman, 2017). A "garden" chapter needs to be added to the existing neighbourhood plans to offer official consultative documents on urban agriculture for the city staff and residents.

Also, those interested people in gardening were faced with the existing land use policy, which is currently not able to provide an appropriate garden site to residents due to the significant land purchasing expenses. Also, discussing Victoria's households, and about 60 percent are renters in Victoria who do not have any permission to garden in their homes. Therefore, two alternatives can be proposed to address the barrier mentioned above, such

as a new legalized type of garden in the city and the permission to growing food on private lands. Therefore, considering futuristic urban agriculture needs, new forms of gardening such as Z-farming, boulevard, and balcony gardens, which can be efficient ways for supporting the UA system in the future, bringing cost-effectiveness to cities (Ali & Srivastava, 2017). Concerning the expenses of land in Victoria, it seems that new types of gardens should be considered in the city such as boulevard gardens, small lot gardens (e.g., apartments' yards), roof gardens on public buildings, vertical gardening, balcony and container gardening, and gardening on private land. Notably, all the types mentioned above need their own regulations within official city documents. The opportunities can occur through developing new design guidelines, a new type of zoning, a new legalized type of UA, and changes in the neighbourhood plans.

To summarize, planners need to believe in gardening in the city to result in more gardens in Victoria that will support residents. All these suggestions need to be measured in an effective governance structure to result in more satisfying community garden outputs.

4.11.2 Question 2: What governance structures and elements are required for urban agriculture (UA) to thrive?

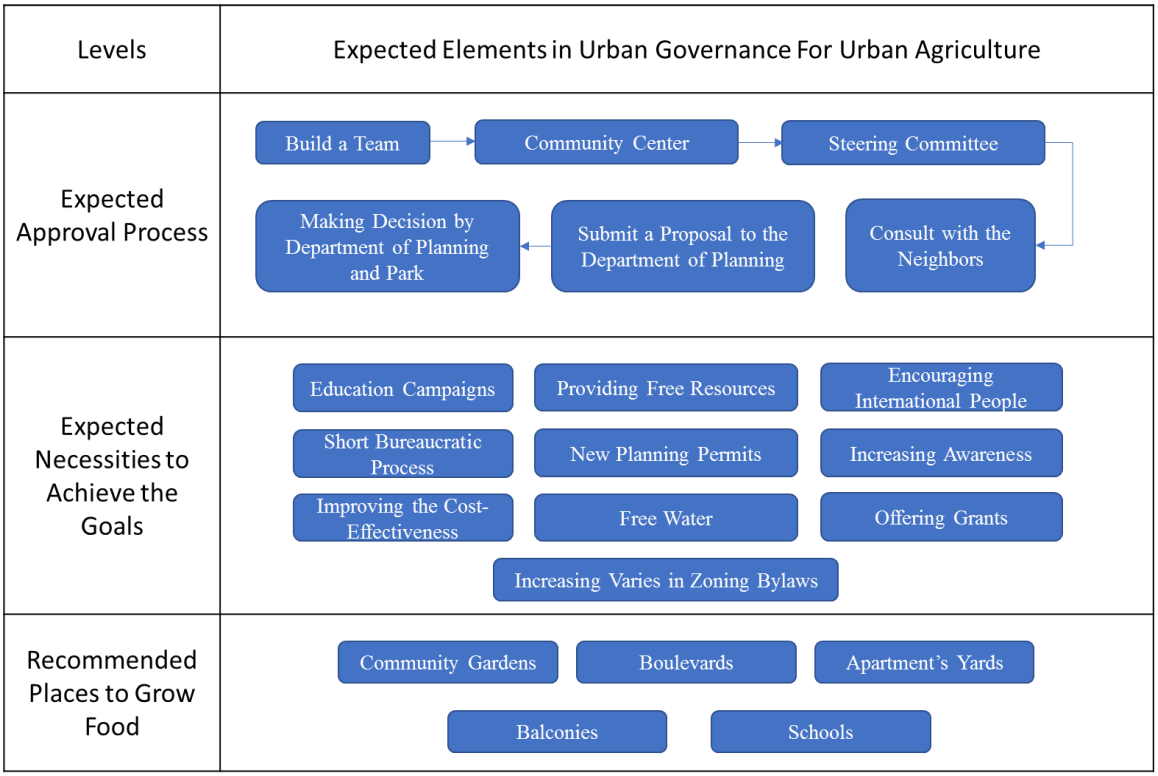
Another area examined in this research related to the existing governance structure pertaining to the growing of food in the city from the participants' attitudes. According to their expressions and considering the City Council and neighbours' agreements, it is argued that Victoria requires a more effective land use policy to identify and allocate appropriate sites for gardening. To improve the site selection process, the city staff need to obtain agreements from the City Council and community centers before they create potential land inventories. This is contrary to what is being implemented in Vancouver; thereby, the City of Victoria needs to add community consultation steps to the existing process so that

neighbours and non-governmental organizations express their ideas about potential parcels to grow food in neighbourhoods (City of Vancouver, 2020).

Also, the current proposal approval process needs to admit changes toward encouraging people to apply for the garden application. Therefore, despite getting approval from the City Council, the urban planning committee can approve the proposal in order to reduce the existing steps to build a garden in the city. In the Following and according to the participants' expectations, the governance of UA in Victoria needs new strategies and tools to create more effective management that guarantee satisfying food production. The participants expect that the below cited, in Figure 21, components should be considered in Victoria's food system.

Figure 21

Final Expected Urban Governance Elements



By comparing the results from CoDyre (2013) confirming an efficient community garden process, I hope that the City of Victoria can make the current community garden building process more straightforward, leading to more food production. In addition, the long waitlist for receiving a plot in existing community gardens is a significant concern for residents and needs to be revised for a more effective and manageable way of distributing the plots among those interested people. The number of plots in Victoria cannot supply the residents' demands; therefore, it is required to increase the number of plots in Victoria and an effective mechanism for distributing plots among interested people and organizations to the garden. Therefore, a funded coordinator position can actively support the distribution mechanism and create an effective network to work towards supplying the garden's needs. Lavallee-Picard (2018) stated that a full-time coordinator was hired in the parks department in the city of Victoria. However, my findings go beyond the previous results suggesting a full/part-time coordinator position and the opportunity for citizens to attend monthly meetings of the City and the Food Table. Notably, it is argued that the coordinator needs to have an agricultural and planning background to act more productively to alleviate challenges and take advantage of local opportunities.

4.11.3 Question 3: What is the role of local stakeholders in planning and policy-making for UA?

A productive collaboration between gardeners and multiple stakeholders, including the City of Victoria, the City Council, the Refugees Society, the compost education center, and schools, would result in an efficient gardening system. The findings from two workshops, held in two different neighbourhoods, show that the City of Victoria performs the essential roles in having more and productive community gardens. The participants perceive that the existing challenges can be addressed by the City of Victoria and some other stakeholders

who are working in close partnership with the City. A similar conclusion reached by Doernberg, Horn, Zasada, and Piorr (2019) posits that municipalities play a major role in food production improvement by providing land, marketing, funding, infrastructure, creating guidelines and regulation. The stakeholders, such as community centers and the compost education center, can support community gardens by providing collaboration and neighbourhood engagement places and programs to meet the social, economic, environmental, educational, and health needs of residents. However, regarding the crucial role of the City of Victoria, the awareness should be increased among residents and the city staff alike through organizing workshops, celebrating the harvests, undertaking student tours, and launching campaigns. Therefore, not only can organizing workshops increase the knowledge of gardeners, but they also help the city staff and councillors to become informed about the gardener's constraints to address their challenges.

4.12 Conclusion

This chapter contains the result of the interviews and workshops and connects the analysis outputs back to the research questions. By coding the transcripts, nine main themes were generated, aggregating all codes to the themes.

The nine themes resulting from the collected data and analysis are a) Community Satisfaction b) Effective Landuse Policies c) Effective Partnership d) Improving the Cost-Effectiveness e) Increasing Awareness f) Long Bureaucratic Process g) Offering Funding h) Providing Resources and Facilities for Gardeners i) Changes in zoning bylaws.

The three interviewed groups participating in this study have various ideas to improve food production in Victoria. However, there are some similarities in their concerns and suggestions

The government groups' perspectives: They focus on a range of special subjects related to their professional background about gardening in Victoria. They stated that the current planning policy, zoning bylaws, and neighbourhood plans require updating according to the concerns of current and future generations. They also postulated that the ongoing bureaucratic process is efficient, and the staff attempts to support those who are interested in gardening in Victoria. Likewise, they presented the view that the most substantial barrier to growing food is a land provision, which is not cost-effective at some point in compared with building construction on lands. Therefore, a new legal form for growing food in the city needs to be offered by the City Council.

The non-government groups' perspectives: They focus on a different aspect of gardening in the city. They ask the government to provide a benefits package to developers in order to encourage them to allocate space for future gardens in new building sites. They claim that some planners in the City of Victoria do not believe in gardening in the city and need to be trained about gardening benefits and intersections with urban planning. Also, participants expressed the view that current community gardens require a good partnership with active stakeholders such as social agencies, schools, and the City Council to improve gardening outputs. A partnership between Victoria Immigrant and Refugee Center and community centres can encourage international people to grow food in the gardens in order to have ethnically diverse gardeners in the city. However, the Refugee Center has "welcome gardens" program that offer workshops and tours for newcomers. The centres are interested in supporting youth to participate in gardening in the city and looking for ways to encourage youth people to join the current gardener's group in Victoria.

The residents' perspectives: They stated that they wish to have more land to grow their food and request the City of Victoria to provide them with more land to build their community gardens. They furthered that the City of Victoria and the City Council should offer a bylaw to grow plant-based urban agriculture on private lands. The participants have a concern about current approaches and request a strong partnership among stakeholders in order to support the community gardens.

The participants' perspectives in workshops: the participants stated that community gardens need to be supported by the residents to provide agreements on building more community gardens. They also noted that the benefits of the garden should be spread among all residents to encourage international people to grow food in community gardens. However, there is still a long waitlist which can be addressed by offering more community gardens in the city.

Chapter 5

Conclusion

5.1 Introduction

Urban agriculture offers a broad range of benefits to communities. Different forms of urban agriculture are becoming a topic of interest for health, and social professionals, urban planners, and others engaged in boosting community sustainability (Hamilton, 2017). With that regard, urban community gardens provide residents with fresh food products and additional social, economic, and environmental advantages. Community gardens offer a space for residents and visitors to connect to nature and improve community cohesion concerning economic and ecological benefits, which all culminate in sustainability improvements (Saumel et al., 2019). Although a considerable amount of literature has been published on various aspects of community gardens, they do not widely discussed the challenges that may pertain to planning regulation, start-up expenses, policy, or socio-economic concerns (Luokkala, 2014).

The purpose of this research was to examine the current urban planning structure and governance role in regard to community gardens in Victoria, to discover ways to alleviate planning and governance challenges and improve the gardens' productivity to support residents. Also, the study aimed to explore the main stakeholders that engage in community gardens to understand and improve their partnerships. Eighteen participants were recruited to participate in semi-structured interviews. The participants were selected across three main groups, including governmental, non-governmental, and residents in Victoria. In addition, eight participants from two different neighbourhoods were recruited to participate in community mapping workshops. There were four participants in each workshop, which were held in James Bay and Fernwood neighbourhoods.

I interviewed all of the participants within two months, according to their availability during the summer of 2019. Also, two workshops were held in the summer of 2019 as well in the neighbourhoods at which the participants presented their ideas on large blank sheets. Afterwards, the collected data was transcribed and set up into NVivo 10 to be coded. I analyzed the data using the software and presented within three levels in response to the key research questions.

5.2 Practical Implications of the Findings

The produced results can be implicated for future practices in Victoria to illuminate coherent policies and bylaws to create productive community gardens, thus contributing to community sustainability. The generated themes, from the analysis of the interviews, provide a guide for the main stakeholders in gardening, the City of Victoria, and the City Council to consider the participants' perspectives to alleviate the current barriers and boost gardens' productivity in Victoria. For example, the highlighted theme, land use policy, suggests that the existing policies have not satisfied the residents nor non-governmental actors, and requires changes in the policies. Notably, some governmental interviewees also expressed the lack of coherent land use policy. Therefore, a review needs to lead to a new chapter in the official city documents that bring in detail regulations and policies to the City of Victoria and its residents.

Moreover, those who participated in the workshops stated their ideas in a genuine and collaborative way, which offers essential outcomes to the City of Victoria. Because the participants are gardening in the community gardens in Victoria and they are fully aware of the current concerns in the gardens, which enable gardeners to offer suggestions to the City of Victoria for addressing the challenges. The results can support the city staff to

employ the recommendations and experiences to have more effective gardens in other neighbourhoods in the future.

5.3 Limitations of the Research and Future Research

The researcher encountered various challenges while conducting this study, particularly in the data analysis stage. One significant limitation of this research was the difficulty in obtaining detailed information through government interviewees, who sometimes refused to share information from their organizations and had answers unlike provided information by non-governmental and residents. As a result, the researcher attempted to divide the interview questions into sub-questions to gain valuable required details regarding the research questions.

Additionally, children's and youth perspectives were not included in this research. Despite that, I believe that community gardens are being implemented in cities to contribute to improving current and future generations' life. Thus, all age group's ideas are required in order to produce more reliable results that bring benefits to all of the generations.

Furthermore, there was a lack of interest among participants, mostly among workshop participants, because their expectations had not been met as promised by the local policymakers. This could also have been the reason for the lack of interest of other participants in devoting two hours to take part in the workshop. I was supported by the community centers and the coordinators to encourage the participants to present their ideas, thus specifically addressing that issue.

5.4 Recommendations for Further Research

The present study offers some suggestions as to how to boost food production in Victoria. One of the significant challenges for the City and the City Council is providing adequate land for interested people to build a garden. Therefore, further research should focus on potentially available lands in Victoria according to the City's budget, and it should begin with a feasibility study for the implantation of new gardens. Researchers need to access government reports and geographic information data, including the information at the 'city parcel' level, to explore appropriate land for UA, considering as selection criteria land price, size, location, land dimension, accessibility, water supply, and the interest of the local community.

It is also recommended that an investigation should be conducted about implementing more varied, new, and different forms of gardening in Victoria. Understandably, Victoria needs new forms of urban agriculture to have more food production, providing opportunities to examine forms and appropriate types of UA concerning current zoning and regulation bylaws. The suggestion can be taken up according to the required resources for each type of UA in Victoria.

Also, formulating policies is an essential area that needs to be focused on by the researchers. Existing land use policies in Victoria afford an opportunity for researchers to examine the productivity of the policies in line with community gardens. For example, the researchers can investigate the current related policies to urban agriculture to explore appropriate policies through different lenses.

As mentioned earlier, Indigenous people experience three times greater food insecurity than the average non-indigenous Canadian; therefore, researchers need to examine the existing food insecurity situation in First Nations Territories in BC in order to

find potential food production opportunities leading to economic and social advantages for these populations.

The research results suggest that studies could also benefit from focusing on the role of immigrant communities in community gardens in Victoria. It is expected that immigrant communities actively participate in urban agriculture projects, and researchers and decision-makers need to investigate how to engage the immigrants in gardening actively.

Lastly, policymakers must receive all stakeholders' perspectives about community gardens. Qualitative and visual research about the residents’ utopia pertaining to community gardens can be conducted. In this recommendation, the researchers are advised to focus on how neighbourhoods could look like in the future while they are equipped with community gardens to represent different types of UA. The researcher can examine this by proposing questions to participants, asking them to present their ideas (visual ideas) on a large sheet, which can then be analyzed using software for qualitative data analysis.

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Appendices

Appendix A

Part 1: The Interview Questions

Group 1: City Officials

1. Could you introduce yourself? What do you do in the City of Victoria municipal/city council government? How long have you been working in this government?
2. Does your work include anything in line with the food system? If so, could you give examples that where is the coincidence?
3. What is your general view on the role of urban agriculture in the city? What comes your mind?
4. Where do you think urban planning comes in urban agriculture projects?
5. What roles do urban planning and planners play in urban agriculture projects?
6. Are planners involved with the food policy council in Victoria? If so, how do you interact with the PIBC (the Planning Institute of British Colombia)? Does the PIBC play an active role in influencing urban agriculture?
7. Are there any other planning tools in the communities that could be a barrier to urban agriculture? If so, explain.
8. How can we solve the mentioned planning challenges in community gardens?
9. Do you know community garden policies (2005 or 2016 version) in Victoria? Explain your view generally.
10. What elements should have good governance in line with community gardens? Which elements are employed by the city of Victoria? Which items do you need to employ?

11. What sort of urban governance and elements should Victoria have regarding community gardens limits currently?
12. What kind of local stakeholders are involved in community gardens?
13. How could local stakeholders contribute to community garden policies and planning?
14. What kind of barriers are there for local stakeholders to cooperate for policy-making in community gardens?
15. How could stakeholders improve community gardens outcomes?
16. What are the most important things that the community garden should do in the future?
17. Any suggestions and comments? How can we grow more food in community gardens?

Group 2: Community-Based Organisations

1. Could you introduce yourself? How long have you been working in the organization?
2. Does your work include anything in line with the food system somehow? If so, could you give examples that where is the coincidence?
3. What is your general view on the role of urban agriculture in the city? What comes to mind?
4. Where do you think urban planning comes in urban agriculture projects?
5. What roles do urban planning and planners play in urban agriculture projects?
6. Are there any other planning tools in the communities that could be a barrier to urban agriculture? If so, explain.
7. How can we solve the mentioned planning challenges in community gardens?

8. Do you know community garden policies (2005 or 2016 version) in Victoria?
9. Do you agree with the governance elements employed by the City of Victoria? Why or why not?
10. What sort of urban governance and elements should Victoria have regarding community gardens limits currently?
11. What kind of local stakeholders are involved in community gardens?
12. How could the local stakeholders contribute to community garden policies and planning?
13. Which kind of barriers are there for local stakeholders to cooperate for policy-making in community gardens?
14. How could stakeholders improve community gardens outcomes?
15. Any suggestions and comments? How can we grow more food in community gardens?

Group 3: Residents

1. Can you tell me about your garden/plot? Where is the garden? What are you growing? Why do you prefer to grow these pieces of stuff?
2. Why should people grow their own food?
3. Do you feel local community gardens are valued in Victoria? If not, what suggestions do you have to improve the relationship between the community gardens and the neighbourhood or city?
4. Would you be interested in seeing Victoria have more gardens for growing food? What are barriers there for reaching the goals? How can urban governance help you to solve?

Part 2: Community Mapping Questions

1- What are the communities' challenges regarding the food system?

2- Where are the suitable locations for community gardens and all their needed facilities?

Appendix B

Part 1: Interview Groups' Information Sheet

Project Title: Investigating the intersection of urban agriculture and urban planning in Victoria

Purpose of Research

I am a student in the Master of Geography at the University of Victoria (UVIC). My research aims to examine the role of urban planning regarding urban governance structures and elements in urban agriculture projects in Victoria. I hope the study will contribute to the future success of community gardens in neighbourhoods to improve food production and sustainability in communities.

The Importance of Research

The urban population is growing, which results in food demands increase and ecological footprints. Also, increasing urban dwellers could lead to food insecurity in cities (Zezza and Tasciotti, 2010) and environmental degradation. Therefore, urban agriculture can be an opportunity to grow food products in light of improving food security rates and citizens' well-being (De Zeeuw, Guendel, and Waibel, 2000). Moreover, it could bring sustainability to communities to feed itself, meet the needs of current people in all sustainability pillars, and create minimal harm to the environment.

Potential Benefits

The participants possess an opportunity to engage in the practice, which can learn about the community gardens in their communities. The result of the research could help the communities to find appropriate ways and policies to implement the community gardens to acquire desired results.

Description of the Interview process

Research participants will be interviewed face-to-face. If you agree, you would be asked questions emphasis on factors such as social support, environmental aspect, economic benefits, and governance structures in line with community gardens. With your permission, the interview would be audio-recorded. Your participation would require approximately 40 minutes of your time. You have the option of participating anonymously.

Risk of Harm to Participants

This study is anticipated not to have any social, physical, and economic risk. Also, participants can withdraw anytime during the research if they feel discomfort.

Management of Research Information/Data

Only my supervisor and I will have access to the provided information. With your permission, the interview would be audio-recorded and later transcribed for further analysis. At your request, the researcher will provide you with a copy of the transcript and will invite you to make changes to the transcript as you wish (e.g. if you would like to withdraw a statement you made during an interview). Electronic transcribed data will be kept in a password-protected computer. Signed consent forms and paper copies of interview transcripts will be stored in a locked file cabinet at UVIC.

Use of Research Information

The analyzed data will be used in my master's thesis, and may also be used for conference presentations, and in journals.

Any changes in the above-mentioned conditions will occur with your further approval.

Part 2: Community Mapping Workshops' Information Sheet

Project Title: Investigating the intersection of urban agriculture and urban planning in Victoria

Purpose of Research

I am a student in the Master of Geography at the University of Victoria (UVIC). My research aims to examine the role of urban planning regarding urban governance structures and elements in urban agriculture projects in Victoria. I hope the research will contribute to the future success of community gardens in neighbourhoods to improve food production and sustainable development.

The importance of Research

Urban population are growing, which result in food demands increase and ecological footprints. Also, increasing urban dwellers could lead to food insecurity in cities (Zezza and Tasciotti, 2010) and environmental degradation. Therefore, urban agriculture can be an opportunity to grow food products in light of improving food security rates and citizens' well-being (De Zeeuw, Guendel, and Waibel, 2000). Moreover, it could bring sustainability to communities to feed itself, meet the needs of current people in all sustainability pillars, and create minimal harm to the environment.

Potential Benefits

The participants will possess an opportunity to engage in the practice, which can learn about the community gardens in their communities. The result of the research could help the communities to find appropriate ways and policies to implement the community gardens to acquire desired results.

Also, the research could acquire new governance structures and elements that can develop the knowledge in line with context-based community gardens.

Description of Workshop Process

The workshop is called community mapping. It can be used to create a visual image of your communities regarding the research goals. Also, it can contribute to considerable community growth by identifying assets in the communities. Community mapping identifies the personal (Knowledge, personal contacts, personal values), local (churches, clubs, cultural groups), and institutional assets of a community. For conducting the map, the following stages are needed:

STAGE 1:

1- The researcher will introduce himself

2- Participants will be asked to introduce him or herself

3- A large-scale land-use and topographical map will be provided.

4- The tools (coloured sticky, pen, papers) will be distributed among participants, and their roles will be clarified.

5- Participants will be asked to use sticky dots to mark the spaces in the community that fit under their theme. They might use different coloured sticky to code different categories of assets—e.g. green for community gardens, etc.

6- Participants start to identify areas with specific problems and potentials for community gardens.

STAGE 2:

1- Participants will have 10 minutes each to explain their drawn features on the map and recommendations.

2- Participants will draw their ‘Dream Tree.’ Each part of the tree will represent different values for the ‘ideal future’ in their community. For example, the roots may represent large values such as poverty alleviation, recreation, etc. The trunk of

the tree may represent needed resources in the community that could help to achieve these values, and the branches could be specific outcomes.

With your permission, your explanation would be audio-recorded. Your participation would require up to two hours of your time. You have the option of participating anonymously.

Risk of Harm to Participants

This study is anticipated not to have any social, physical, and economic risk. Also, participants can withdraw anytime during the research if they feel discomfort. However, as the data will be audio-recorded in a group setting and it is logistically impossible to remove only your contributions if you withdraw from the study. In this case, your data will be used in a summarized form with no identifying information.

Management of Research Information/Data

Only my supervisor and I will have access to the provided information. With your permission, the discussion would be audio-recorded and later transcribed for further analysis. At your request, the researcher will provide you with a copy of the transcript and will invite you to make changes to the transcript as you wish. Electronic transcribed data will be kept in a password-protected computer. Signed consent forms and paper copies of transcripts will be stored in a locked file cabinet at UVIC. Data will be deleted at the end of the project.

Use of Research Information

The results of this study will be published in my master's thesis, and may also be used for conference publications, presentations, and published in journals.

- Any changes in the items mentioned above will only occur with your further explicit approval.

Appendix C

Part 1: Consent Forms

Project Title: Investigating the intersection of urban agriculture and urban planning in Victoria

Principal Investigator
Abdolzaher Ghezeljeh, Student
Master of Geography

Student Supervisor
Dr. Jutta Gutberlet
Department of Geography

Consent Form for Interview

Thank you for reading the presented information about the interview. According to ethical procedures for academic research, this consent form is necessary for the researcher to ensure that participants understand the aim of the research.

Therefore, if you are happy to participate, then please complete and sign the form below.

- I have read the purpose of the study presented in the information letter, and I agree to participate in the research.
- I understand that participation in this research is voluntary, and the participant can withdraw it at any time or refuse to answer the question.
- I understand that the participant can withdraw permission to use data from my interview within ten days after the interview, in which case the material will be destroyed.
- I understand that my answers will be kept confidential, and my name will not be used in the report or reports that result from the research.
- I agree for this interview to be tape-recorded. I understand that the audio recording made of this interview will be used only for the thesis and may be used for the conference's presentation and journal article.

- Only the investigator and his supervisor allowed access to the original recording.
- I know that the thesis will be posted on the Uvic Library website, " Uvic Space."
- I understand that all recorded data will be destroyed two years after the thesis has been defended.
- I understand that the participant does not expect to receive any payment for participation.
- I understand that I can have a copy of the transcript of my interview if I like to make edits.
- I can make contact with the researcher with any questions related to the study I might have in the future.
- I understand that if someone is at risk of harm, the participant may have to report this to the relevant authority, which is mentioned at the end of this form.

_____ _____ _____

Name of Participant Date Signature

I, Abdolzaher Ghezeljeh, promise to adhere to the procedures described in this consent form.

_____ _____

_____

Principal Investigator Date Signature

If you have any concerns as a research participant in this study, please contact the Human Research Ethics Board.

Copies: *Once this has been signed, the participant should receive a copy of the signed consent form, and the information sheet. A copy of the signed consent form should be placed in the main project file, which must be kept in a secure location.*

Part 2: Community Mapping Workshops' Consent Form

Project Title: Investigating the intersection of urban agriculture and urban planning in Victoria

Principal Investigator
Abdolzaher Ghezeljeh, Student
Master of Geography

Student Supervisor
Dr. Jutta Gutberlet
Department of Geography

Consent Form for Community Mapping Workshop

Thank you for reading the information about the workshop. According to ethical procedures for academic research, this consent form is necessary for the researcher to ensure that participants understand the aim of the research and their involvement in the workshop.

Therefore, if you are happy to participate, then please sign the form below.

- I have read the purpose of the study presented in the information letter.
- I understand that participation in this research is voluntary. Also, I can withdraw at any time. However, I know that the data will be audio-recorded in a group setting, and it is logistically impossible to remove only my contributions if I withdraw from the study. In this case, my data will be used in a summarized form with no identifying information.
- I understand that all recorded data will be destroyed two years after the thesis has been defended.

- I understand that the thesis will be posted on the UVic Library website, "UVic Space."
- I understand that the answers will be kept strictly confidential, and my name will not be identified in the report or reports that result from the research.
- I agree with this workshop to be tape-recorded. I understand that the audio recording made of this work will be used only for the thesis and may be used for conference presentation, report or journal article.
- I understand that the principal investigator and his supervisor allowed access to the original recording and hand-drawn maps.
- The participant does not expect to receive any payment for participation.
- I can request my hand-drawn map within ten days after the workshop to make edits.
- I understand that I can ask any questions about the research I might have in the future.
- I understand that if someone is at risk of harm, the participant may have to report this to the relevant authority, which is mentioned at the end of the form.
- I agree to work with other participants in the workshop, which will take up to two hours.
- I understand that the workshop held in the community centre and the participants are representatives of the community.
- I understand that participants' role in the workshop would be to draw features on the map and explain each feature on the map.

_____ _____ _____

Name of Participant Date Signature

I, Abdolzaher Ghezeljeh, promise to adhere to the procedures described in this consent form.

_____ _____

_____

Principal Investigator Date Signature

If you have any concerns as a research participant in this study, please contact the Human Research Ethics Board.

Copies: *Once this has been signed, the participant should receive a copy of the signed consent form, and the information sheet. A copy of the signed consent form should be placed in the main project file, which must be kept in a secure location.*

Appendix D

The Codebook and Hierarchical Name

Name	Hierarchical Name
Adopted species	Nodes\\Codes\Adapted species
Facilities and infrastructure	Nodes\\Codes\ facilities and infrastructure
Facilities by City of Victoria	Nodes\\Codes\Role of stakeholders\ facilities by the City of Victoria
Animal protection	Nodes\\Codes\Animal
Approval process	Nodes\\Codes\Approval process elements
Approving by the City	Nodes\\Codes\Approving them by city not councillors
Asking staff and the Council directly	Nodes\\Codes\Asking staff and the Council directly
Best use of land	Nodes\\Codes\Land use planning policies\Best use of land
Bicycle for gardeners	Nodes\\Codes\Role of stakeholders\bicycle for gardeners
Broad overlaps need between the local and provincial government	Nodes\\Codes\Broad overlaps need among local and provincial gov
Building a new community garden for Cool Aid Center	Nodes\\Codes\Role of stakeholders\Building new community garden for Cool Aid center
Calling for volunteers	Nodes\\Codes\Role of stakeholders\Calling for volunteers
Organizing campaign	Nodes\\Codes\Increasing awareness\Campaign
CG support by media	Nodes\\Codes\Role of stakeholders\CG support by media
Changes in zoning bylaws	Nodes\\Codes\Changes in zoning bylaws
Coffeemaker and bench	Nodes\\Codes\Role of stakeholders\Coffee maker and bench
Community agreement	Nodes\\Codes\Community agreement and disagreement
Community association as a connector between city and gardeners	Nodes\\Codes\Community association as a connector between city and gardeners
Conducting more research about UA	Nodes\\Codes\Increasing awareness\Conducting more research about UA
Dedicating plots to the school district	Nodes\\Codes\Role of stakeholders\Dedicating plots to the school district
Design guidelines for new buildings	Nodes\\Codes\Design guidelines for new buildings
Developing a business license	Nodes\\Codes\Developing business license
Developing partnership with city staff and councillors	Nodes\\Codes\Developing partnership with city staff and councillors

Developing UA types of definitions	Nodes\\Codes\Developing the UA types definitions
Distribution mechanism	Nodes\\Codes\Distribution mechanism
Encouraging people with different culture	Nodes\\Codes\Encouraging people with different culture
Encouraging stakeholders to the public council meeting	Nodes\\Codes\Encouraging stakeholders to the public council meeting
Food coordinator	Nodes\\Codes\Food coordinator
Free garbage bins and mulch	Nodes\\Codes\Role of stakeholders\Free garbage bins and mulch
Funded position	Nodes\\Codes\Funded position for one who has UA and UP skills
Garden coordinator grant	Nodes\\Codes\Garden coordinator grant
Gardeners commitment to protect the products	Nodes\\Codes\Gardeners commitment to protect the products
Gardening permission for UA in Apartments	Nodes\\Codes\Legalizing new type\Gardening permission for UA in Apt
Growing in Apartment yard	Nodes\\Codes\Growing in Apt yard
Growing on private land	Nodes\\Codes\Land use planning policies\Growing on private land
Having a consultation role in talking with councillor and neighbours	Nodes\\Codes\Having consultation role in talking with councillor and neighbours
Having funded position	Nodes\\Codes\Having funded position
Implementation policies	Nodes\\Codes\Implementation policies
Increasing awareness	Nodes\\Codes\Increasing awareness
Incorrect assumptions about the city staff	Nodes\\Codes\Incorrect assumptions about the city staff
Encouraging groups by ICA	Nodes\\Codes\Role of stakeholders\Encouraging groups by ICA
Encouraging youth to UA	Nodes\\Codes\Encouraging youth to UA
Increasing grants	Nodes\\Codes\Role of stakeholders\Increasing grants
Indoor high-tech UA	Nodes\\Codes\Indoor high tech UA
Insurance for private land gardeners	Nodes\\Codes\Insurance for private land gardeners
Introducing regulations	Nodes\\Codes\Introducing regulations
Keen competition for land using	Nodes\\Codes\Not cost effective\Keen competition for land using
Lack of commitment to UA	Nodes\\Codes\Lack of commitment on UA
Lack of space for renters	Nodes\\Codes\Land dedication\Lack of space for renters
Lack of training	Nodes\\Codes\Lack of training
Land dedication	Nodes\\Codes\Land dedication
Land use planning policies	Nodes\\Codes\Land use planning policies
Legalizing new type	Nodes\\Codes\Legalizing new type

Long bureaucratic way to get approval	Nodes\\Codes\Long bureaucratic way to get approval
Long waitlist	Nodes\\Codes\Long waitlist
Multiple-use guideline	Nodes\\Codes\Multiple use guideline
Neighbour's agreement	Nodes\\Codes\Role of stakeholders\Neighbor's agreement
Neighbour's complaints	Nodes\\Codes\Community agreement and disagreement\Neighbor's complaints
Network among all stakeholders	Nodes\\Codes\Network among all stakeholders
A new chapter in the neighbourhood plan	Nodes\\Codes\New chapter in the neighbourhood plan
New connection way due to lack of time	Nodes\\Codes\Asking staff and the Council directly\New connection way due to lack of time
Cost effectiveness	Nodes\\Codes\Not cost effective
Object-based projects	Nodes\\Codes\Object-based projects
Offering to fund	Nodes\\Codes\Offering funding
Organizing celebration	Nodes\\Codes\Role of stakeholders\Organizing celebration
Organizing Victoria's community garden board	Nodes\\Codes\Organizing Victoria's community garden board among gardeners
Participating in public consultation	Nodes\\Codes\Participating in public consultation
A partnership between municipality and developers for green guideline	Nodes\\Codes\Role of stakeholders\Partnership between municipality and developers for green guideline
Partnership with schools	Nodes\\Codes\Partnership with schools
Preventing privatization	Nodes\\Codes\Land use planning policies\Preventing privatization
Preventing to garden in a park	Nodes\\Codes\Land use planning policies\Preventing to garden in a park
Producing organic fertilizer	Nodes\\Codes\Producing organic fertilizer
Providing resources	Nodes\\Codes\Role of stakeholders\Providing resources
Reducing neighbour's complaints	Nodes\\Codes\Role of stakeholders\Reducing neighbour's complaints
Reducing waitlist	Nodes\\Codes\Reducing waitlist
Removing shades	Nodes\\Codes\Removing shades
Role of stakeholders	Nodes\\Codes\Role of stakeholders
Safety by police	Nodes\\Codes\Role of stakeholders\Safety by police
Size of food project	Nodes\\Codes\Size of food project
Size of lot	Nodes\\Codes\Size of food project\Size of lot
Supporting the proposal	Nodes\\Codes\Role of stakeholders\Supporting the proposal
Theft and lack of fencing	Nodes\\Codes\Theft and lack of a fence
UA site visiting by staff	Nodes\\Codes\UA site visiting by staff

Water and fencing	Nodes\\Codes\ Facilities and infrastructure\Water and fence
Water charge for UA on private land	Nodes\\Codes\Water charge for UA on private land
Working with refugees	Nodes\\Codes\Working with refugee
Workshop by schools	Nodes\\Codes\Role of stakeholders\Workshop by schools
Workshop for students	Nodes\\Codes\Workshop for students
Workshops by the Compost Center	Nodes\\Codes\Role of stakeholders\Workshops by compost center
Zoning permission to UA	Nodes\\Codes\Zoning permission to UA
Local newspaper's attention	Nodes\\Codes\ Local newspaper's attention to community gardens