# Sustainable Food Security for Local Communities in the Globalized Era: a Comparative Examination of Brazilian and Canadian Case Studies


**By**

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I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

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# Abstract

In a world where food production is sufficient to feed everyone, more than 850 million people live in conditions of undernourishment, hunger, or starvation. Much of the problem lies in the current dynamics of the global agri-food system; they have impaired access to food and contributed to environmental damage and social disintegration. This increasingly integrated global system is displacing family farming enterprises in favour of agro-industrial monocultures, with their associated consequences for ecosystem health (biodiversity loss, heavy reliance on fossil fuels, etc.), and in the degradation of traditional food cultures.

Conventionally, the term "food insecurity" is used to describe situations of food deprivation. This study, however, adopts a broader perspective on the issue. It has associated the ideas of food security with those related to healthy food systems, suggesting that it is not only important to strive for universal access to adequate food but also to think of the means and processes by which it can be achieved; that is, a food system that promotes equity and environmental sustainability. In addition, food security also emphasizes the need for a healthy and active life unimpaired by overconsumption or inadequate eating habits.

Using a systems perspective, this study has devised criteria of sustainable food security, which serve as indicators of health in the food system. These criteria include nutritional and cultural adequacy of food, physical and economic access to it, the setting in which it is offered (i.e. the "food environment"), and the food systems' social and biophysical impacts. Such criteria were applied to two case studies: first in Canada (Waterloo Region, Ontario) and then in Brazil (Feira de Santana, Bahia), two very different contexts, but both under the influence of global agri-food dynamics. With this case study analysis, this research investigates the current challenges for achieving sustainable food security in local communities, as well as opportunities and benefits that might be available.

Feira de Santana exhibits great agro-biodiversity, a very localized food system, and community initiatives to support local food traditions, family agriculture, and sustainable farming practices based on agroecology. These efforts, however, are hindered

by poverty, lack of education, poor infrastructure, and little support from the local government. For its part, Waterloo Region counts on a very supportive government that strengthens local food initiatives and combines efforts with non-state organizations in order to promote a healthy food system. Despite possessing notable local food traditions, its food system is much more globalized than Feira de Santana's. Most of its food is imported, and much of the arable land is used for agro-industrial cash-crops. This has hampered the operations of the smaller local farmers, damaged the environment (due to long transportations and intensive, conventional agriculture), and contributed to poor eating habits. Although Waterloo Region faces less food deprivation than Feira de Santana, it has a much bigger problem with respect to overconsumption and obesity – half of the local population is overweight with associated health concerns.

In conclusion, this study stresses the need to consider food security from a systems perspective, taking into account social and environmental factors. Thus, it highlights the need to promote sustainable food systems, and draws some recommendations for achieving it.

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Thank you all.

# Dedication

This thesis is dedicated to those 850 million people experiencing food deprivation in this world of abundance, individuals who are not faceless numbers, but human beings with a conscience and a heart.

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# List of Acronyms

| | |
|---|---|
| **CAR** | *Companhia de Desenvolvimento e Ação Regional* (Company of Regional Action and Development) |
| **CONSEA** | *Conselho Nacional de Segurança Alimentar e Nutricional* (National Council of Food and Nutritional Security) |
| **EBDA** | *Empresa Baiana de Desenvolvimento Agrícola* (Bahian Company of Agricultural Development) |
| **EMBRAPA** | *Empresa Brasileira de Pesquisa Agropecuária* (Brazilian Company of Agro-husbandry Research) |
| **FAO** | Food and Agriculture Organization |
| **GMO** | Genetically Modified Organism |
| **IMF** | International Monetary Fund |
| **IPCC** | Intergovernmental Panel on Climate Change |
| **MOC** | *Movimento de Organização Comunitária* (Movement of Communitarian Organization) |
| **NAFTA** | North American Free Trade Agreement |
| **NGO** | Non-governmental Organization |
| **OECD** | Organization for Economic Co-operation and Development |
| **PRONAF** | *Programa Nacional de Fortalecimento da Agricultura Familiar* (National Programme of Family Agriculture Strengthening) |
| **RAPA** | *Rádio Patrulha* (Radio Patrol) |
| **UEFS** | Universidade Estadual de Feira de Santana (State University of Feira de Santana) |
| **UNDP** | United Nations Development Programme |
| **UW** | University of Waterloo |
| **WHO** | World Health Organization |
| **WTO** | World Trade Organization |

# Chapter 1: Introduction

## 1.1. Food Insecurity in a World of Abundance

According to the United Nations' Food and Agriculture Organization (FAO), more than 850 million people live in conditions of hunger or undernourishment[1] worldwide, most of them in the developing world.[2] Despite some predictions of food scarcity[3], there is a clear consensus that the world currently produces enough food to meet everyone's needs.[4] Therefore, the problem lies in the dynamics of contemporary food systems, which have denied universal access to food and, in addition, caused significant social and environmental impact on communities and ecosystems.

With the phenomenon of globalization, food systems have become increasingly integrated worldwide. Cash-crops have replaced subsistence agriculture; traditional farming methods have given place to intensive, industrial ones (relying on monocultures, chemicals use, more machinery, etc.); and in many areas the focus of agriculture has shifted from local consumption to food exports. This has substantially increased agricultural output and food trade, as well as allowed consumers – particularly in the developed North – to enjoy more exotic foods and cheaper prices.[5] At the same time, this has rendered communities much more vulnerable to market fluctuations.[6] Conventional food systems have also had significant socio-environmental impacts, which are usually not accounted and are thus treated as *externalities* of the system. Such impacts include

[1] Although the word "malnutrition" is generally used to characterize food deprivation, "undernourishment" seems more appropriate because malnutrition can also result from overconsumption and unhealthy diets. As such, this study distinguishes between the two concepts. In order to be precise, it uses "undernourishment" for situations of food deprivation (as it is the case of those FAO numbers) and "malnutrition" for all forms of food insecurity (under *and* overconsumption).
[2] Food and Agriculture Organization (FAO), 2006b
[3] Such predictions go back to Thomas Malthus, who at the turn of the 19th century projected that food production would not accompany population growth. Although grounded on different arguments, food scarcity predictions have persisted in the 20th century and to present times. For a recent reference, see Brown, 2004.
[4] Lappé et al, 1998, pp. 8-14
[5] The reasons for cheaper prices often include government subsidies to certain food commodities, the efficiency of large-scale production, and the fact that food can now be sourced from virtually everywhere in the globe, which enhances competition. See Pollan, 2006.
[6] See The Economist, 2007, for recent examples of global food price rises and how that impacts particularly the poor.

the erosion of food cultures, social capital loss, ecosystems degradation, and a global shift towards unhealthier eating habits.

Thus, we live in a world of food abundance and widespread food insecurity, both in the form of food deprivation or of overconsumption (with its related health concerns, such as diabetes and heart diseases). Local communities worldwide have had to cope with such global trends, at a time when their self-reliance is increasingly smaller due to the integration of food systems. As such, the promotion of food security coupled with sustainability (or, as this study suggests, the promotion of *sustainable food security*) is a major challenge for the 21st century.

## 1.2. This Investigation

### 1.2.1. Research question

The objective of this research is to provide answers to an overarching inquiry: *How can sustainable food security be promoted in local communities in a globalized era?*
A number of other questions arise from this inquiry, such as:

- What is sustainable food security and which are its elements?
- What is particular to the globalized era and what influences does the global agri-food system have on food security promotion at the local level?
- What are the challenges that local communities have to face, and what can they do in order to achieve sustainable food security?

These questions are all part of that overarching inquiry, and they are the object of this investigation.

### 1.2.2. Study rationale

This study sees sustainable food security as a complex interaction of elements: social, economic, biophysical, cultural, and educational. Therefore, a systems approach to the problem of food insecurity seems necessary, an approach that identifies its roots and recognizes the connections among those distinct food security elements. This seems more appropriate to overcome the problem than partial views which may consider, for instance, access to food but not other impacts of the food system on individual and societal well-being. All those different elements operate in a in a synergistic manner; therefore, a

systems perspective seems better suited to examine real-world contexts and identify complex challenges. This approach contributes to building food security in a way that also meets other socio-environmental imperatives such as equity and sustainability, while minimizing vulnerability at the local level. This needs to include not only vulnerability to market fluctuations, but also to shifts in biophysical conditions, such as those caused by global climate change.

An in-depth analysis of local communities allows for a detailed examination of how those multiple factors interact in the food system. It highlights how they may create complex challenges to sustainable food security, and also how different stakeholders can engage in integrated action to promote it. It is at the local level that most actors can make a difference, particularly community and grassroots groups (such as consumers or small farmers). Only few players have enough power to influence governance at higher levels by themselves, but this becomes a much easier task once the whole community is engaged.[7]

As Maxey (2006: 233) points out, there have been very few studies comparing food systems in different continents. A comparative study between Canada and Brazil not only helps fill this gap, but also involves two very distinct contexts in the global North and South, which allows for a broader examination. It identifies differences and similarities in their challenges and opportunities to promote sustainable food security; and given the very distinct settings, it is also reasonable to assume that much of what applies to both contexts can be extended to other parts of the world.

### 1.2.3. Thesis assumptions

The first assumption of this thesis is that food security should be based on an ethics of sustainability, one that advocates for forms of development that guarantee the integrity of the society, the economy, and of natural systems. As such, social justice (or equity), economic vitality, and biophysical sustainability are goals in and of themselves, and imperatives that must be considered in the promotion of food security.

A second assumption is that access to adequate food should be recognized as a right, and, therefore, that the recognition of universal food security is a meaningful goal.

[7] This happens not only by setting an example to be expanded, but also lobbying governments and organizations at higher levels.

The United Nations' Special Rapporteur on the right to adequate food defines it as follows:

> Right to adequate food is a human right, inherent in all people, to have regular, permanent and unrestricted access, either directly or by means of financial purchases, to quantitatively and qualitatively adequate and sufficient food corresponding to the cultural traditions of people to which the consumer belongs, and which ensures a physical and mental, individual and collective fulfilling and dignified life free of fear.[8]

This study, however, goes further to also identify the right of communities to preserve their food cultures, their livelihoods, and to have significant influence over the decision-making that affect their lives (e.g. food and agricultural policies). This is consistent with the idea of protecting communities from vulnerability and with the food sovereignty movement, which will be discussed later.[9]

## 1.3. Research Contributions and Boundaries

### 1.3.1. Academic contributions

The first academic contribution of this study is a broadened definition of food security, one that emphasizes sustainability and includes elements often overlooked, such as food insecurity from overconsumption and the socio-environmental impacts of food production. These are gaps present also in the FAO definition of food security.[10] Different authors have highlighted distinct elements for a state of food security or a healthy food system.[11] This study integrates many of those elements into a consistent definition and criteria for examining food security in real-world contexts. More than a product of literature review, such definition and criteria were tested on the field and enriched with contributions from communities in Canada and Brazil.

A second academic contribution is a better understanding of the challenges to achieving sustainable food security in local communities. As this study examines very

[8] United Nations Human Rights, 2007, p.4
[9] For the principles of food sovereignty, see the International Planning Committee, a global network of organizations and activists advocating for it.
[10] See World Food Summit, 1996
[11] See, for example, Young, 2004, for considerations on food insecurity as a result of overconsumption; Shiva, 2000, for a defence of cultural appropriateness in food security; and Altieri, 2000, for a discussion of biophysical sustainability in food production.

distinct settings in different countries, it is possible to identify their particular challenges but also some which can be generalized to other contexts. The same can be said about potential solutions, some of which are particularly suitable to those contexts (or similar ones), and some which are more general and can be applied to other communities.

Finally, this research contributes academically with insights from the two case studies in Canada and Brazil, and with the comparison between them. The purposes of this study were not only explanatory, but also exploratory; therefore, its results can be object of further analyses in future research, and help pave the way to other works on food security. This is particularly the case of Feira de Santana, the Brazilian case study, where this research is the first to apply a systems perspective on food security analysis.

### 1.3.2. Practical contributions

Practical contributions can certainly arise from the application of this study's results. The broader understanding of food security, greater awareness of its challenges, and the recommendations provided here may all influence the attitudes and behaviours of different social actors (e.g. consumers, community groups, non-state organizations, government officials, food businesses). This may lead to action in real-world contexts, particularly in the two communities examined, and contribute in a tangible manner to the promotion of sustainable food security (e.g. in the form of policy changes, community initiatives, networking among different stakeholders).

### 1.3.3. Research Boundaries

This research focuses on challenges to, and opportunities for, achieving food security at the local level. As such, it considers forces and factors operating at state/provincial, federal, and global levels, but only as long as they affect local communities. Clearly, each of those larger levels poses specific challenges and can be arenas for action. However, this study deals with existing challenges at the local level, and focuses only on what could be done in, and by, local communities.

The research examines two case studies, and they are the only ones analyzed in depth. Because of limited time, resources, and scope, other communities are only generally considered, without their specifics. This is another boundary and a limitation to the applicability of the results. Naturally, the more similar a community is to one of the

case studies presented here, the more it can benefit from this study's results, as it is likely to face similar challenges. Nevertheless, many similar challenges emerge in very different communities as a result of broader trends (e.g. towards agricultural industrialization, towards American fast-food diets) and can be generalized to other communities. Similarly, many of the recommendations are applicable to other contexts, provided they are adapted to the specifics of each locality.

## 1.4. Methodology

This three-part study involves, first, a multi-disciplinary literature review in order to develop sustainable food security criteria. This review is presented in chapters 2 and 3, which discuss elements of food security and the structure of the global agri-food system, with particular attention to its effects in Canada and Brazil. Second, the study applies such criteria to two very different case studies, Waterloo Region (Ontario, Canada) and Feira de Santana (Bahia, Brazil), in order to test them and examine food security in those contexts (Chapter 4). And third, the food security and food systems literature is used to map out and analyze the current challenges and opportunities for achieving sustainable food security in local communities. This last part concludes the thesis with recommendations for effective action, both in the assessed communities and broadly in other localities (Chapters 5, 6 and 7).

### 1.4.1. Methodology rationale

The rationale for the selected methodology lies in the nature of this study, which lends itself to the use of a case study approach. First, the leading question is about *how* we can promote sustainable food security in local communities, which requires explanations and analysis for an adequate comprehension of the issue. Second, this is a study about contemporary events taking place in real-world contexts, so the research gains substantially from direct observations and from the examination of case studies. According to Yin (2003), such conditions make a case studies strategy the most appropriate methodology for this research.[12]

[12] Yin, 2003

### 1.4.2. The case study sites: Waterloo Region (Ontario, Canada) and Feira de Santana (Bahia, Brazil)

Waterloo Region and Feira de Santana are the two case studies selected for this research. Their food systems have very distinct ecological, socio-economic, political, and cultural contexts. However, these two communities have features that make them suitable not only for food security research, but also for comparison.

Waterloo Region is a good case study because of its long history of farming traditions and the active policy promotion of local farming. Even if Waterloo Region is a primarily urban setting, the urban areas are in close proximity to the rural areas, both physically and in terms of community involvement. The region has been a pioneer in food system studies and initiatives for food security promotion, both from the regional government[13] and non-profit organizations[14]. As such, there is an abundance of baseline data available to enrich this research (e.g. studies on local food production and patterns of consumption, analyses of food accessibility). Moreover, as there is already a structure in place to work on local food security, findings and recommendations are more likely to make practical contributions in Waterloo Region.

Feira de Santana has less baseline data available, and less of a formal structure working on the local food system. However, the region also has important agricultural surroundings and long farming traditions. It contrasts with Waterloo Region in the fact that its agriculture is mostly for subsistence and regional trade, whereas that of Waterloo is export-oriented[15]. As chapter 4 will examine in greater detail, this has important implications for both the communities and the natural systems they rely upon. The more local orientation of Feira de Santana makes it interesting for analysis, not only due to its traditional practices (often healthier and more sustainable than highly industrialized food systems), but also to some of its community initiatives (See Chapters 4 and 6).

Those aspects make Waterloo Region and Feira de Santana two interesting communities to analyze. Despite many contrasts, they are also suitable for comparison. This is the case because both of them have a population of approximately half a million

[13] See, for instance, Xuereb and Desjardins, 2005
[14] See FoodLink, 2008a
[15] Region of Waterloo, 2003a

people, at nearly the same distance from a metropolis – Toronto and Salvador. In addition, both of them have long farming traditions and important agricultural surroundings. Third, they have very different contexts but are both experiencing a global trend towards a more industrialized and integrated agri-food system. Thus, the analysis of such distinctive communities helps test the food security criteria in different contexts, identify common challenges, and learn from contrasting experiences.

### 1.4.3. An explanation of the case study methodology

According to Yin (2003), this research strategy can be considered an empirical inquiry investigating the real-life context of a contemporary phenomenon, which in this case is the state of food security in Waterloo Region and Feira de Santana. Also, it is a method that encompasses the whole research process, from research design to data analysis. Such a strategy relies on a number of evidence sources, which are integrated in a fashion usually referred to as "triangulation". In this study, the sources of evidence are: (1) the academic literature on food security, sustainability, and food systems; (2) direct observations on the field, including the examination of local records, documents and reports; and (3) interviews with key-informants in the two communities, such as farmers, government officials, and public health professionals.

### 1.4.4. Data analysis strategies

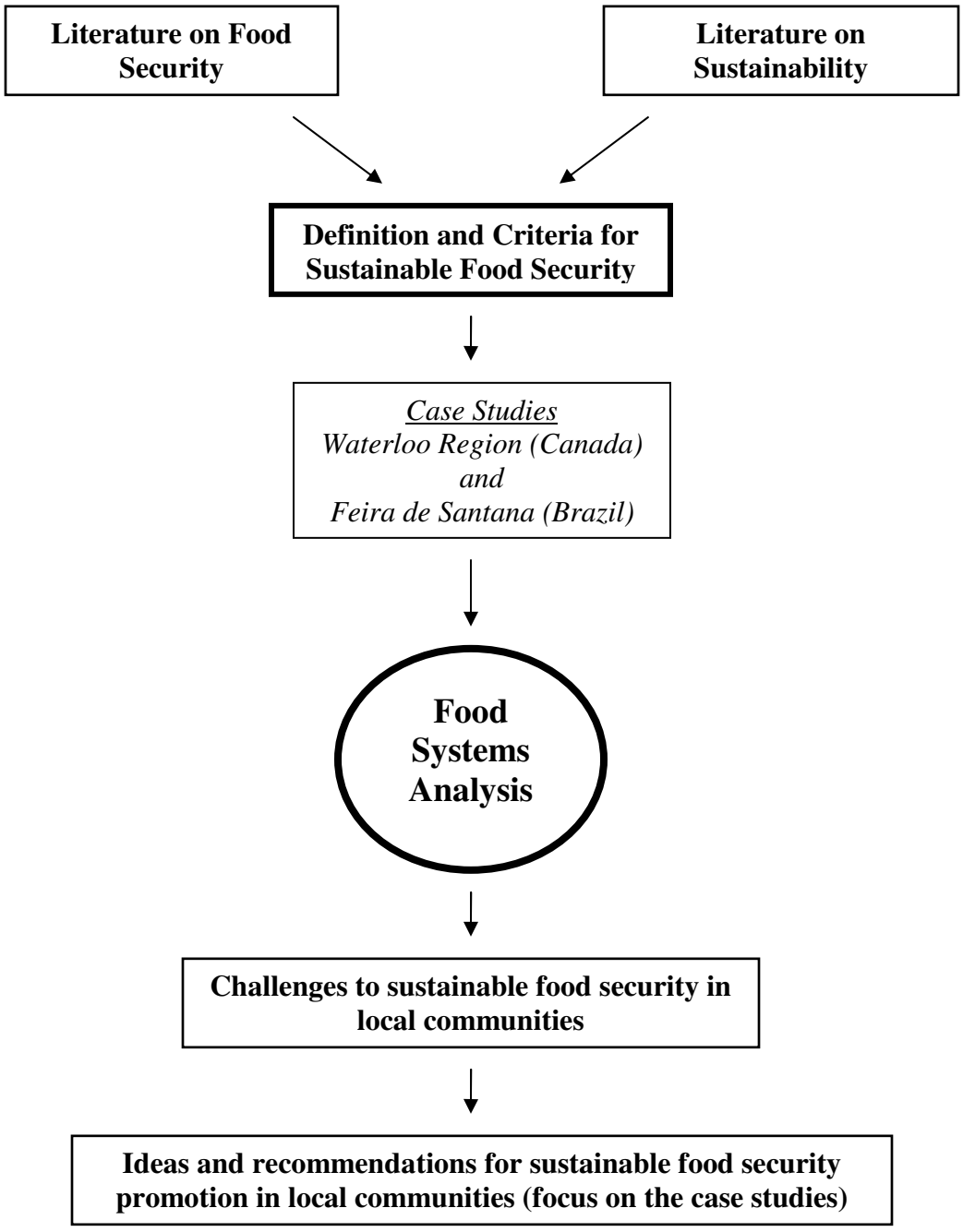
The first part of this study consists of the creation of sustainable food security criteria, and these are then used to examine the findings from the case studies. The main strategy is what Yin (2003) describes as *pattern matching*, which here means having those criteria as a pattern and the communities as real-life contexts where they are applied. Particular techniques such as *explanation building* and *logic models* are also used in order to support the analysis and identify causal relations in the phenomena being explained. The study compares its results to existing explanations and logic models in the literature about Waterloo Region, Feira de Santana, or food systems generally. From this process, the study provides improved logic models and explanations to the barriers to food security, as well as to recommendations for achieving it.

A parallel analysis is that of the food security criteria, which this study tested in the field. Views of food security designed by academia and mainly by authors from

developed countries may not coincide with the perceptions of grassroots actors such as farmers, or even with the ones of scholars from developing countries. So the interviews played an important role in this process, collecting perceptions from different actors in Feira de Santana and Waterloo Region. This procedure helped fill gaps in the criteria, strengthen its validity, and thereby make them a more reliable contribution.

### 1.4.5. Methodology framework

The methodology for this study is summarized in the framework below.




## 1.5. Thesis Structure

This thesis is structured in seven chapters, which moves the reader in a logical way: it first discusses the meaning of sustainable food security; then examining food systems

from the global to the local level, increasing the degree of detail as it narrows down to the case study communities. Finally, later chapters analyze the whole scenario, identifying challenges to food security at the local level and providing recommendations for achieving it.

**Chapter 1** has introduced the reader to the research question, its rationale, boundaries and contributions, and finally the methodology being used.

**Chapter 2** consists of a broad discussion on the meaning food security, how it has been defined by different groups, and how this study understands it. The chapter introduces and explains the concept of sustainable food security, its multiple elements, and why that view on food security should be preferred.

**Chapter 3** describes the current global agri-food system and its effects on food security worldwide. The chapter gives particular attention to Canada and Brazil, detailing their national contexts with regard to food security, their understandings of it and approaches to achieving it.

**Chapter 4** narrows down the examination to the local level. It describes the case studies in detail, and examines the food systems of the two communities (Waterloo Region and Feira de Santana) with regard to each of the criteria created in Chapter 2.

**Chapter 5** analyses the findings from the case studies under the light of the literature on food systems and sustainability. It identifies biophysical, socio-economic, political, cultural, and educational challenges to sustainable food security at the local level. Although the analysis focuses on the two case studies, some of the challenges can be generalized to other communities.

**Chapter 6** explores some initiatives being taken in Waterloo Region and Feira de Santana, and provides recommendations for sustainable food security promotion at the local level. It provides insights and suggestions for action of multiple actors, from consumers to community groups and policy-makers.

Finally, **Chapter 7** concludes the thesis with an overview of its main points, recommendations for further research, and final considerations on the promotion of sustainable food security.

# Chapter 2: A Broad Understanding of Food Security

## 2.1. Introduction

The notion of food security is as old as humanity, as the establishment of human communities always depended on access to food. However, the understanding of it has continuously changed through time, to incorporate different elements. This chapter examines how the understanding of food security has evolved, and proposes a broad definition that links it to sustainability principles. It does so by considering each of the elements regarded as important for a state of sustainable food security, and finally creates sustainable food security criteria that can be used to assess real-world contexts.

## 2.2. Concepts and Ideas of Food Security

### 2.2.1. The evolution of the concept

Efforts to fight hunger and food insecurity may have been a fact of life at various points in history, but it was only after World War II that such efforts became concerted international action at the global scale. In the 1940s, the world saw the creation of the United Nations and of its Food and Agriculture Organization (FAO), with the purpose of organizing and strengthening international efforts in food-related matters. In 1974, this organization brought on the first World Food Conference, where leaders agreed upon the goal of putting an end to world hunger. They also proposed the following definition of food security:

> Availability at all times of adequate world food supplies of basic foodstuffs to sustain a steady expansion of food consumption and to offset fluctuations in production and prices.[16]

The conference occurred in the wake of a devastating famine in Bangladesh, one of many episodes of severe starvation leading to thousands of deaths despite all the development and progress brought on by technology, science and improved health-care. Before the Bangladesh famine, the 20th century had already witnessed famines in Persia (1917-1919), China (1928-1929), Bengal (1943), across Europe during the two world

[16] Food and Agriculture Organization (FAO), 2006a

wars, in Ethiopia (1973), and several others across the world.[17] Then, for the first time, at the 1974 Food Conference, world leaders proclaimed that *"every man, woman and child has the inalienable right to be free from hunger and malnutrition in order to develop their physical and mental faculties."*[18] This is known as the Universal Declaration on the Eradication of Hunger and Malnutrition. It also recognized the existence of sufficient resources to end hunger, so the FAO launched a plan to achieve that within 10 years. But severe episodes of hunger would persist after the conference, such as in Ethiopia (1984) and North Korea (1996), as well as chronic undernourishment (i.e. not an episodic problem, but a continuous state of food deprivation). Chronic hunger and undernourishment remain present in the 21st century, as well as episodes of famine, as seen in Darfur, Malawi, and Niger.

The World Food Conference occurred at a period of sharp price rises[19], and at the climax of the Green Revolution, when researchers developed high-yield varieties of staple foods such as wheat and corn and applied them in developing countries (particularly Mexico, Pakistan, and India). By expanding food availability, they expected to expand food consumption and achieve what was considered food security at that time. However, as a groundbreaking study of the Nobel laureate Amartya Sen would demonstrate in the early 1980s, food availability *per se* is not sufficient to guarantee food consumption and end hunger. It is necessary to make it accessible, either in the form of means to produce it or of purchasing power to buy it.[20]

In 1983 the FAO amended its definition of food security to then include economic access to food, following up on Sen's work. Three years later, in 1986, the World Bank also published "Poverty and Hunger", a famous study that reaffirmed the notion that increased production would not be a solution if people remained poor and unable to access food.[21]

The concept of food security has continued to evolve since then. In 1996, at the World Food Summit, it achieved its most inclusive definition, the one still adopted by the

[17] See Drèze and Sen, 1989
[18] World Food Conference, 1974
[19] See Friedmann, 1994
[20] Sen, 1982
[21] World Bank, 1986

FAO and endorsed by several countries (Canada and Brazil included). According to the organization,

> Food security, at the individual, household, national, regional and global levels, exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.[22]

This definition reaffirms the need for economic access in addition to availability, and, for the first time, requires that the food have quality, both in terms of nutrition and cultural appropriateness. "Safe and nutritious food… for an active and healthy life" can be simply understood as *healthy food*. Similarly, "food to meet their… food preferences" can be translated into *culturally-appropriate food*. In this study, food that meets these two requirements is referred as *adequate food*. Each of these security elements is discussed in greater detail in the later sections of this chapter.

### 2.2.2. Major gaps in the standard food security definition

Although the FAO definition has become increasingly inclusive, it still has important gaps commonly pointed out by academics and community organizations. This study highlights three major ones. They include sustainability, food sovereignty and food insecurity from overconsumption and poor eating habits.

Environmental concerns have grown exponentially in recent decades, joining those of equity and social justice to give birth to the idea of sustainability, in which economy, society and ecology are considered together.[23] As its name suggests, sustainability refers to the conditions that allow practices, activities and systems to endure in the long-term, i.e. to be *sustainable*. The FAO definition contains an important statement that might evoke this idea of sustainability: the need to meet the conditions to food security "*at all times*". This, however, can be interpreted in different ways. It could, indeed, mean the long-term and future generations. However, the FAO understands it as *stability*, or the conditions to meet food needs without the risk of seasonal food insecurity

[22] World Food Summit, 1996
[23] See Gibson, 2005

(e.g. from bad weather or economic crises).[24] As such, from this study's perspective, the definition shows a major gap for failing to incorporate sustainability principles.[25]

A second gap relates to "food sovereignty". In the 1996 World Food Summit, the civil movement La Via Campesina brought on the term "food sovereignty" to designate peoples' and communities' ethical and sovereignty rights over food. This movement consists of a network of civil society organizations that gathers rural workers and marginalized peoples from across the world, particularly from developing countries. Along with some academics[26], it has defended the right of communities to define their agricultural and food policies, to keep their traditional livelihoods and to preserve their food cultures.[27] This study recognizes such elements as important for food security, as next sections will explain; therefore, it sees the silence about food sovereignty as another major gap of that standard definition.

A third major gap relates to the problems caused by overconsumption and unhealthy eating habits. Overweight, obesity, and diet-related chronic diseases such as type II diabetes are increasingly widespread in both developed and developing countries. In some countries, it is already a larger problem than food deprivation. As a result, this concern has been gradually incorporated into the notion of food security[28], and it can be even interpreted in FAO definition, which stresses the need for "an active and healthy life". Yet, publications from that organization (such as their annual report *State of Food Insecurity in the World*) still fail to incorporate overconsumption as a form of food insecurity.[29]

### 2.2.3. Food security as a healthy food system

The idea of healthy food system takes into account multiple factors (e.g. economic, social, and biophysical) and actors involved with food (e.g. farmers, food processors, policy-makers, retailers, and others) and the complexity of their interactions. This

[24] See Food and Agriculture Organization (FAO), 2006a
[25] It is worth mentioning that an FAO report on organic agriculture does use the term "sustainable food security"; however, it does not propose an amendment to the current definition, and the two issues (food security and environmental sustainability) are still largely treated separately. See Food and Agriculture Organization (FAO), 2007a
[26] See Rosset, 2006; and Shiva, 2000
[27] La Via Campesina, 2003
[28] See Young, 2004; and Xuereb and Desjardins, 2005
[29] See, for instance, Food and Agriculture Organization (FAO), 2006b

approach draws substantially from sustainability principles. As Gibson (2005) recognizes, sustainability is a slippery concept that has led to debates and to a huge variety of interpretations. This study adopts Gibson's approach to sustainability which sees it as an open-ended process of thinking and acting that recognizes the links and interdependencies among social, ecological and economic spheres. It includes the core issues of decision-making, taking into account both short- and long-term well-being, from the local to the global.[30]

As noted earlier, the FAO definition of food security, although fairly inclusive, does not incorporate concerns about the way food is produced or distributed. Food may be produced or traded in a way that damages ecosystems integrity, increases social inequities, or undermines cultural traditions. A healthy food system, grounded on sustainability principles, on the other hand, accounts for all those factors, and strives for a state of food security that reconciles proper nutrition with the imperatives of social justice and biophysical integrity. Moreover, it is as state of food security that provides protection from vulnerability (e.g. to market fluctuations, weather variations, food safety scares), and which is capable of sustaining in the long-term.

The next section discusses in more detail the meaning of a state of sustainable food security, examining its necessary elements and their importance.

## 2.3. The Elements of Sustainable Food Security

As discussed above, a systems approach to food security considers the food system not only as a provider of food, but also as a web of processes with social and environmental effects (e.g. agriculture, trade, transportation). Sustainable food security is, therefore, the state where the food system provides adequate food while promoting social justice and ecosystems integrity.

### 2.3.1. Availability of adequate food

Food availability constitutes the most basic element of food security. However, globally this does not seem to be an issue, as food production has substantially increased in recent

[30] Gibson, 2005

decades. The current production of grains, alone, would be already sufficient to feed the world population and eliminate hunger, just if the needy had access to it.[31]

The food available to the population must also meet standards of safety, i.e. to be free from pathogens and other contaminants, such as chemical residues. But these chemical residues, as well as bacteria, will be often present in the food, even if just in small quantity. This is the case, for example, of pesticide residues commonly present in fruits and vegetables from conventional agriculture. A similar case is that of antibiotic and hormone residues in animal products such as meat, dairy and eggs, whose safety has been continuously contested.[32]

In order to be considered adequate, food must be not only safe, but also nutritious. This means that the food should provide, through a balanced diet (e.g. including fruits, vegetables, whole grains), the necessary macro and micronutrients that maximize health.[33] This is what the World Health Organization recommends in its nutrition guidelines, and what is also widely adopted in national food guides.[34]

If the food is safe and nutritious, then it can be called healthy; however, it must also be culturally-appropriate. For instance, some foods may be simply unacceptable to some consumers because of cultural or spiritual reasons. As Vandana Shiva notes,

> [Food security] is also culturally appropriate food. Vegetarians can starve if asked to live on meat diets. I have watched Asians feel totally deprived on bread, potato, and meat diets in Europe.[35]

One could argue that most people living in food insecure conditions would accept even foodstuffs which do not suit their culture, i.e. they would put their survival needs first. This was an issue, for instance, when in 2001 the United States provided Afghanistan with food aid that included peanut butter, typical to Americans but not to Afghanis.[36] This is why it is more adequate to speak of "cultural appropriateness" than of "cultural acceptability", given that situations of hardship might make people accept food that they

[31] Lappé et al, 1998
[32] See Pollan, 2006; and Richards, 2006
[33] Macronutrients are proteins, fats, and carbohydrates, the main substances we need to obtain from food. Micronutrients include nutrients that are required in smaller quantities, such as vitamins and minerals.
[34] See World Health Organization (WHO) and Food and Agriculture Organization (FAO), 2003; Health Canada, 2007; and Ministério da Saúde, 2004
[35] Shiva, 2000, p.21
[36] See Roy, 2001

otherwise would not. But well-being is not limited to being fed; it includes mental and social needs; therefore, culturally-appropriate food is necessary.

To be considered adequate, then food must be both healthy (i.e. safe and nutritious) and culturally-appropriate. However, it also needs to be physically and economically accessible, so that people can actually experience its benefits.

### 2.3.2. Physical and economic access to food

As the pioneering work of Amartya Sen and the World Bank report "Poverty and Hunger" demonstrated in the 1980s, lack of accessibility is a major cause of widespread food insecurity in a world of abundance.[37]. Some authors suggest that consumers should not have to take buses with grocery bags, and that food should be available at walking or biking distance, such as in local, neighbourhood markets.[38] Nevertheless, such worries may look minor if compared to contexts in parts of the world where people have to expose themselves to danger, or to walk for hours under harsh weather conditions in order to access food. Therefore, what is considered adequate physical access can be a relative concept. At the most fundamental level, the need to eat or feed one's family should not expose individuals to unacceptable risks. Moreover, food acquisition should not demand so much time and effort that people find difficult to meet their other needs, such as leisure activities, cultural and social involvement.

Ideally, access to food should occur in ways that provide more than "just" the food. Neighbourhood markets, for example, provide both the food and the opportunity to strengthen social bonds and sense of community. Neighbourhood markets are just an example, as they may not fit some cultures (e.g. indigenous communities). Each society must define its adequacy, based its own on cultural values, traditions, and preferences.

Economic access, for its turn, can mean either money to purchase food or the means to produce it, such as land and seeds. In other words, it has to do with having the *entitlements* that make one capable of acquiring adequate food.[39] It must exist along with physical access, and it is important that both be stable. This means that people should not be so vulnerable that they could fall into food insecurity because of weather conditions, a

[37] Sen, 1982; World Bank, 1986
[38] Region of Waterloo Public Health, 2004a
[39] Drèze, J. and Sen, A., 1989, p.9

bad season, or market fluctuations. Instead, their physical and economic accesses need to have stability, guaranteeing them adequate food "at all times".[40] A number of analysts have noted that people may starve even when food is available.[41] It happened, for instance, during the Bengal famine of 1943, when peasants' debt and market speculation raised the food prices and made it inaccessible to the poor. In that year, 3.5 million Bengali starved to death because they lacked the economic access to adequate food.[42]

### 2.3.3. Promoting equity and social integrity

In a state of sustainable food security, people access adequate food through a system that is beneficial both to the society and to the environment. These are aspects related to *how* we overcome food insecurity.

This systems approach goes against the mainstream viewpoint that sees hunger as a problem to be solved without questioning its primary causes. Poppendieck refers to the approaches based on such a shallow view as "token solutions – solutions that simply link together complementary symptoms without disturbing the underlying structural problem".[43] But the effects of the current agri-food dynamics are not restricted to hunger.[44] It is related to structural problems which are also responsible for poverty, inequality, degradation of social integrity, and undermined governance. According to Poppendieck,

> Defining the problem as hunger ignores a whole host of other needs. Poor people need food, but they also need housing, transportation, clothing, medical care, meaningful work, opportunities for civic and public participation, and recreation. By focusing on hunger, we imply that the food portion of this complex web of human needs can be met independently of the rest, can be exempted or protected from the overall household budget deficit. […] life is not so compartmentalized.[45]

Poppendieck argues that "token solutions" (e.g. food assistances, such as food banks, food pantries, soup kitchens) actually hijack efforts that could be driven towards more inclusive approaches. By providing mental and emotional comfort to its

[40] Food and Agriculture Organization (FAO), 2006a
[41] Lappé et al, 1998, p.18
[42] Shiva, 2000, pp. 5-6
[43] Poppendieck, 2000, p. 195
[44] See, for instance, Shiva, 1993 and 2000; Norberg-Hodge, Merrifield, and Gorelick, 2002; and Halweil, 2004
[45] Poppendieck, 2000, p.198

participants, they can quiet the ethical and emotional appeals of the hunger issue. These appeals could lead citizens to demand structural and more substantial changes, but if they feel they are doing their part and effectively fighting food insecurity, they may not look deeper into the problem. Such solutions are also convenient to the *status quo*, as they offer both a destination for food surpluses and a way for agri-food companies to present themselves as socially responsible.[46]

Sustainable food security can be only achieved by addressing the social factors which are now causing poverty and compromising the access to food of hundreds of millions across the world. Equity and social integrity are, therefore, essential elements in any food system; not only because they have an influence on food accessibility, but also because they are goals in and of themselves.

Moral and ethical imperatives tell us to distribute benefits and risks in a fair manner within the society. This implies equitable access to different types of resources, such as wealth, land, and government support. Such resources are essential to meeting biological, mental, and social needs that lead to well-being and quality of life.[47] Similarly, quality of life can be severely affected by exposure to risks such as chemical hazards, natural dangers, or urban violence. The fair distribution of these factors is as much a social issue as it is a moral issue. This is why equity is commonly claimed as social *justice*, an appeal to ethical values and principles.

In the context of food security, the claim for equity is commonly related to building a fairer food system and ensuring people's rights over the resources they need. This is present, for instance, in the food sovereignty movement mentioned before. The organization known as La Via Campesina and others that advocate for food sovereignty argue not only for an equitable distribution of wealth and land, but also for a shift in the huge imbalance of power in the society.[48] The distribution of power is as much a cause as it is a consequence of the distribution of resources. As some actors concentrate ownership over resources such as land and government subsidies, they gain power (economic power in the form of wealth, political power in the form of lobby influence, etc.). This power, in

[46] Poppendieck, 2000
[47] See World Health Organization, 1947, for the recognition of such needs in its constitution.
[48] La Via Campesina, 2003

turn, grants such actors a facilitated access to resources, in a vicious cycle that favours inequity.

Concentration of power and resources clearly hampers effective societal governance. If a few actors concentrate the power to shape food systems in their favour, the majority is left in disadvantage with virtually no control over the processes and dynamics that affect them. This is especially true if such actors are not properly accountable, i.e. if the people do not count with effective means to reclaim their rights. Therefore, the concept of equity is inherently connected to the ideal of participatory democracy, as it demands that power and control be distributed in the society.[49]

There are two main reasons which make equity necessary to sustainable food security. First, food insecurity is taking place in a world of abundance. Therefore, the unequal distribution of power and resources bear a major responsibility for food deprivation. In an equitable system, wealth, land, and adequate food are fairly distributed in order to meet the needs of all, i.e. we make the best use possible of the resources we have. Thus, by optimizing accessibility to adequate food, equity proves to be also an efficient way of tackling food insecurity.

With abundant resources, however, we might still be able to feed everyone properly even without equity. This seems to be the goal of those who encourage the enhancement of food production without addressing the problem of inequality.[50] But such a state of food security would still be part of an unfair, undemocratic, and ethically dubious system. The efforts to feed everyone should not neglect ethical imperatives or other public needs. As highlighted before, people also need – and have the right to – medical care, proper housing, civic and political participation, and so forth, and these are all hampered by inequity. Therefore, we must seek food security in a way that assists in the meeting of such other needs, through food systems that promote not only adequate food, but also social justice.

Social integrity refers to the qualities that help build social capital in a community. They are social features also promoted in the concept of healthy communities, such as civility, strong sense of community, and high degree of public

[49] See Institute for Democracy and Electoral Assistance (IDEA), 2007
[50] See Borlaug, 2004

participation.[51] Dale highlights that to build social capital we also need strong cultural and spiritual values. These would, along with solidarity, enhance the feeling of connectedness among people, thereby promoting cooperation in the society.[52]

One important element of social integrity is the food culture, i.e. the very specific relationships each society has created between culture, religion, and eating habits.[53] This involves not only the modes of consumption, but also the choice of what is produced and how it is produced. It comprises a diversity of practices that are present at every stage of the food chain, from agricultural practices to processing methods, cooking styles and taste preferences.

Because different food cultures developed in ways that are associated with distinct plant and animal species, their preservation also favours that of biodiversity. This along with a diversity of practices, leads to food diversity, which naturally brings aesthetic and taste variety without the need of artificial additives. These factors are responsible for mental and social satisfaction related to food consumption. As seen before, this requires culturally-appropriate food, which for its turn depends on the integrity of food cultures. Therefore, the same efforts to provide culturally-appropriate food should also promote – instead of undermine – this aspect of social integrity.

Vibrant food cultures can play an important role in ensuring health. As the World Health Organization states, good nutrition demands micronutrients which should be obtained through a diverse diet[54], and this comes naturally in the presence of biodiversity and a diversity of practices. One could argue that such nutrients can be added later during the processing or through genetic engineering. However, the side effects of these processes on the environment and on human health are highly debatable.[55] Moreover, such an "artificially-added" diversity does not contribute to biodiversity or to the food culture traditions, since the process is controlled by the food industry.[56]

A food culture is often associated with traditional livelihoods. They strengthen the cultural identity of a society and thereby foster a sense of connectedness among the

[51] Hancock, 2000; Murray, 2000; Wolff, 2001; and Ontario Healthy Communities Coalition, 2003
[52] Dale, 2005
[53] Adapted from Shiva, 2000
[54] See World Health Organization (WHO), 2006a
[55] Ontario Public Health Association, 2001; See Séralini, Cellier, and De Vendomois, 2007, for indications of toxicity in genetically-modified maize
[56] Shiva, 2000; Halweil, 2004

people – a key element of social integrity. In addition, they help preserve traditional agricultural practices, such as soil management, water use, intercropping methods, etc.[57] As such, food cultures and traditional livelihoods contribute to sustainable food security in more than one way; not only by allowing for the cultural satisfactions of eating, but also by preserving the integrity of rural environments.[58]

Finally, social integrity contributes to food security as it strengthens the bonds among different social actors, creating an environment of connectedness and cooperation. The stronger the social bonds between consumers and farmers, the more likely they are to care about the living conditions of the others (e.g. about the sort of food being provided to consumers, the income level of farmers).[59] This connectedness also motivates awareness about every part of the food system. This means, for instance, consumers who are concerned not only about food quality and prices, but also about rural labour conditions, the sustenance of farmers, and environmental impacts that may affect other populations. Ultimately, this sense of connectedness promoted with social integrity is likely to make citizens more concerned about each others', what consequently stimulates action towards food security.

In contexts of low social capital and pre-eminence of individualism, people are likely to ignore problems which do not affect them. On the other hand, when social integrity is present, the sense of community and connectedness naturally gives birth to mutual support, in the form organization, networking, and cooperation.[60] This helps overcome not only food insecurity, but also poverty, inequality, and any other problem that can be mitigated by joint efforts.

[57] There can be traditional, environmentally harmful practices. However, as Forsyth points out, people adopting traditional livelihoods usually have an acute awareness of the social and ecological consequences of their practices, for their very sustenance often depends on it. (Forsyth, 2003) Moreover, these farming systems are typically oriented towards short- and long-term subsistence, which often puts them in tune with sustainability principles.

[58] The preservation of traditional farming practices is part of the concept of "multifunctionality of agriculture", which sees it as more than just food production. From this point of view, agriculture is also related to the preservation of natural areas, of landscapes, and also of the traditional livelihoods that give support to food cultures. (World Trade Organization, 2007)

[59] Kneen, 1995

[60] Dale, 2005

### 2.3.4. Sustaining life-support systems

As the FAO definition of food security highlights, food needs to be available to all people, *at all times*. Although the organization uses the term to require the *stability* of food access[61], it should also include long-term considerations. This cannot be achieved without paying attention to the integrity and the life-supporting functions of ecosystems. In other words, only a sustainable food system can stand in the long-term, meeting people's needs at all times, those of present and future generations.

Natural systems operate through a complex dynamics of processes involving: temperature regulation, rain patterns, water and nutrient cycles, maintenance of atmospheric conditions, biological control of species populations through competition and predation, among others. These processes depend on the biotic and abiotic components of ecosystems, i.e. both on the biodiversity and on the physical conditions of the environment (chemical composition of the soil, of water bodies, temperature, sunlight availability, etc.). All these factors interact in a complex manner in nature, an interaction which evolution has brought to the present stage. Complex systems approaches to ecology have showed that such interaction in ecosystems is not characterized by constancy and equilibrium, but by continuous change.[62] However, it is still possible to talk of *ecosystems integrity or health*, referring to the conditions that allow such ever-changing interactions to keep performing their life-supporting functions.

Food production requires the protection of the integrity of ecosystems. Global climate change is a particularly salient example of the importance of this point. According to the Intergovernmental Panel on Climate Change (IPCC), rain-fed agriculture is expected to lose up to 50% of its productivity by 2020, and this is mainly in areas that already experience severe food insecurity, such as Sub-Saharan Africa.[63] Even in industrial agriculture, production is largely affected by temperatures, soil conditions, and other biophysical traits. Biodiversity, for instance, is a key aspect, as it makes plants more resistant to pests and weather variations. It is important even for monocultures, as the development of new varieties depend on cross-breeding with wild ones.[64]

[61] Food and Agriculture Organization (FAO), 2006a
[62] Kay and Schneider, 1994
[63] Intergovernmental Panel on Climate Change (IPCC), 2007
[64] De Boef, 2007

As such, this environmental component is essential for food systems that meet food needs without compromising those of future generations – the main point of sustainability. It means guaranteeing not only the potential for food security in the future, but also the conditions for the fulfillment of cultural, spiritual, educational, and aesthetic needs associated to natural areas.[65]

### 2.3.5. Creating conditions for appropriate choices

This conceptualization of food security has so far embodied principles related to access to adequate food, social requirements for a healthy food system (equity and social integrity), and the sustenance of natural systems. Yet there are some other elements which should be considered.

The definitions of food security which talk of accessibility seem to rely on the assumption that consumers will always make use of such an access, but that is not necessarily true. For example, those who are food-insecure as a result of unhealthy diets often have access to adequate food and do not avail themselves of it. Therefore, we must acknowledge the existence of some factors that influence their choices.

Education is one of those factors. In a context where many foods are available, consumers need to be capable of distinguishing which are best to their health. Similarly, they need to be educated about the functioning of the food system in order to make informed choices and, thereby, support socially- and environmentally-friendly food production, processing, and trade.[66]

Another important factor is the relative accessibility (physical and economic) of adequate foods in comparison to others. For example, in some parts of the world, fat, energy-dense, and highly processed foods are often cheaper than fresh, more nutritious ones. This may be a crucial factor when deciding what to eat, particularly for those with a limited income. In addition to the price difference, there is also the issue of physical accessibility. In North America, for instance, low-income neighbourhoods are likely to have a high number of fast-food outlets and convenience stores, whereas grocery stores are less accessible.[67]

[65] Orr, 2004
[66] Adapted from Dale, 2001, p.71
[67] Block et al, 2004

The European Association for the Study of Obesity (EASO) has coined the term "obesogenic environments" to describe contexts that stimulate the consumption of unhealthy foods. They include, *inter alia*, relatively inexpensive prices, easy physical access, inadequate nutritional education, and also a whole culture of convenience foods and unhealthy eating habits. Such a culture is strongly supported by food industries through advertisement and propaganda, used not only to seduce consumers, but also to create in children the taste and the interest for their products.[68]

Food security became an issue because of problems caused by malnutrition. Access to adequate food can, indeed, overcome this problem. However, there is a difference between "having access to adequate food" and "accessing adequate food". The increasing occurrence of diet-related chronic diseases makes evident that the former is not sufficient to ensure healthy eating or an active life. Therefore, it is necessary to have more than just accessibility to adequate food. People need the conditions to make appropriate choices in a supportive food environment, i.e. one that favours and stimulates consumers' choices for foods that meet the social, environmental, and adequacy requirements discussed so far.

First, there should be conditions for making informed choices, i.e. food education and awareness about the functioning of the food system (e.g. its effects on social equity, the environmental costs of food production). Only then people can make informed decisions and change their attitudes accordingly, as individuals and as a society. At the personal level, this may include choices for healthier diets, fair-trade products, and foods produced in environmentally-friendly ways. At the societal level, such an attitudinal change can result in public pressure to creating healthier food systems, through civic and political participation.

Second, a supportive environment should provide better relative physical and economic access to adequate food, as opposed to other foods. In practical terms, this means better prices and a stronger presence, in stores and eateries, of food that meets the adequacy, social, and environmental criteria discussed before.

Third, a supportive environment needs to be embedded in a culture that raises people's interests in their own health and in that of the food system. The Slow Food

[68] European Association for the Study of Obesity (EASO), 2002

Movement, for instance, has been a promoter of such a culture. The movement proposes that consumers be involved with food production and preparation, if not directly, at least being concerned about the way it happens. That would be also a culture of appreciation for the social and cultural meanings of food – a strong contrast with the fast-food culture.[69] That would promote social integrity and motivate interest and care for the food system (e.g. the way food is produced, its processing or preparation). With such attitudes, people would probably be more likely to contribute and safeguard food security, staving off threats to the health of their food system (such as in the form of policy changes).[70]

This section has argued that potential access to adequate food is not sufficient to guarantee food security in its broader sense. It requires that individuals and communities actually make use of such potential. This depends on cultural, educational, and structural factors such as government policies and market dynamics.

## 2.4. Achieving a Broad Understanding: Definition and Criteria

A broad understanding of food security includes proper availability of and access to healthy and culturally-appropriate food, as well as concerns with the integrity of human communities and of the natural environment. The food environment should also facilitate action towards those goals, and foster interest, awareness and consciousness about the quality of the food system. This would make the society more involved and prone to promote and maintain a sustainable food security.

Thus, a state of sustainable food security exists when:

1. All people have stable physical and economic access to healthy and culturally-appropriate food.
2. The food system respects and promotes equity and social justice, strengthening social integrity.
3. The food system contributes to biophysical sustainability. It promotes biodiversity and ecosystems integrity.

[69] Slow Food, 2008

[70] Such an attitude would also make people more likely to contribute to the solution of other problems such as poverty, social inequity and global climate change. In addition, there is an important educational factor. Having people interested and involved in achieving food security means raising social and environmental literacy. They would also feel that their engagement matters and can bring about results, which is crucial for governance.

4. Consumers have a food environment with favourable conditions to choosing foods that meet the three criteria above.
5. People make choices and have attitudes that are beneficial to the promotion of sustainable food security.[71]

This broad and inclusive conception is obviously an ideal state. As we set personal health as a goal that we strive for, the same can be done for the health of food systems.

Those criteria can be summarized into the following definition:

*Sustainable food security exists when all people have and exercise a stable access (physical and economic) to healthy and culturally-appropriate food, in a food system that contributes to biophysical sustainability, social integrity and social justice, and which offers favourable conditions for attitudes and choices that help promote these goals. Finally, the people must indeed have such attitudes and make such choices.*

It must be up to each society to establish a hierarchy among the criteria. Cultural, moral, and spiritual values will be determining factors in this process. A society that esteems nature's integrity more than people's health may refuse to damage ecosystems even if this means living undernourished. In this case they would be putting Criterion 3 at a higher place than Criterion 1. In another society where different values ground people's decisions, the provision of adequate food to everyone may be considered more important than social equity. In this case, the society would be ready to feed people through ways that increase inequity if there is no alternative, such as in an emergency or crisis (which means giving priority to Criterion 1 over Criterion 2). Whatever the weight a society gives to each of the criteria, they should all be present in a state of sustainable food security. Therefore, as the study has argued, the efforts to meet one of them should not hinder, but support the efforts towards the others.

Almost all the literature used in this chapter portrays a "First World", Western perspective on food security, mainly from Europe and North America. Significantly, a

[71] As the supportive environment required by Criterion 4 must preserve freedom of choice, people may either choose in favour of food security or not. For instance, if they prefer unhealthy foods despite favourable conditions to the adoption of healthy diets, they may experience the harms of malnutrition and be food-insecure. Education and culture certainly play a significant role in these choices. Therefore, in addition to the other four criteria, a state of sustainable food security also needs that people's choices and attitudes be indeed in favour of it.

"critical" political ecology (as that of Forsyth, 2003) has claimed that arguments, actions and even science are naturally biased by interests, personal perspectives, and assumptions. Therefore, in order to test and enhance the food security criteria developed here, this study has applied them in the field. This has consisted of an examination of two distinct communities (Waterloo Region, Canada; and Feira de Santana, Brazil) with reference to each criterion. Chapters 4 and 5 will explore this in detail. But before narrowing down to the community level, it is worthwhile to examine the current global agri-food system to which they are subject. This is the topic of the next chapter, which also analyzes the realities of Canada and Brazil with regard to food security.

# Chapter 3: Canada and Brazil in the Global Agri-food Context

## 3.1. Introduction

The rise of industrialization, capitalist economics, and globalization has caused profound changes in human societies and their food systems. These phenomena have fostered the replacement of local, traditional food systems for larger, agro-industrial, and profit-oriented ones, leading to a global agri-food system of increasing exports, trade, and international policy-making.

This chapter provides a brief picture of such a system, describing the global agri-food dynamics to which local communities are subject. It devotes particular attention to the contexts of Canada and Brazil, discussing differences and similarities in their states of food insecurity and in their approaches to overcome it.

## 3.2. Food Security and the Global Agri-food System

The current global agri-food system, with its focus on industrial production and capital accumulation, has its roots in 16th-century England, where the rise of capitalism gave birth to new forms of exchange and relationships based on competition and profit-maximization. These imperatives compelled landlords to enhance food productivity and meet market demands, starting a trend towards industrialization and consolidation in agriculture.[72]

As capitalism continued to develop in England, agriculture became more and more attached to market imperatives. This led to the growth of the urban population, as the new model of production created a mass of propertyless people driven away from rural areas.[73] Capitalist ideas of competition and constant improvement spread across other regions and gradually shaped other European food systems. The model was uniquely productive, and substantially increased England's wealth, influence, and power. In North America, despite some reliance on small-scale, family farming, the English colonies too started adjusting their activities to market demands. Other European powers

[72] Wood, 2000
[73] Norberg-Hodge, Merrifield and Gorelick, 2002, p.5

such as France, Portugal, and Spain soon adopted capital accumulation as an imperative, and they all shaped the modes of organization in their colonies accordingly.[74]

Later, colonialism gave way to imperialism, which boosted the expansion of capitalist practices worldwide. As European powers gained control over regions in Asia and Africa, they also replaced traditional systems for market-oriented agriculture. In other words, European countries promoted their own economic model worldwide. As part of it, they fostered an agro-industrial model based on cash crops, constant improvement, and profit-maximization.[75]

Despite a substantial international trade, it was not possible to talk of globalization before the 20th century. In that century, especially after World War II, the free-trade policies and multinational corporations rendered countries more interdependent than ever before. Multiple forms of state protectionism (tariffs, import quotas, export subsidies, etc.) started to be seen as trade barriers, and therefore dismantled. As a consequence, not only food trade, but also national food policies (e.g. farm bills) and food production have become increasingly influenced by the global market imperatives.[76]

### 3.2.1. An overview of global food market

The global food market has continuously expanded, following the growth of global food production. Despite some authors' warnings about the risks of food shortages due to resources depletion and population growth[77], world agricultural output has continued to increase.[78] World agricultural production experienced an annual growth of 2.2% in the 1996-2006 period.[79] For instance, cereals production alone has risen to more than 2.1 billion tonnes in 2007. Even if not all of that goes to human consumption, these numbers still illustrate a substantial growth in agricultural outputs and capacity for food production.[80]

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[74] Wood, 2000
[75] Wood, 2000; Norberg-Hodge, Merrifield and Gorelick, 2002, p.5
[76] Clapp, 2005 and 2006
[77] See Brown, 2004
[78] Food and Agriculture Organization (FAO), 2007b
[79] Food and Agriculture Organization (FAO), FAOSTAT, 2008
[80] Food and Agriculture Organization (FAO), 2007c, p.8. See it for output numbers of other agricultural commodities.

The FAO estimates the current value of world food production to be around 1.5 trillion dollars, three times higher in real terms than it was less than 50 years ago, in the early 1960s.[81] This accounts for both the increase in agricultural outputs and the larger presence of value-added products. Thus, agriculture has played an increasingly significant role in the global economy. In terms of international trade, food accounted for a US$ 745 billion dollar market in 2007 – some 21% more than the previous year and the highest level on record.[82]

### 3.2.2. Impacts of global food dynamics on food security

Local communities worldwide have been subject to the dynamics of such an expanding global agri-food system. They include not only trade and market forces, but also influences on domestic policy-making, food cultures, and social behaviours. Increasing trade liberalization brought on by the World Trade Organization (WTO), the Organization for Economic Co-operation and Development (OECD), and other multilateral institutions has intensified such influences, as well as the volume of global food trade. This has increased economic interdependence among countries, and shifted most food systems towards export markets. Although the WTO, the OECD, and some authors have argued that expanded global food trade and further liberalization are beneficial to food security[83], critics have highlighted a number of negative impacts from such trends.

The last section showed that the global food system has substantially increased food production and trade, arguably increasing efficiency and raised food safety standards.[84] Some authors suggest that it has also helped alleviate poverty and hunger in the world, by increasing agricultural outputs.[85] However, as early critiques in the 1980s showed, food production alone cannot overcome food insecurity. Critics of the global agri-food system today highlight the fact that about 850 million people remain undernourished despite the enormous quantity of food produced and traded. And as a

[81] Food and Agriculture Organization (FAO), 2007b, p. 120
[82] Food and Agriculture Organization (FAO), 2007c, p. 6
[83] See Messerlin, 2005; Organization for Economic Co-operation and Development (OECD), 1997; and World Trade Organization (WTO), 2002
[84] Personal interview with Délio Barbosa, public health official and former director of sanitary inspections in Feira de Santana, Feira de Santana, fall 2007
[85] Borlaug, 2004

quick comparison between FAO reports from 2000 and 2006 reveal, that number is not decreasing, but increasing.[86] Thus, some authors point out the unequal access to food and the unfair distribution of capital in today's world, criticizing the global agri-food system on the grounds of equity and social justice.[87]

Critiques of the inequity in food systems often highlight the increasing consolidation in agriculture.[88] A few corporations have gained control over food production and through the food chain, making use of vertical and horizontal integration in order to expand their activities.[89] They become more competitive and start to accumulate power, at the expense of smaller players such as family farmers.[90] This has increased inequity by concentrating capital and ownership. Similarly, it has hampered governance by exerting control over food prices, the kind of food being offered, production and processing. These corporations also possess political and ideological power, used to influence consumers, policy- and decision-making processes (by lobbying on farm bills, for example).

Another critique has been with respect to the changing diets of societies in recent decades. The World Health Organization (WHO) suggests that there has been "a global shift in diet towards increased intake of energy-dense foods that are high in fat and sugars but low in vitamins, minerals and other micronutrients". The organization recognizes this as a major cause for overweight, obesity, and associated chronic diseases such as cancer and type II diabetes.[91] It has been suggested that much of that is due to the current food

[86] See Food and Agriculture Organization, 2000, and Food and Agriculture Organization, 2006b
[87] See, for instance, Halweil, 2004; Norberg-Hodge, Merrifield, and Gorelick, 2002; Shiva, 2000; and Lappé et al, 1998
[88] A good measurement of that is the number of farmers, which has decreased as agriculture becomes industrialized and more concentrated in larger farms and fewer hands. The United States had almost 7 million farmers in the 1935, and less than 1,9 million nowadays; Canada lost about three-quarters of its farmers between the 1941 and 1996; and in Europe, the six founding countries of the Common Agricultural Policy (CAP) had about 22 million farmers in 1957, and only 7 million in 1998. (Norberg-Hodge, Merrifield, and Gorelick, 2002, p.7)
[89] Horizontal integration consists of that on the same stage of the food chain, whereas vertical integration is that including multiple stages. Heffernan, 2000
[90] Those agri-food corporations are able, for example, to stay in business on very low profit margins, since they operate in a large scale. Other examples of their power are: the large share of government subsidies that they usually enjoy, and which allows them to sell for less than the cost of production; and their ability to cross-subsidize their activities, and allow some of their branches to stay in business even when experiencing major losses. (Heffernan, 2004, p.67)
[91] World Health Organization (WHO), 2006b. See also Smil, 2002

system structure, largely focused on industrial monocultures, highly-processed products, and convenience foods.[92]

Such a food system structure, particularly its reliance on large-scale, chemical-intensive monocultures and long-distance transportations, has also posed serious harms to the natural environment.[93] Critics suggest that contemporary food systems have thereby contributed to biodiversity loss, soil depletion, air and water pollution, and global climate change, as well as disrupted important ecological cycles that used be part of traditional farming.[94] According to some authors, the non-internalization of these environmental costs into food prices has been a major reason for the economic success of agro-industry and their competitive advantage over smaller farmers.[95]

Finally, the global food system has taken control from countries and local communities over the various stages of the food chain. This has arguably reduced weather risks in agriculture, as most communities can source food from other places in the event of a lost harvest. At the same time, vulnerability to market fluctuations and food safety scares have increased; in this latter case, due to intensive farming and the centralization of processing and distribution.[96] Furthermore, contemporary food systems have supplanted traditional livelihoods and removed much of the control over food policies from local communities, which has given rise to the whole movement around food sovereignty.[97]

These are all influences that contemporary, global food dynamics have had on local communities and their state of food security. Next section looks at the particular contexts of Canada and Brazil, paving the way for the in-depth analysis of the case studies in Chapter 4.

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[92] Pollan, 2006 and 2008
[93] Altieri, 2000
[94] A common example is that of livestock farming. Traditionally, farmers would feed livestock without external inputs, and use its manure as fertilizer. In the industrial food system the cycle is broken: crop farmers need chemical fertilizers, and livestock farmers need to get rid of animal waste. As Wendell Berry puts it: "The genius… of farm experts is very well-demonstrated here: they can take a solution and divide it neatly into two problems". Norberg-Hodge, Merrifield, and Gorelick (2002), p. 41. See also Foster and Magdoff, 2000
[95] See Norberg-Hodge, Merrifield, and Gorelick (2002), p. 72
[96] Pollan, 2006
[97] See Douthwaite, 1996, Hines, 2000; and Menezes, 2001

## 3.3. The Contexts of Canada and Brazil

Much of the global dynamics described above are present in the context of Canada and Brazil, as both countries have widely adopted agro-industry and embraced the globalization of food trade. This has happened, however, to different extents and in different ways. Although Brazil is now a major food producer and the second largest food exporter in the world (only after the United States)[98], most food consumption in the country comes from family agriculture.[99] Canada is also a major food exporter (3rd), but it is much more integrated into the global food system in terms of consumption. For instance, the country imports 80% of all fruit it consumes.[100] If on the one hand this is due to the Canadian biophysical conditions limit food production, on the other hand it is due to a stronger presence of agro-industrial structures and conventional farming in that country.

Brazil and Canada are thus both nested in the global agri-food system, which affects the relative food security of their communities.

### 3.3.1. The state of Canadian food insecurity

According to the FAO, Canada is among the countries with the lowest levels of food insecurity in the world, having less than 2.5% of its population suffering from hunger or undernourishment, i.e. fewer than 800,000 people in a total population of about 31 million.[101] Statistics Canada, however, points out that food insecurity affected as much as 10% of Canadians in the years of 1998 and 1999, about 3 million people. In most cases, these were residents of low-income households, residents or households relying on social assistance, single-mother families, or aboriginal peoples. Moreover, children seem to be even more vulnerable to food insecurity, with rates that reached 14% of the Canadian population.[102]

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[98] Organization for Economic Co-operation and Development (OECD) and Food and Agriculture Organization (FAO), 2007, p. 39
[99] Personal interview with Albertino Carneiro, regional director of CAR (Company of Regional Action), a Bahia State agency working with agriculture and rural development, Feira de Santana, fall 2007
[100] Xuereb and Desjardins, 2005, p. 12
[101] Food and Agriculture Organization (FAO), 2006b
[102] Statistics Canada, 2001

Despite such a relatively good performance, the picture of Canadian food insecurity would change substantially if it included overweight and diet-related illnesses.[103] Today, the majority of Canada's adult population is overweight, and 1 out of 5 Canadians is obese.[104] Statistics Canada suggests that "more than one quarter of Canadians get more than 35% of their calories from fat, the threshold beyond which health risks increase". Moreover, this is a problem that seems to increase along with income-level, unlike food deprivation.[105] Within Canada, Québec children eat the most nutritious food, e.g. more fruits and vegetables, fewer snacks and less fast-food. Unfortunately, this is somewhat undermined by the fact that those children are consuming twice the calories from fat than the national average.[106]

### 3.3.2. The state of Brazilian food insecurity

Brazil is home to 14 million hungry or undernourished people, the equivalent to 8% of its total population (about 190 million). As in Canada, food insecurity affects mostly the poor, who, in Brazil, are concentrated in the North and Northeast regions. Moreover, given that most of the poor are black[107], we can also identify a systemic racial element to the problem.[108]

These numbers reveal a significant difference between Canada and Brazil. Yet they do not tell everything, for there different degrees of food insecurity. The 3 million undernourished Canadians and 14 million undernourished Brazilians do not actually experience the same phenomenon. According to a FAO report on the "depth of hunger", the undernourished Canadians have an average deficit of 130kcal/day, while undernourished Brazilians lack an average of 250kcal/day. It means that, quantities aside, food insecurity in Brazil is still twice as harsh as it is in Canada, implying more serious

[103] Young, 2004
[104] Statistics Canada, 2004
[105] Statistics Canada, 2006, p.2
[106] Statistics Canada, 2006, p.9
[107] It is important to remark that, unlike countries such as the United States, Brazil does not apply a bipolarized classification of blacks and whites. The Brazilian society is highly mixed and multi-ethnical, in a way that many people will have Caucasian *and* African ancestors. Therefore, "race" will be something gradual and frequently hard to determine among Brazilians. It most of the times depends on physical traits, not on origin. For statistical purposes, Brazil has used self-report as a way to put its population into 5 categories, literally translated as: Whites, Blacks, Browns, Indians, and Yellows (Chinese, Japanese, and others with physical traits from East and Southeast Asia).
[108] United Nations Development Programme (UNDP), 2005

health and social consequences (e.g. greater vulnerability to diseases, less energy for activities and engagement, and more suffering).[109]

Despite an adequate food supply, skewed distribution of land and wealth still hampers food security in Brazil.[110] [111] In this country, the richest tenth of the population receives approximately half of all the income. The poorest 40%, for their turn, get only 9% of that – with a mere 1% increase between 1981 and 2004.[112] Moreover, about half of the productive land in Brazil remains in the hands of 1% of its people.[113]

This scenario of food deprivation has not prevented obesity from becoming a problem at least as serious as undernourishment in Brazil. About 40% of the adult population is overweight, and more than 10% are obese.[114] These numbers have risen dramatically in recent decades, especially among higher-income sections of the population. Thus, the highest incidence of obesity and overweight is in the South and Southeast regions, the richest areas in the country. There, more than 45% of the adults are overweight, in contrast to the less than 35% in the north-eastern state of Bahia.

### 3.3.3. Canadian and Brazilian approaches to food security

Approaches to promoting food security vary according to historical backgrounds, economies, ecosystems, and social characteristics, which create distinct understandings of it. The Government of Canada has expressed its concerns with respect to food security through an Action Plan, where it embraces the FAO definition and highlights other goals such as sustainability, poverty reduction, and social justice. The plan also stresses

[109] Food and Agriculture Organization (FAO), 2000
[110] Food and Agriculture Organization (FAO), 2006b
[111] The concentration of land in Brazil has deep historical roots. By the early decades of 1500s, Portugal initiated the colonization of that recently-discovered land, fostering the establishment of large properties (*latifúndios*). After the Brazilian independence in 1822, such discrepancy persisted, as the empire (then a Brazilian Empire government) favoured powerful landowners. Even the abolition of slavery (1888) and the rise of the republic (1889) were not able to solve the problem. Only in the mid-20th century initiatives towards land redistribution started to arise, in the form of peasant organizations and governmental institutions. However, such fledgling movements were promptly mitigated by the military that took over the government in 1964 and established a twenty-year dictatorship. That period was marked by a close relationship between powerful landowners and politicians, and only in the 1980s, with the re-democratization of the country, the issue of land redistribution gained more attention on the government agenda. Since then, both the state and the society have become increasingly concerned about this question, broadly referred to as the *agrarian reform*.
[112] Maia, 2006
[113] Montero, 2005
[114] Instituto Brasileiro de Geografia e Estatística (IBGE), 2004

meaningful consideration of traditional knowledge and livelihoods as contributors to food security, such as those of family farmers and native communities. [115]

Canadian approaches have often taken such socio-environmental concerns into account, and fostered agricultural activities that are both productive and sustainable. This is seen, for example, in some regional government plans in Ontario, such as Halton[1] and Waterloo[2]. Another important aspect of Canadian perspectives on food security is its long tradition of family farming and vibrant rural communities. Therefore, Canadian approaches have often highlighted how agri-business and urban sprawl led to the decline of those valued communities.[116]

Brazil, on the other hand, has taken a somewhat different approach to food security. Because it faces much more poverty and malnourishment than Canada, a much stronger emphasis is placed on feeding the needy than on building healthy food systems. According to the FAO, the number of food-insecure Brazilians is now 25% smaller than 15 years ago, in the early 1990s, but this progress has not shifted that emphasis. Recent programmes to redistribute wealth and eradicate hunger such as Family Grant (*Bolsa Família)* and Zero Hunger (*Fome Zero)* are good examples of such a focus. Together, they have contributed to bringing millions of Brazilian families out of poverty.[117] Another important initiative is the National Programme of Family Agriculture Strengthening (*Programa Nacional de Fortalecimento da Agricultura Familiar* – PRONAF), which fosters social development and a sustainable, diversified food production.[118] Many of the hungry, poor, and powerless live in rural areas of Brazil, hence the proximity between the food security debate and those around rural development and land reform.

Following the growth of international concerns which led to the World Food Summit in 1996, the Government of Brazil gave food security a higher public policy profile in the 1990s. The country now has a National Council of Food and Nutritional[119]

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[115] Agriculture and Agri-Food Canada, 1998
[116] See Kneen, 1995
[117] Conselho Nacional de Segurança Alimentar e Nutricional (CONSEA), 2007b; Food and Agriculture Organization (FAO), 2006b
[118] See Programa Nacional de Fortalecimento da Agricultura Familiar (PRONAF), 2002
[119] In Brazil, most initiatives and programs prefer the term "food *and nutritional* security" instead of simply "food security", in order to emphasize that people should not only eat sufficiently but also be well nourished.

Security (*Conselho Nacional de Segurança Alimentar e Nutricional* – CONSEA), and similar councils exist at the state and municipal levels. Brazil's initiatives emphasise the importance of food nutritional quality and the need for public education with respect to healthy eating habits. Moreover, they embrace food sovereignty as an essential element, stating that policies and actions should favour both Brazilian agro-industry and local food cultures.[120] An example of that put in practice is a national program called Kitchen Brazil – Intelligent Eating (*Cozinha Brasil – Alimentação Inteligente*), which trains people in preparing foods by making the best use of typical ingredients and following local food cultures.[121]

As in Brazil most state action on food security comes from the national government, all those federal initiatives play a major role in determining the state of food security in local communities.

## 3.4. Conclusion

Global Food systems have shifted towards agro-industrial processes and market-driven dynamics. This new form of agriculture has increased outputs and made more food available. Yet it has also negatively impacted food security in a number of ways. Contemporary food system dynamics have hampered equity, caused damage to natural systems, and driven consumers towards unhealthy eating habits.

Both Canada and Brazil have experienced food insecurity in the form of deprivation and overconsumption. Food deprivation is more common in Brazil, while overconsumption is more of a problem in Canada. Each country has taken its own approach to tackle food insecurity, usually along the lines of international organisms (the FAO, in special), but adding particular concerns and focuses that match their contexts and understandings of food insecurity. In the case of Canada, this is for instance reflected in its concerns with the health of rural communities, whereas in Brazil we can identify a more visible preoccupation with feeding the hungry and preserving local food cultures. The next chapter examines in-depth a community in each country, and assesses their state of food security with regard to the five criteria created earlier.

[120] Conselho Nacional de Segurança Alimentar e Nutricional (CONSEA), 2007a
[121] Ministério do Desenvolvimento Social e Combate à Fome (MDS), 2006a

# Chapter 4: A Comparative Examination of Waterloo Region and Feira de Santana

## 4.1. Introduction

Waterloo Region (Ontario, Canada) and Feira de Santana (Bahia, Brazil) are two regions that face very different challenges with respect to sustainable food security, yet there are some similarities. The following overview of each community, with historical and geographical information helps contextualize each area's food systems. Field observations and key-informant interviews provide primary evidence and an understanding of food security within the local contexts. Finally, a comparison between the two food systems using the food security criteria developed in Chapter 2 highlights the similarities and differences between the two communities. That will allow this study to identify challenges to local food security promotion and draw from their initiatives in order to provide recommendations.

## 4.2. An Overview of Waterloo Region in the Context of Food Systems

Waterloo Region is located in Southwestern Ontario, in the Great Lakes region of Canada. It spreads across 1,382km$^2$, and comprises three cities (Waterloo, Kitchener, and Cambridge) and four rural townships (North Dumfries, Wellesley, Woolwich, and Wilmot).[122] Altogether, the region is home to more than 500,000 people.[123] (See Appendix I, Map 1)

Waterloo Region has a long history of farming. The first to practice it were the local aboriginal peoples (Huron, Iroquois, and others), who started agriculture in this region before the arrival of Europeans.[124] These foreign settlers arrived in the early 1800s, mainly German-speaking families coming from Europe and the United States. These first immigrants included primarily Mennonite and Amish peoples, whose religious beliefs committed them to traditional, small-scale farming practices and simple

[122] Region of Waterloo, 2003b
[123] Region of Waterloo, 2007a
[124] Government of Ontario (Canada), 2007

livelihoods (such beliefs still sustain them in these practices today).[125] They contributed to making the region (then called Waterloo County) a flourishing farming area, which had in agriculture its main activity.

Still in the 19th century, the county was supporting farmers in several ways, such as financing agricultural fairs, strengthening rural organizations, and buying seeds from bad harvests.[126] Economic growth and technological development marked the 20th century, modernizing agriculture and increasingly connecting the local food system to activities in other parts of the country and of the world. This ultimately led to the integration of Waterloo within the current global agri-food system, whose implications to the region are discussed later in the chapter. Nevertheless, small-scale farming has still persisted, strongly supported by the Mennonite and Amish traditions.

Waterloo County became Waterloo Region in 1973, shifting its organizational structure in accordance to a provincial decision, and reaching the current configuration of seven municipalities.[127] A regional council became a local policy- and decision-making body for the combined cities and townships, which retained their own local jurisdictional authority. Jurisdictional responsibilities with respect to food are now shared by different levels of government. As a "creature of the province" and subject to the constitutional authority of the provincial government, Waterloo Region is subject to decisions taken at the upper level, but the regional government creates its own policies with reference to public health, social services and other areas linked to food security.[128] Cities and townships are responsible for zoning and regulating local markets and commercial food services.

Waterloo is among the fastest growing regions in Ontario and in Canada. It is connected to important transportation networks, which adds to accessibility to many North American markets. High-tech industry and the services sector have grown, but the

[125] Mennonites and Amish consist of Protestants from the Anabaptist movement in the 16th century, some of who migrated from Europe to the United States and later to Canada. They preserve a number of habits concerning faith and daily life, specifying standards for clothing, for practicing religious rituals, etc. The more conservative streams are called "Old Order", and they may be very strict in their livelihoods. For instance, many of them reject modern conveniences, such as telephone and electricity. See Third Way Café – Mennonite Media, 2007
[126] Region of Waterloo, 2007b
[127] Region of Waterloo, 2007b
[128] Region of Waterloo, 2007c

local agro-industry remains strong and economically important – particularly in the production of meat, grains, and dairy foods.[129]

This information portrays the larger context of development in Waterloo Region, its historical trends and geographical features that help understand challenges and possibilities for local food security. As the examination will reveal, much of this broader context is reflected in that local food system.

## 4.3. An Overview of Feira de Santana in the Context of Food Systems

Feira de Santana is located in Bahia, the largest and most populated state of the Northeast Region of Brazil. The division of Brazil in regions is not only geographical, but also political. Each of the five regions has their own cultural, economic, biophysical, and social distinctions, what makes of Brazil a very heterogenic country.[130] (See Appendix I, Map 2)

Feira de Santana finds itself in a transition region within Bahia, the *agreste*, an area in-between the coastal Forest Zone (*Zona da Mata*) and the Brazilian semi-arid (called *sertão)*. The municipality spreads across 1,353km$^2$, and comprises seven districts in addition to the main city. They are: Bonfim de Feira, Governador João Durval Carneiro, Humildes, Jaguara, Jaíba, Maria Quitéria, and Tiquaruçu.[131] All these districts are mainly rural areas. Overall, the municipality now exceeds 571,000 habitants. [132] (See Appendix I, Map 3)

Feira de Santana was settled by a family of Portuguese origin in the 18$^{th}$ century, during Brazil's colonial times. For a long period, the region was a single farm (*Sant'Ana dos Olhos d'Água*), a small one compared to the typical huge land properties of that period.[133] It offered fertile land and an abundant water supply, from both underground

[129] Harry Cummings and Associates Inc., 2003
[130] Adapted from Ministério das Relações Exteriores, 2007
[131] Prefeitura Municipal de Feira de Santana, 2007
[132] Prefeitura Municipal de Feira de Santana, 2007
[133] It is important to keep in mind some differences between the colonization of Brazil and that of Canada and most of the United States. Whereas most English and French colonies in North America followed a population model, establishing relatively small land properties, producing commodities with family labour for regional consumption, the Portuguese in Brazil followed what is called an exploitation model. This was mainly aimed at the extraction of resources such as gold, silver, timber, and agricultural products. In the latter case, the process relied on what Brazilian historians call MEL (or MSL in English): Monocultures (mainly sugar-cane), Slavery, and *latifúndios*, from the Latin word *latifundia*, i.e. large land properties.

and numerous natural ponds. Once established, the newcomers built a church on their farmland, and that became an attractive spot for travelers moving between the inlands and the coast, where the state capital (Salvador) is located. More people arrived and the area became a village. Soon a market was established providing travelers with food and farm animals, and in a short time that market became the basis of a fledgling local economy. It became known as "Santana's Market", or *Feira de Santana*. There, farming became also an important sector, for it was necessary to supply trade and grant the subsistence of local merchants.[134]

Development in Feira de Santana took place without any significant sustainability concerns.[135] The original vegetation was replaced by farmland and pastures, while careless urbanization degraded local water supplies. This process continues today characterized by urban sprawl and slums. Ponds have often become dumps, and most of the groundwater is now contaminated by household wastes. As much of the city lacks sewage and sanitation, wastes are stored in septic pits in the ground, or left as litter.

The increasing population and urban sprawl have aggravated a series of socio-environmental problems not at all limited to the water supplies. As a result of irregular waste disposal and lack of sanitation, much of the poorer areas of the city face public health issues, such as food contamination and preventable diseases (e.g. diarrhea, dengue fever, schistosomiasis). Such poor areas are mainly the outskirts and suburbs of Feira de Santana – what contrasts with the suburbs of North America, which are often wealthier areas.[136]

Those outskirts of Feira de Santana are sometimes rural areas, particularly the seven municipal districts. It is there that most farming activities in Feira de Santana take place. Agriculture there has always been devoted to subsistence and small-scale trade, local and regional – an exception to the context of large-scale, export-oriented

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This key difference has not only created two very distinct histories of agricultural development in the Americas, but also shaped the quite distinct ways Brazilians and Canadians see rural life.

[134] Santo, 2003

[135] Obviously the contemporary conception of sustainability was not present in the 19th century, but long before that, some populations and communities around the world demonstrated sustainability concerns in their practices and relationship with the land, such as the natives who were in Bahia before the Portuguese arrived.

[136] See Miglioranza et al, 2002, and Lang and LeFurgy, 2007

agriculture, common in Brazil since its colonization.[137] As such, agricultural production in Feira de Santana has always needed to be diverse, so that it could provide a healthy diet to the locals relying on it. Beans, corn, manioc root, livestock, and tropical fruits (e.g. cashews, mangoes, and others) have been the main products of this local agriculture.

Since the 1970s, cattle farming has given rise to a notable leather industry in Feira de Santana. This has been one more activity to strengthen the local commerce, the most important economic sector of the city. It has highly benefited from the location of the city. In Bahia, Feira de Santana is usually referred as "the semi-arid gateway", for linking Salvador to the inland areas of the state. Moreover, all main roads connecting northern and southern states of Brazil pass through Feira de Santana resulting in 17 road entrances in the city. This facilitates transportation routes for trade, but also the frequent migration of low-income, uneducated people looking for job opportunities, who add to the poor and irregularly-settled population of the city.[138]

Most notable from the perspective of this thesis is the locally-oriented food system of Feira de Santana. It was already an exception in the contexts of previous centuries, and it remains an exception today, in contrast with other regions in Bahia (the southeast, which exports citric fruits[139]; the north, which exports tropical fruits; the south, which exports cocoa; and others). Instead, food production in Feira de Santana and its neighbouring areas supplies regional consumption and local trade. Many daily or weekly street markets offer locally-produced food abundantly, and involve a great deal of products from family agriculture. Again, this adds to the vibrant commercial sector of the city – which will be later discussed as a major opportunity for the promotion of sustainable food security.

## 4.4. Key-Informant Interviews and Field Observations

Key-informant interviews and observations (on the field and of government documents) took place in both communities. The key informants were chosen based on their expertise on the local food system or on a specific element of food security (e.g. food safety, farming, agricultural policies, nutrition). They were: farmers, members of community

[137] Santo, 2003
[138] Queiroz et al, 2004
[139] Almeida, 2004

organizations, agronomists, city planners, dieticians, food market coordinators, food system researchers, chefs, sanitary inspectors, and different government officials. They contributed to this research by answering to a list of open-ended questions about food security and the food system of their community. The interviews involved four types of questionnaires, each directed to a certain group of informants: (1) farmers; (2) public health professionals; (3) researchers and food system experts; and (4) consumers (See Appendix II). In addition, the interviews counted also on follow-up questions and spontaneous contributions from the informants.

The two tables below provide information on such informants from Waterloo Region and Feira de Santana, omitting the names of those who asked for anonymity.

Table 4.1 – Key-Informants from Waterloo Region

| Informants from Waterloo Region | | |
|---|---|---|
| **Name** | **Occupation** | **Questionnaire Used** |
| Heather Dabrowski | Coordinator of the 1st University of Waterloo Local Farmers' Market, and volunteer in the Neighbourhood Markets Pilot Project in Waterloo Region. | (4) Consumers |
| Jessica Kwik | Master's Candidate in Environmental Studies and coordinator of the Neighbourhood Markets Pilot Project in Waterloo Region | (3) Researchers and Food System Experts |
| Katherine Pigott | Public Health Manager | (2) Public Health Professionals |
| Marc Xuereb | Public Health Planner | (3) Researchers and Food System Experts |
| Pat Vanderkooy | Public Health Nutritionist | (2) Public Health Professionals |
| Rachel Hull | Chef, and former caterer | (4) Consumers |
| Suzanne Dietrich | Food researcher with work experience in non-profit associations such as food banks and social planning councils | (3) Researchers and Food System Experts |
| ********* | Farmer and Food Retailer | (1) Farmers |
| ********* | Farmer and Food Retailer | (1) Farmers |
| ********* | Public Health Planner | (3) Researchers and Food System Experts |
| ********* | Public Health Planner | (3) Researchers and Food System Experts |

Table 4.2 – Key-Informants from Feira de Santana

| Informants from Feira de Santana | | |
|---|---|---|
| **Name** | **Occupation** | **Questionnaire Used** |
| Adriano Costa | Coordinator of MOC (Movement of Communitarian Action), a local NGO | (3) Researchers and Food System Experts |
| Albertino Carneiro | Director of CAR, a Bahia State agency to promote regional action and development | (3) Researchers and Food System Experts |
| Célia Firmo | Coordinator of MOC | (3) Researchers and Food System Experts |
| Délio Barbosa | Nurse and former director of sanitary inspections in Feira de Santana | (2) Public Health Professionals |
| Eduardo Pereira | Farmer and councilor of the local Syndicate of Rural Workers (STR) | (1) Farmers |
| Elias Oliveira | Agronomist from EBDA, the Bahia State agency in charge of providing agro-technical assistance to farmers. | (3) Researchers and Food System Experts |
| José Silva | Farmer and Food Vendor | (1) Farmers |
| José Sales | Farmer and director in both the STR and the Association of Small Producers of Feira de Santana (APAEB) | (1) Farmers |
| Josenira Souza | Dietician in the municipal government | (2) Public Health Professionals |
| Lariane Santos | Coordinator from CRE SER, a rural credit cooperative | (3) Researchers and Food System Experts |
| Naidison Baptista | Executive-secretary of MOC | (3) Researchers and Food System Experts |
| Terezinha Lima | Farmer and president of APAEB | (1) Farmers |

This accounts for 23 interviews in total, 11 in Waterloo Region and 12 in Feira de Santana. The expected length of each interview was of 90 minutes. However, that varied significantly and ranged from 40 minutes to 170 minutes, as some informants were willing to elaborate more on their answers. On the other hand, more succinct answers or time constraints rendered some interviews shorter than initially expected.

Field observations included visits to rural areas and farms, to food stores and outlets, to local farmers' and street markets, to the state-subsidized "People's restaurant" and to public schools where the food is supplied by the government.[140] As the author is from Feira de Santana, personal observations went much beyond those of a casual visitor or researcher, and included the experience of more than 15 years living in that city. In Waterloo Region, the author got involved in two initiatives as a volunteer and had a hands-on experience; first in the University of Waterloo Food Market Initiative, and second in the St. Mary's Neighbourhood Market, an initiative from the regional public health department.

## 4.5. Examining the Two Food Systems

This section examines comparatively the food systems of Waterloo Region and Feira de Santana, and makes reference to the five sustainable food security criteria developed in Chapter 2. After the discussion of each criterion, we move to a general summary of comparison that ends the chapter.

### 4.5.1. Criterion 1: Ensuring Availability and Accessibility of Food

***1)*** *All people have stable physical and economic access to healthy and culturally-appropriate food.*

**Waterloo Region**

Waterloo Region has a sufficient and abundant supply of food, made available by several grocery stores and smaller retailers. The region also counts on four farmers' markets: Cambridge Market, Kitchener Market, Waterloo Market, and St. Jacobs Market. Although the region has the 2nd most productive agricultural sector in the province (after

[140] See Ministério do Desenvolvimento Social e Combate à Fome, 2006b

the Niagara Region)[141], harvest is limited to the warmer months, so most of the food available comes from outside.[142] If, on the one hand, this has had social and environmental implications, on the other hand it has guaranteed a year-round supply of diverse foods.

According to a public health planner, there is no evidence of food deserts in Waterloo Region, i.e. of urban areas with no green-grocers or fresh-food options.[143] Yet there seem to be issues related to nutritional quality, which is usually poorer in the foods found in convenience stores. These stores sell mainly processed products rich in sugar and fats, such as soft drinks and chips, and they rarely offer fresh produce. Therefore, consumers who have less access to grocery stores or farmers' markets may still have food available, but less nutritious options.[144]

That led Public Health Waterloo Region to set up two produce markets in low-income neighbourhoods in 2007, and there are plans to increase that numbers in the coming years.[145] According to the markets coordinator, "Starting [them] we're seeing a high demand. […] So it's a great beginning, but obviously there are other low-income areas that could be served to increase access to fresh produce".[146] The poor nutritional quality of much of the food available seems to be quite an issue in Waterloo Region, as a public health official notes:

> I think within that food system there are obviously some problems from a public health perspective; a definitive trend towards greater diabetes and obesity within the larger population. And that is probably due to the abundant supply of high calorie, calorie-dense food, which is sometimes called junk-food. So I think that's a problem.[147]

Government documents point that about 50% of the population in Waterloo Region is overweight, and most do not eat enough fruits and vegetables as recommended by

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[141] Out of the 225,800 acres of farmland in Waterloo Region, 80% is devoted to crop production, mainly grains (e.g. wheat and maize) and oilseeds (e.g. soybeans and alfalfa). This supports the strong livestock sector, the primary activity of 60% of all farms in Waterloo Region. The region also produces fruits and vegetables, such as apples, plums, various berries, tomatoes, zucchini, and sweet corn. (Harry Cummings and Associates Inc., 2003)
[142] See Xuereb and Desjardins, 2005
[143] Halweil, 2004, p.87
[144] Region of Waterloo Public Health (ROWPH), 2004a
[145] Personal interview with a public health official of Waterloo Region, Waterloo, summer 2007
[146] Personal interview with Jessica Kwik, coordinator of the neighbourhood markets initiative in Waterloo Region, Waterloo, summer 2007
[147] Personal interview with a public health official of Waterloo Region, Waterloo, summer 2007

Canada's Food Guide.[148] "So, we know, reality is that people aren't eating healthy", says a public health planner.

Another important element of healthy foods is safety. In this regard, Ontario has stringent regulations, particularly when compared to Brazil; for instance, the province regulates all food vending at farmers' markets and on the streets to ensure certain standards of hygiene and appropriate food storage.[149] Unsafe food vending does not seem to be an issue in Waterloo Region, but on the other hand, industrial foods have started to raise safety concerns among consumers and public health professionals. This is because of risks of contamination from environmental pollutants (as in the case of fish[150]) or bio-chemicals, such as preservatives, antibiotics, pesticides, and hormones used in the food industry. A public health official from Waterloo Region reveals scepticism in that regard:

> In reality it's all in the definition of risk. How much of a certain known toxin are we willing to expose our population to? And when studies come out and they say "we're pretty certain that at this level of exposure there is detriment, therefore we'll set the safe level at…" Pick your number. Quite often the number is picked as one-tenth of that level. But sometimes scientists will settle for half of that number. At what point do I think that the population risk is at the right level? And I know that some of that is politics. I know that Health Canada has to be mindful of the fisheries industry in Canada, and the beef production industry in Canada when it comes to the discussions about hormones and antibiotics use.

In addition, this professional also raised the compliance of the food industry as a concern.

> It's done on an honour system whereby the food company has to obey these regulations and the transgressors are brought to light by consumers who complain, by health professionals who notice, perhaps by their competition, and if the truth comes out in the investigation they may be fined or put out of business. But quite often that doesn't seem to be true to them, especially if they are large multinational companies.[151]

Thus, despite strict standards for food vending, the safety of foods from the agro-industry or fisheries seems to be an issue in Waterloo Region.

Another aspect to consider is cultural appropriateness. That does not seem to be a problem in Waterloo Region, at least for the majority of its population – government

[148] Xuereb and Desjardins, 2005
[149] See City of Toronto, 2008
[150] Harvey, 2004
[151] Personal interview with a public health official of Waterloo Region, Waterloo, summer 2007

officials say. Indeed, most of the food available is produced in North America, oriented towards the tastes and preferences of its consumers. On the other hand, the officials are uncertain whether the same can be said about the growing immigrant population in Waterloo, as they have very distinct cultural backgrounds and eating habits. Nevertheless, according to a public health planner, the region has increasingly offered ethno-cultural stores, restaurants and foodstuffs, and this has helped meet the cultural needs of a more diverse population.[152]

All key informants and government documents point to economic access as the main barrier to food security in Waterloo Region. The public health department has found that, despite food being abundant, some pockets in the community still cannot afford it. According to a local public health planner, "Those would be mainly low-income neighbourhoods and small farms". 5% of the population still needs food assistance, and almost half of these are children. These people (almost 24,000 in 2006) are assisted by the Food Bank of Waterloo Region, a civil society organization that manages local distribution of food to the needy, through donations and partnerships.[153]

In this context, lack of physical and economic access intermingle and create a complex problem. In the words of a regional public health planner:

> [Food] is not affordable to everybody. And affordable food isn't physically accessible to everybody. In other words, some people might be able to afford nutritional diet, but they can't access it because they'd have to travel too far to get to it. The food available is adequate, but it's not accessible to everyone.[154]

For some in the community, food seems to be neither adequate nor accessible. Those who cannot afford and rely on food banks have complained that "they don't really get much fresh fruits and vegetables. It's usually canned or usually processed food", a public health planner reveals. Suzanne Dietrich, who has worked with food banks, agrees. "A lot of the food in the food banks is nutrient bankrupt; it's not healthy". Yet their effort should not be neglected. "The food banks try their best to get healthy food", Dietrich adds.

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[152] Once again, those ethno-cultural foods are mainly imported from outside the region, as most of them are not – or even cannot – be grown locally.
[153] See The FoodBank of Waterloo Region, 2007
[154] Personal interview with a public health planner of Waterloo Region, Waterloo, summer 2007

In sum, Waterloo Region has in place a food system that offers abundant and diverse food. However, much of it is recognized as unhealthy, primarily due to its poor nutritional quality. This affects mainly those who live in low-income areas and/or rely on food assistance; first, because they may not be able to afford a healthy diet; and second, because low-income neighbourhoods and food banks are generally ill-assisted with healthy food options.

**Feira de Santana**

As Waterloo Region, Feira de Santana offers abundant food through grocery stores and small retailers. These places are not only well supplied, but also well distributed throughout the city. They can be found in almost every neighbourhood, even in rural areas. In addition, the city counts on seven produce markets, some of which are daily, including numerous street vendors who sell food in downtown or visit customers door-to-door.

The food being offered seems to perfectly fit local traditions and eating-habits. This is true for both daily diets and special occasions that demand particular foods, such as Easter and St. John's[155]. It is interesting to observe that, because of the European customs brought to Brazil, some local traditions include non-local foods, such as walnuts at Christmas and cod at Easter. But even these foods are available in Feira de Santana.

Concerning health, the adequacy of food is more debatable. This debate is mainly related to food safety, not nutritional quality. Although Feira de Santana offers fast-foods and others rich in sugar and fat, it also offers abundant nutritious options, as a local nutritionist notes: "We have a good infrastructure, with fruits, vegetables, and regional foods. In terms of physical access we don't have any difficulty". A state official argues that the availability of nutritious foods has actually improved lately: "There is an advantage in food availability in the last 20 years. The best thing in this aspect is maybe the improvements in transportation. Nowadays we eat much more fruit than 10 or 20 years ago".

[155] St. John's, known as *Festa Junina* in southern Brazil and as *São João* in the Northeast Region, is a major celebration in Brazil, and specially in the Northeast. It involves local foods and drinks which are particularly typical of this occasion (e.g. cooked peanuts, *canjica, licor de jenipapo*, etc.).

Food safety issues involve both processed and non-processed foods. The former are supposedly safe, as there are federal and state agencies to inspect them. Health professionals, however, demonstrate great scepticism of those inspections and of the additives in such foods. Josenira Souza, a local nutritionist, provides an example: "Those juice cartons, for instance, there are not only flaws during the manufacturing, but also the preservatives". Preservatives are a concern not only because there is fear of their harmful effects on health, but also because there is little trust that the industry really complies with the food safety regulations.[156] "The best is to run away from the industrialized foods and to look more for natural foodstuffs", the nutritionist says.

There is, however, important food safety concerns related to non-processed foods as well. Délio Barbosa, who for many years directed the sanitary services of Feira de Santana, shares some of his experience: "We have already found bakeries which prepared bread at home, on the bed, in the bathroom, etc. This is the reality we see very often". Despite efforts from the vigilance, 20% to 30% of the meat sold in Feira de Santana has no safety inspection, as well as all the fruits and vegetables sold at the farmers' markets. Nevertheless, the nutritionist goes in defence of such fresh foods: "I think the agrochemicals are worse because they penetrate the food. And those [local] ones, no; you wash it, you peel it, and there you get some good food".

It is illegal to sell raw milk in Feira de Santana, yet more than 1,200 local vendors sell milk without any processing or inspection. According to Délio Barbosa, the vigilance lacks the economic and human resources to do enforce the regulation. These food safety concerns, however, touch on another very important issue which should not be overlooked: accessibility. "There is the social issue", Barbosa says. He adds:

> Maybe they don't look so much at that in Canada, which is a rich country. But it's different from Feira de Santana, where you have people doing certain sorts of things in order to survive. And if you take away his or her only way to survive, he or she will end up in prostitution, violence, hunger. That's why sometimes this work is neglected, because

[156] In October 2007, the Brazilian Federal Government and its Federal Police discovered sectors of the milk industry which were adding illegal substances to their milk, plus legal preservatives but in much larger quantities than those allowed, in order to make it more durable. There were also indications of corruption, as a food safety inspector seemed to be involved. Only denouncements from ex-employees and other milk cooperatives allowed the discovery of those actions. (Ministério Público Federal, 2007) This and other examples clearly contributes to the general distrust of the food safety standards in the industry, making health professionals reticent about processed foods.

> if you really do it, you will make more than 1,200 family-breadwinners unemployed. At the same time it's our duty to offer the vigilance of the food. So it's a hard situation.[157]

There is no precise data on how much of the local population is food-insecure, but it seemed clear to the interviewees that not everybody has access to adequate food. Lack of economic access is a major reason, as seems to be often the case.[158]

Thus, the food system of Feira de Santana demonstrates strong points with reference to the availability of food which is both nutritious and culturally-appropriate. Nevertheless, food safety is a concern in both processed and non-processed foods. Physical access is not an issue, as produce markets and grocery stores are widespread throughout the city. The major barrier is clearly economic access, for many families do not have means to produce food or the income to buy it. (See Box 4.1)

**Box 4.1 - Summary of Criterion 1**

Despite all biophysical, cultural, and socio-economic differences, Waterloo Region and Feira de Santana have some similar features in terms of accessibility to adequate food. First, both offer abundant and diverse foods. Cultural appropriateness does not seem an issue in either location. Second, regardless of differences in income levels, economic access is the main barrier to food security in both communities. On the other hand, there are differences in terms of physical accessibility. Both have a widespread availability of food, but the quality is different; in Waterloo Region, highly-processed foods are more accessible, whereas in Feira de Santana the fresher foods are closer to the consumers. This has made nutritional quality more of an issue in the first case. Regarding food safety, public health professionals from both places voice concerns about agro-industrial foods. However, the Brazilian community faces more issues related to the food safety of raw foods and in street food vending. This is mainly due to less strict standards of safety and less capacity to enforce regulations. Yet, one should not forget that thousands of local families live on activities that depend exactly on the non-enforcement of those.

[157] Personal interview with Délio Barbosa, public health official and former director of sanitary inspections in Feira de Santana, Feira de Santana, fall 2007
[158] Belik et al, 2001. Also see Drèze and Sen, 1989

### 4.5.2. Criterion 2: Promoting equity and social integrity

*2) The food system respects and promotes equity and social justice, strengthening social integrity.*

**Waterloo Region**

Equity has been defined as a state where society achieves a high level of social justice, with a fair distribution of power over the decisions and processes that affect present and future conditions of people's lives.[159] In the case of food systems, power means the capacity to shape it according to certain interests and preferences. It can be in the in the form of wealth, for example. Or more generally, power can mean access to different resources, such as natural (e.g. productive lands), financial (e.g. subsidies from the government), or human (e.g. access to cheaper labor).

The first stage of any food system is production. Farms are responsible for that, and in Waterloo Region they have become increasingly consolidated. The region had 1,642 farms in 1986 and this number declined to 1,444 by 2001. In 1986 almost 80% of the farms were owned by individual families, while in 2001 these were less than half of the total – a decline of almost 50% in absolute numbers, from 1,303 to 704. This reduction in the number of farms has been accompanied by their enlargement, in both physical and economic terms. [160] As smaller farmers find hard to compete with larger agribusinesses, many of them abandon their activities, or else become dependent of some off-farm income.[161]

Both farmers and government officials from Waterloo Region indicate that cheap food prices are primarily responsible for that trend toward consolidation in the farming sector. As public health planner puts it, "We don't pay enough for food".[162] He notes that the average Canadian spend less than 10% of his or her income on food, versus an usual average of more than 50% in developing countries.

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[159] Adapted from Gardner and Roseland, 1989

[160] The number of farms with more than 760 acres rose in almost 50% during that fifteen-year period, while the quantity of smaller farms declined. Moreover, between 1990 and 2000, the number of local farms reporting an annual gross receipt of less than 100,000 decreased in 25%, whereas those reporting more than 100,000 increased in 5%. Region of Waterloo, 2003b

[161] Region of Waterloo Public Health (ROWPH), 2004b

[162] Personal interview with a public health planner of Waterloo Region, Waterloo, summer 2007

This trend towards consolidation is not restricted to farming. A similar process has happened all across the food chain, from food production to food retailing. In this latter case, supermarket chains have made use of significant competitive advantages (e.g. scale, more bargaining power with suppliers) to dominate local food markets at the expense of independent retailers. Currently, in Waterloo Region, half of all food expenditures are estimated to take place at supermarkets – more than 63% of all expenditures at food stores. In this sector, control is even more concentrated, as just a couple of corporations are responsible for all those sales: Sobeys, Loblaws (Zehrs Markets), Food Basics, and Price Chopper (a branch of Sobeys).[163]

Such a food system has hampered equity not only with skewed distribution of power and control, but also with the reduced accessibility of low-income consumers to healthy foods. Its structure makes fat and energy-dense foods have better prices than fresh produce, and therefore more economically-accessible. This can determine the diet of low-income families. It is also a social justice issue, as a public health official notes:

> Generally food that is organic, local, is less affordable to people with lower incomes. And to tell people to eat healthier as a way to avoid health problem is a bit hypocritical. Telling people to eat healthy is not enough. People can't afford. They don't really have that choice. I think that's a real social justice issue, if you cannot afford to have a healthy diet.[164]

In addition, low-income neighbourhoods are also impaired in their physical accessibility to more diverse, healthy foods. Therefore, this creates a whole social justice problem as the food system structure marginalizes poorer consumers.

Another problem with such an inequitable structure touches on governance. A report by the Public Health Department of Waterloo Region has showed that most local farmers think to have no control over food prices. Moreover, they feel that their voice is not heard, and that the decision-making processes at different levels of government are out of their control. The result is not only a deficient democracy, but also reported frustration, anxiety, and stress.[165]

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[163] Harry Cummings and Associates Inc., 2003
[164] Personal interview with a public health official of Waterloo Region, Waterloo, summer 2007
[165] Region of Waterloo Public Health (ROWPH), 2004b, p. 49

The replacement of traditional farming systems for agribusinesses has also undermined social integrity in this region. As small farms disappear, the same happens to traditional, rural livelihoods. These have been a typical element of family farming and rural communities in Waterloo Region, as in other parts of Canada and of the world. Such livelihoods involve cultural identities, diversity, a strong sense of community and social values that strengthen community health. At the individual level, they also mean attachment to the land, as well as an emotional involvement with the food production.[166] This latter factor is important not only for social integrity, but also as a way of enhancing moral values, individual health, and self-fulfillment.[167]

The contemporary food system of Waterloo Region (and of other North American communities) has gradually weakened those elements. As Brewster Kneen points out, North American farms have become increasingly business-oriented, and farmers now tend to be more agri-businessmen than stewards of the land, more committed to production than to the social roles they used to play as contributors to vibrant rural communities.[168]

That has caused a disconnection between farmers themselves, but also between producers and consumers. In the words of a public health planner: "Now there is this huge disconnect between where [food] is grown, who grows it, how it reaches [the consumers], and who consumes it, and how it is consumed". According to another local planner, that growing distance contributes to what could be seen as a form of alienation: "Not knowing the farmer, what's the chance of feeling some sort of solidarity […] and understanding the troubles people have to go through to grow and raise our food?". Consumers thus lose knowledge about farming processes, as a result they may lose cultural values, and the two groups lose the contact that promoted social integrity in the past.[169] With the dismantling of traditional food markets, consumers have also lost contact among themselves, and thereby communities lose in social connectivity. As the coordinator of the regional Neighbourhood Markets pilot project argues,

> Community conviviality and social cohesion demand that people interact with each other and find spaces to do that. The neighbourhood markets

[166] Region of Waterloo Public Health (ROWPH), 2004b
[167] Durning, 1991
[168] Kneen, 1995
[169] Kneen, 1995

> have been a site for some of that as well. But it's a matter of place-making. Grocery stores don't act in that same way, because the goal there is for people to buy and leave in a very efficient manner.[170]

"From a social capital point of view, that's a lot", a public health planner adds, "And I think the state of our food system contributes to that, to losing social capital".[171]

Despite such a trend, Waterloo Region still preserves much of its traditional farming culture, when compared to other North American communities. One indication of that is the average farm size in the region, 156 acres, against a provincial average of 226 acres.[172] This is due in part to the high number of livestock farms (usually smaller in size) in Waterloo Region, but there seem to be also social reasons involved. Because the region has a strong rural tradition supported by a significant population of Old Order Amish and Mennonites, it has been able to keep more of its small-scale, local farming, and more of the farmers' markets' culture.

With respect this social element of food security, the picture of Waterloo Region is thus a divided one. Its food system contains features of both localization and globalization, and these have had distinct effects on the local society, as discussed throughout the section. Yet the net balance of forces has clearly favoured the agro-industrial food chain, which has concentrated power and capital and expanded the distance between actors in the food system.

**Feira de Santana**

It is difficult to be precise about how much of the food in Feira de Santana comes from agro-industry or from family agriculture. Feira de Santana has seen large supermarket chains and processed foods increase their presence and gain popularity in recent years, but direct sales from local farmers or food vendors are still very common. [173] Despite this apparent balance, there is a number of reasons to believe that this food system does not promote social justice.

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[170] Personal interview with Jessica Kwik, coordinator of the neighbourhood markets initiative in Waterloo Region, Waterloo, summer 2007

[171] Personal interview with a public health planner of Waterloo Region, Waterloo, summer 2007

[172] Harry Cummings and Associates Inc., 2003

[173] One of the main supermarket chains in Feira de Santana, *Bompreço*, is now owned by Wal-Mart, an American-based corporation which is one of the largest food retailers in the world.

The first reason is that Feira's food system dynamics are visibly disadvantageous to the poor. This is particularly the case for the poor at the production end of the food chain, i.e. small farmers. "The farmer in Feira de Santana survives", a local farmer says. There are about 50,000 family farmers in the region, most of them living in 2- or 3-acre properties. Generations pass and these properties become increasingly smaller, as farmers split the land among their children. Local farming has reached such a small scale that it is no longer a significant source of income – an off-farm job has become necessary. The food system dynamics visibly contribute to keeping them poor, particularly by posing barriers to their attempts to sell farm products and make an income from that. Food processors and retailers in the conventional market demand quantity and regularity of supplies, which family farmers cannot provide from such small properties and growing seasonal crops. Price fluctuations are also disadvantageous, as those farmers sell very cheap food (unprocessed and without added-value) in the high-peak season, and buy it year-round for more expensive prices. Finally, poorer farmers are also in disadvantage because the food system dynamics require expertises that the poor do not have, such as knowledge on markets behaviour and the ability to deal with bureaucracies (e.g. tax payments, street vending licenses). (See Chapter 5 for a more detailed examination of these challenges)

A second reason relates to the policy environment of this food system. Given the dynamics discussed above, the primary way that farmers sell their products is at produce markets or on the streets. However, the space in such markets is limited. Moreover, the government charges taxes that most farmers cannot afford. The city also forbids food vendors from selling on the streets without paying taxes and obtaining an official receipt. This is a procedure that most farmers cannot afford either, and that many do not even comprehend. As a result, hundreds of vendors come to the streets everyday and are eventually targeted by the police. Policemen known as RAPA (short form for Radio Patrol), the responsible for the enforcement of that law, expel the vendors and confiscate all their products; "unless the vendor 'pleases' them", a state government official says, suggesting the existence of bribery. "Then it's a sort of non-accounted tax", he adds.[174]

[174] Personal interview with Albertino Carneiro, regional director of CAR (Company of Regional Action), a Bahia State agency working with agriculture and rural development, Feira de Santana, fall 2007

According to some local farmers, that police is their main obstacle to making an income from the farm products. “They should let everyone sell in peace”, a farmer and food vendor says. “That is why criminals are ravaging everyone. The people deserve more support”.[175]

The third reason relates to the political dimension of the food system. Some of the local decision-making has been clearly beneficial to large producers at the expense of family farmers. An example is the food supplying of institutional markets (e.g. public schools, hospitals, and at the scale of Bahia State, of state-owned grocery stores). The government could use the production of family farmers to meet that demand and provide them with an income. But instead, it buys mostly from large producers, who are often political allies of the decision-makers.[176] That establishes a usual relationship that is by any means limited to Feira de Santana, in which businessmen and politicians exchange favours to their mutual benefit, often to the detriment of the majority’s interests.

Those practices favour large agribusinesses and the agro-industry, not the poor. “Agribusiness produces and exports, exports and accumulates”, Naidison Baptista, an NGO leader, explains. He continues:

> Accumulation does not match with food security because, in the Brazilian context, food insecurity comes exactly from the non-participation of the people in the wealth of the nation. So the more I have a process of accumulation, the more I have an element that promotes food insecurity. Yet there is no doubt that companies and large farms play a beneficial role when they create jobs. It’s an ambiguous process.[177]

However, large-scale farming in Brazil often involves poor labour conditions, such as overwork, limited access to the social security mechanisms of the state, and vulnerability to contamination from agrochemicals.[178] These chemicals are sometimes substances which have been forbidden in richer countries, but which are still used in the developing world. Moreover, those workers hardly take prevention measures that would reduce their

[175] Personal interview with a farmer of Feira de Santana, Feira de Santana, fall 2007
[176] Interview with Albertino Carneiro, regional director of CAR (Company of Regional Action), a Bahia State agency working with agriculture and rural development, Feira de Santana, fall 2007
[177] Personal interview with Naidison Baptista, executive-director of MOC (Movement of Communitarian Organization), a local NGO, Feira de Santana, fall 2007
[178] Personal interview with Albertino Carneiro, regional director of CAR (Company of Regional Action), a Bahia State agency working with agriculture and rural development, Feira de Santana, fall 2007

exposure. Some of them are illiterate, some can read but cannot understand label instructions, and others may even dismiss such precautions as unnecessary.[179] As such, large producers concentrate the capital and the profits, but the poor are the ones to bear most of the risks.

The more direct sales at farmers' markets and on the streets are visibly more beneficial to social justice, as 100% of the consumer's money goes to poor farmers or food vendors. It is a mutually beneficial process: the farmer earns an income from his activity and the consumer enjoys healthy foods that entail social justice promotion and ecological sustainability (See next section). The process boosts the local economy and also promotes social integrity, as consumers and food vendors are brought together – between the two and also among themselves. It creates bonds among vendors in the same area, as well as spaces for consumers to meet and socialize.

As stated in the beginning, the two food chains (traditional and agro-industrial) co-exist in the food system of Feira de Santana. However, its market dynamics, its policy environment, and the politics behind it seem to be all favourable to the agro-industrial chain. That contributes little to poverty eradication and, in fact, helps marginalize the poor, particularly those at the production end of the food chain. Nevertheless, traditional features such as local produce markets and street food vending have endured the ongoing changes (e.g. stronger presence of the agro-industry and of food corporations, stricter food safety regulations, increasing bureaucratic obstacles), and still help promote equity and social integrity in the region. (See Box 4.2)

[179] Personal interview with Elias Oliveira, agronomist at EBDA, the Bahia State agency in charge of providing agro-technical assistance to farmers, Feira de Santana, fall 2007

**Box 4.2 – Summary of Criterion 2**

The global trend towards the replacement of traditional food systems for agro-industrial ones has been present in both Waterloo Region and Feira de Santana. That has reduced social justice in both places, as their systems favour concentration of capital and of control over the multiple stages of the food chain. Similarly, social integrity has been harmed in both communities. This is mainly due to the increasing disconnection between producers and consumers, as well as within those groups. That said, the food system of Feira de Santana seems more beneficial to social justice and integrity than that of Waterloo Region. First, there is a larger participation of poor producers and vendors in the food market, which provides them with an income, boosts the local economy, and helps redistribute wealth. Second, because that has created an affordable and physically-accessible offer of healthy foods for low-income consumers. And third, because the greater availability of produce markets, street food vending, and direct sales has allowed for greater social connectivity, both between producers and consumers and within these groups.

### 4.5.3. Criterion 3: Sustaining the natural environment

***3)*** *The food system contributes to environmental sustainability. It promotes biodiversity and ecosystems integrity.*

**Waterloo Region**

As last section discussed, Waterloo Region has a food system that operates mainly through agro-industry. Sales of food from traditional agriculture, however present, are very limited. Therefore, this is a food system that is largely supportive of monocultures, high-input conventional agriculture, and long-distance food transportations. When talking of the local food system, a public health planner speaks of "huge negative impacts", referring to all the environmental damages of those practices. They include, for instance, biodiversity loss from monocultures, heavy reliance on chemical use and fossil fuels, risks of water and human contamination from such substances, and the greenhouse gas emissions from trucking or shipping food across long distances (the so-called "food miles", which contribute to air pollution and global climate change).

"Food miles" in Waterloo Region have been particularly high, as the region relies heavily on food imports. A study found that food travels in average 4,500km before arriving in Waterloo, generating an average of 1.8kg of greenhouse gases per kg of food – more than 50,000 tons in total.[180] This is equivalent to the emissions of about 17,000 cars in a year.[181]

Much of that food, such as tomatoes, could be grown or raised in Waterloo Region. If all the tomatoes consumed in Waterloo region were locally produced, associated greenhouse gas emissions would be 132 times lower.[182] Sometimes Waterloo Region does produce the foods it imports, then it establishes the so-called "redundant trade", a type of unnecessary trade in which the region exports and imports the same product. In Waterloo, that usually happens to vegetables and fruits such as tomatoes and strawberries, which are imported from as far as California even during the local peak season.[183]

Those are environmental impacts often caused far from Waterloo Region, as the food consumed here is produced far away. Nevertheless, the environmental damage is continental or even global, as the example of climate change reveals. With regard to the local agriculture, there have been attempts to make it environmentally sound. According to a public health planner,

> The region has a policy basically to encourage farmers to pay attention to water quality issues and thinking about water runoffs, particularly from livestock farms, and providing subsidies to help families build up buffer zones close to creeks, etc.[184]

The region has become particularly concerned about the impacts of agriculture after a tragedy in the Town of Walkerton, when farm runoffs contaminated groundwater

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[180] Beef imports are by far the most impacting, accounting for more than 15,000 tons of that total.
[181] Xuereb, 2005a
[182] Xuereb and Desjardins, 2005
[183] Miedema, 2006. According to this author, such a trade happens for four main reasons. First, other governments often provide subsidies to their growers; that makes it cheaper to import the food from elsewhere (the United States, in particular). Second, differences in labor costs may also help reduce the prices of imported foods. Third, some exporters who negotiate in large quantities may have bargaining advantages, and they can also sell for smaller prices – as a large overall profit is guaranteed. And fourth, the environmental costs of conventional agriculture and of food transport over long distances are not taken into account in the prices. As a result, "redundant trade" becomes more profitable to those selling and buying food.
[184] Personal interview with a public health planner of Waterloo Region, Waterloo, summer 2007

causing seven deaths and making more than 1,000 people ill in Ontario.[185] Despite such cases, a local farmer argues that the Waterloo Region farming community does its best to be environmentally responsible: "A lot would be just common sense. And they would be done even without a regulation, if the farm environment was economically healthy". According to a local planner, "Most farmers try to be good stewards of the land they farm, [but] we're forced to make the price of food cheaper at the expense of the environment". This seems to be particularly the case of large-scale operations, where organic crops and greater environmental protection would elevate the costs of production – and, therefore, the price of food. "What people do not realize is that true organic is going to cost a minimum of double, if not triple", a farmer argues, "If consumers pay, farmers will grow it. Period."[186]

Despite the dominance of conventional agriculture, the food system of Waterloo Region still counts on some degree of traditional, environmentally-friendlier farming. That comes mainly from Mennonite farmers, whose traditions have kept livelihoods and practices associated to small-scale family farming. These alternative methods use virtually no external inputs, and promote much more integration in the agro-ecosystem (e.g. intercropping, recycling animal wastes). Moreover, the food is primarily used for the consumption of farmers themselves and sold in local markets, what entails minimal environmental impacts from transportation.

Despite some efforts to encourage local food consumption[187] and to highlight biophysical elements in the concept of food security[188], Waterloo Region still has a food system that relies primarily on conventional agriculture and agro-industry. Even if some traditional agriculture remains, it has played a very limited role in local food consumption. As such, this is a largely unsustainable food system, whose environmental impacts have gone much beyond this region – as seen in its contribution to greenhouse gas emissions and climate change.

[185] Personal interview with a public health official of Waterloo Region, Waterloo, summer 2007
[186] Personal interview with a farmer of Waterloo Region, Waterloo, summer 2007
[187] See FoodLink, 2008b
[188] See Xuereb and Desjardins, 2005

**Feira de Santana**

As in Waterloo, in Feira de Santana we can find both a traditional and an agro-industrial food chain, and as seen above, they have very distinct effects on the biophysical environment. As to the former, most products come from within the country, but given Brazil's physical size, that does not necessarily mean little environmental impact from transportation. Processed foods, for example, usually come from the southern regions of the country, which means thousands of kilometres away. Fruits, vegetables and hard beans[189], on the other hand, are mainly from within Bahia state, which means fewer emissions from transportation.

Feira de Santana only plays a minor role in agri-food industry as a producer; minor because most local farming is for subsistence. Conventional agriculture is barely present in the region. The few local large producers are actually livestock farmers, cattle breeders who own large pasturelands. They produce beef and milk, and supply mainly local and regional markets. Although some environmental impacts might be identified in those activities (for instance, the contribution of cattle to soil erosion and to methane emissions), they are considerably less harmful than conventional crop farming linked to long-distance transports (as in corn or soybeans monocultures, for example)

Chemical inputs used to be common in the small-scale agriculture of Feira de Santana. Nowadays, however, family farmers barely use them, as they are often wary of their effects on the land. In Brazil, chemical inputs such as pesticides and fertilizers are usually referred as "agrotoxics", which gives an idea of how they are popularly regarded. Instead, family farmers base their work on traditional agricultural practices, such as intercropping and the use of animal wastes as manure. "Maize provides shade to beans, and beans fortify the land for maize", a local farmer explains. This traditional agriculture is much less reliant on chemical inputs. Instead, it promotes nutrients cycling and ecosystem integration on the farm. In addition, it is linked to short-distance transportation, as the food is mainly sold at local markets.

Feira de Santana, therefore, has a food system that is part traditional, part agro-industrial. The trend in recent years, however, has been that of replacement of the former

[189] It is worth noting that hard beans are a staple in Brazilian diets, usually consumed as a main dish everyday.

by the latter, as in other parts of the world. When compared to North American communities, the traditional food chain in Feira de Santana plays a much larger role. This is not only because there is a larger quantity of family farmers involved, but also because it represents a much larger share of the local food consumption, particularly among the poor. (See Box 4.3)

**Box 4.3 – Summary of Criterion 3**

Agro-industrial food chains based on conventional agriculture have been present in both food systems, in Waterloo Region and Feira de Santana. However, that is particularly significant in the Canadian example, where most of the food is imported and much of the production is exported. As previous chapters argued, that has a significant environmental cost, such as biodiversity depletion, risks of contamination, and "food miles" that contribute to global climate change. On the other hand, small-scale farming endures in both communities, but to a different extent. In Waterloo, it plays a smaller role in the food system, and represents little in the overall food consumption. It is much more dominant in Feira de Santana, where much of the food consumed is locally or regionally grown. In sum, both Waterloo Region and Feira de Santana have caused some degree of environmental impact through their food systems. However, that toll seems to be significantly higher in the case of the Canadian community.

### 4.5.4. Criterion 4: Creating a supportive food environment

***4)*** *Consumers have a food environment with favourable conditions to choosing foods that meet the three criteria above.*

Chapter 2 argued that consumers' choices are key to achieving sustainable food security and that they are highly influenced by their food environment. That includes, for instance, the relative accessibility to foods that meet the three criteria above (as opposed to that of other foods), as well as the values of the food culture present in the community.

**Waterloo Region**

There seems to be a consensus among public health professionals and food system experts that the current food environment of Waterloo Region is highly supportive of unhealthy foods. Usually, those are the same foods that entail the social and environmental costs discussed in the previous sections: energy-dense, processed foods from conventional agro-industry. As a regional public health official notes, "Everywhere we go there is this plethora of choices of foods that aren't necessarily that good for us".[190] Or in the words of a local chef and former caterer:

> Unhealthy [food is] definitely easier [to access]. Everywhere you go. Like, if you don't want to make your lunch and you want to go out somewhere, you have to look pretty hard for a place that has healthy food. You know, yes, McDonald's has salad and it might be healthy, but it came from 3000km away and the dressing is not healthy, etc. It's really difficult to eat healthy food unless you're at home.[191]

The easier accessibility that such unhealthy, socially- and environmentally-harmful foods enjoy involves both physical proximity and better prices. Fast-food outlets are a major example, and generally in North America they tend to be at hand and to be cheaper than healthier alternatives.[192] This is particularly true for lower-income areas, where food prices will have a stronger influence on consumers' choices.[193] A local public health official explains: "When we look at affordability, the processed and those kinds of food are much more affordable compared to what is really healthy, so there is a higher tendency to get into some of the processed foods."[194]

A Waterloo Region's public health official suggests that we pay attention not only to the food environment of the whole community, but also to that of particular areas. "I think the quality of food in the workplace or in school is also a consideration, because if I forget to bring my lunch and I go upstairs, I'm kind of dependent on the quality of food that is offered", she argues.[195] Similarly, the food environments of university campuses arguably have significant influence on students' food choices. As the broader food

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[190] Personal interview with a public health official of Waterloo Region, Waterloo, summer 2007
[191] Personal interview with Rachel Hull, chef and former caterer in Waterloo Region, Waterloo, summer 2007
[192] Pollan, 2006
[193] Block et al, 2004
[194] Personal interview with a public health official of Waterloo Region, Waterloo, summer 2007
[195] Personal interview with a public health official of Waterloo Region, Waterloo, summer 2007

environment, those particular ones in Waterloo Region present very similar problems; through better physical and economic accessibility, they largely favour the consumption of foods that are mostly unhealthy and that entail negative social and environmental impacts. (See Box 4.4)

**Box 4.4 – The Food Environment of the University of Waterloo**

The University of Waterloo (UW) is the largest educational institution in the region, with more than 24,000 full-time students.[1] Unlike some other universities in Canada, the university manages its own food distribution and sales through a Food Services department, which is overtly committed to health, social and environmental principles. That commitment has been turned into action, for instance, in the form of occasional farmers' markets on campus, the use of recycled materials, and the availability of nutrition charts for the foodstuffs.[2]

Yet, the campus food environment offers a great deal of unhealthy food, such as soft drinks and fat, energy-dense foods such as chips, chocolate, and pastries (donuts, muffins, etc.). Most campus eateries are in fact cafeterias, where that sort of food is readily available and at inexpensive prices.[3] In addition, the campus has countless machines where students can get those foods at all hours. Healthy food, on the other hand, is relatively less accessible, due to higher prices and to a smaller offer in an environment largely dominated by fast-foods.

Nonetheless, when Food Services held a temporary farmers' market, UW students and staff responded very positively, both as customers and as volunteers. Because a healthy and sustainable option was made accessible, both physically and economically, many people promptly embraced it. This example reveals that many consumers in the region are sufficiently concerned to make good choices, yet they may not do so because their food environment is to a large extent supportive of unhealthy foods.

[1] University of Waterloo, 2007
[2] See Food Services
[3] See Food Services: Locations and Hours

Although prices and physical accessibility play a major role in influencing consumers' food choices, they are not the only elements in a food environment. Much of it relates to the values of a given food culture (for instance, fast-food values such as convenience, versus slow-food values such as the social experience of eating together). Public health professionals and food researchers from Waterloo Region all agree that its food environment has been largely influenced by the dominant food culture of North America, which values cheap, quick, convenient, tasty and nutritious meals. The two last elements, however, are highly debatable, as critics argue that the agri-food industry has actually taken away taste and nutrition from food, as well as the notion of those from the consumers.[196] "Good food isn't as important to us as it was before", a local food researcher says.[197]

Despite the influence of such a culture, local farming traditions seem to still play a role. As a public health official says, "We have the culture of farming that is appreciated by our growers for the most part, [and] a culture of appreciating farmers' markets".[198] As next section will reveal, this cultural element has strongly contributed to consumers' willingness to support the local farming community.

On a more superficial level, the food environment also influences consumers' behaviour through advertisement. In this sense, Waterloo Region is again part of the larger North American context where agri-food corporations spend billions of dollars to promote their products. In the words of a regional public health official:

> There's tastes and demands that are shaped largely by marketing of large groups, food firms that dominate the market and have the power to influence demand, to create a desire for things that they have to sell.[199]

Such an appeal, to which children are especially vulnerable[200], has stimulated unhealthy diets and therefore contributed to undermine food security in Waterloo Region.

As seen in the examination of previous criteria, traditional elements (in this case, the traditional food culture and its values) have faced those of the agro-industrial system. In Waterloo Region, this latter have been highly influential over consumers' choices and

[196] See Halweil, 2004; Pollan, 2006 and 2008
[197] Personal interview with Suzanne Dietrich, local food researcher, Waterloo, summer 2007
[198] Personal interview with a public health official of Waterloo Region, Waterloo, summer 2007
[199] Personal interview with a public health official of Waterloo Region, Waterloo, summer 2007
[200] See Borzekowski and Robinson, 2001

behaviours. Strong advertisement and the propagation of values such as convenience provide the encouragement, while better physical and economic accessibility give the support for food-insecure behaviours to take place.

**Feira de Santana**

Locally-produced food entailing positive socio-environmental impacts is very accessible in Feira de Santana, visibly more than others. As the analysis of the first criterion revealed, farmers' markets and street food vending are extremely common in the city, and also well distributed across it. This has resulted in very good accessibility to diverse, healthy, and local food options; much higher than that enjoyed by conventional, agro-industrial foods. For instance, fast-food chains selling processed foods are quite rare – there is only one McDonald's outlet for a city with more than 500,000 people.

Unprocessed, locally-produced foods enjoy also greater economic accessibility in the context of Feira de Santana. In the words of Josenira Souza, a local dietician:

> "Here we still go to the markets, the neighbourhood markets. I do all my food-shopping with 17 *reais [about C$10]*. What could you buy with 17 *reais* in a grocery store? […] A sandwich from McDonald's, for instance; with the money of a sandwich a person here can buy food for all the family for the whole day".[201]

That provides favourable conditions to choosing socially- and environmentally-friendly foods. The food system also favours the consumption of culturally-appropriate options. Whether in local markets or large retailers, typical foods (such as rice, beans, manioc flour, and local fruits) are usually easier to find and are more affordable than other foods. Nevertheless, if we look at the health aspect, both local and agro-industrial food chains pose problems. Healthy food is affordable and accessible, but so is unhealthy food. This applies both to the agro-industrial chain and to the traditional one, because in Feira de Santana much of the *junk food* is local. They are, for instance, homemade deep fried pastries sold in small retailers or food outlets. They do contribute to boosting the local economy, but not to improving consumers' health. In addition, these nutritionally-

[201] Personal interview with Josenira Souza, nutritionist and local government official in Feira de Santana, Feira de Santana, fall 2007

poor foods (from both local and agro-industrial chains) raise food safety concerns, as discussed before. (See Box 4.5)

**Box 4.5 – The Food Environment of State University of Feira de Santana (UEFS)**

UEFS is the largest educational institution in Feira de Santana, and its only public university (in Brazil, that means that there are no tuition costs). Its main campus hosts about 9,000 staff, students, and faculty from different areas, ranging from medicine to social sciences and law.[1] They count on a university restaurant and a number of snack bars managed by the university. The restaurant is managed in partnership with a local firm, and it offers three meals a day: Breakfast (some combination of bread, butter, coffee, milk, oatmeal, etc.), lunch (rice, beans, meat, and salad), and dinner (salads, soup, etc.). This is exclusively available to the students, who refer to it as *bandejão* (or "big tray"), as you walk on a line with a tray. The state subsidized prices are very cheap even to local standards: breakfast costs 50 cents of *real* (C$ 0.30), lunch R$ 1 (C$ 0.6), and dinner for 70 cents of *real* (C$ 0.66). In addition to this service, the university restaurant offers also one where you pay R$1 / 100g, which offers more variety, and is not exclusive to the students.

Although there are no machines making soft drinks, chips and chocolate available at all times, they can all be found at the campus' snack bars, along with non-processed but nutritionally-poor foods such as deep fried pastries. However, these places also offer healthier options such a freshly squeezed juices, which are as accessible (physically and in terms of prices) as soft drinks. In this case, it will be up to the consumers to choose based on their preferences and priorities, without the influence of prices or of what is more at hand.

This example is a useful illustration of the larger food environment of Feira de Santana. As said before, there is a great deal of physical and economic access to adequate foods, and state subsidization has played a major role in guaranteeing that to students. At the same time, healthy and unhealthy foods are available fairly accessible, leaving the choice to the consumers.

[1] See Universidade Estadual de Feira de Santana (UEFS), 2007.

With reference to the food culture, Feira de Santana has experienced similar influences to those present in Waterloo Region. Consumers are increasingly influenced by the convenience of ready-made and fast foods, as a local nutritionist notes:

> Housewives don't want to prepare sauce anymore, so they buy the ready-made one. "I'm going to take this orange juice that is ready because then I don't have to squeeze the oranges myself at home". You find the ready-made foods, which you just put in the oven and warm up. So you go after convenience and end up diverted from the ideal.[202]

Again, that trend is reinforced by the marketing of agro-industries influencing the food environment. In Feira de Santana, that happens to a lesser extent than in Waterloo Region, as much of the traditional food culture remains, yet the trend is visible. On that, a local farmer gives his perspective.

> There is little space for the small farmer. On the other hand, there is a great market for what often has little quality. That marketing destroys the life of small farmers. Marketing for products that don't worth a cent, often with no nutrients, and that reduce your life.[203]

In general, despite trends towards agro-industrialization and the abundance of processed foods, the food environment in Feira de Santana is still favourable to local options that support the community and the natural systems. That alone does not guarantee health, as much of the unhealthy foods are actually local. However, nutritious options are abundant and, physically and economically accessible, much more than other foods. In addition, the food culture is very supportive of those options. Despite increasing enticements from food industry advertisement, local food traditions remain relatively strong when compared to Waterloo Region, and still influence to a large extent what Feira consumers choose to eat. (See Box 4.6)

[202] Personal interview with Josenira Souza, nutritionist and local government official in Feira de Santana, Feira de Santana, fall 2007
[203] Personal interview with a farmer of Feira de Santana, Feira de Santana, fall 2007

**Box 4.6 – Summary of Criterion 4**

Waterloo Region and Feira de Santana present contrasting features with respect to their food environment. In the former case, unhealthy foods that entail the social and environmental harms of conventional agro-industry are widely available, and they enjoy much more accessibility than other foods (physical and economic). In that context, the food industry exerts a large influence, both on consumers' choices (through strong advertisement) and on the food culture, by fostering values such as convenience. On the other hand, Feira de Santana's food system seems much more supportive of local foods that are beneficial to the community and the environment. They enjoy much better physical and economic accessibility, which seems to be the opposite of Waterloo Region. In the context of Feira de Santana it is important, however, to keep in mind that local food is sometimes unhealthy, and these also enjoy good accessibility. Despite an increasing power of the agro-industry over eating habits, the traditional food culture in this community remains relatively strong, and still has a large influence on the food choices of local consumers.

### 4.5.5. Criterion 5: Adopting sustainable attitudes and practices

***5)*** *People make choices and have attitudes that are beneficial to the promotion of sustainable food security.*

When the food environment provides the means the promotion of sustainable food security becomes ultimately a matter of choice. It depends on adopting practices and attitudes that lead to all those benefits discussed before (e.g. individual health, an equitable society, environmental sustainability). Ideally, those attitudes and practices should be present among all actors in the food system; however, for the purposes of this study, examination is focused on the practices and attitudes of two key groups, farmers and consumers, the two ends of the food chain.

**Waterloo Region**

Previous sections already examined farmers' practices with relation to food security in Waterloo Region, yet it is important to look at their level of education. The farming

community of Waterloo Region seems to be to a large extent aware of food system dynamics and its role in it. According to a local farmer, they are much more aware than the consumers. In his words:

> Farmers are very much more educated. You know, you're standing there and a customer will ask you 'is this corn GMO?' Well, I know what [GMO] is, but probably he just heard on the TV that it's bad for him. We've all taken environmental farm courses; we deal with the Grand River conservation authority on a regular basis. It's stewardship.[204]

That is corroborated by the great involvement that the farming community has had in local initiatives to promote healthy eating and create a sustainable food system in Waterloo. These initiatives, led by Waterloo Region's public health department, are often in partnership with community organizations such as FoodLink, which has close ties with local farmers – and which in fact, has farmers as part of its board.

The main issue in Waterloo Region, with regard to this criterion, seems to be the attitude of consumers. They are key actors in any food system, the ones that, at the end of the food chain, provide the economic support to all other activities. Some public health professionals have pointed that consumers in Waterloo Region are fairly well educated about healthy eating. However, as the regional public health nutritionist reminds, knowledge about healthy eating does not always coincide with healthy diets. In her words,

> There's still the whole piece about choice, which may or may not be based on knowledge, and may or may not match the knowledge I have. Maybe they know about health food choices. But in fact their lifestyle is such that they don't have healthy eating habits. [On the other hand] some people may know nothing about what a healthy diet is according to nutritionists, and yet they naturally choose a very healthy diet. A farm family that chooses to consume a lot of the products that it grows on the farm; probably haven't read too many nutrition brochures; maybe they did not get excited in February 2007 that there was a new Canada's Food Guide, but they eat well. Do they know what healthy eating is? Debatable. Could they explain it? Debatable. Do they eat healthily? Probably.[205]

[204] Personal interview with a farmer of Waterloo Region, Waterloo, summer 2007
[205] Personal interview with Pat Vanderkooy, public health nutritionist of Waterloo Region, Waterloo, summer 2007

For instance, despite some awareness about healthy eating, more than half of the local population was either obese or overweight in 2003, mainly due to unhealthy diets.[206] The same applies to the aspects of consumer behaviour. For instance, a report from the regional government showed that 87% of residents believe it is important to buy local food. The most frequent reason was food freshness, followed by the preservation of farmland, the support of local farmers, and the reduction of imports.[207] Despite such concerns, a public health planner says that "probably 80 to 90% of people shop regularly at the major grocery stores operated by two chains that dominate the Canadian food market". He recognizes that consumers have "some sense of justice and concern" for farmers, but acknowledges that taste and convenience are still much stronger factors driving their food choices.

According to a local farmer, consumers have also become accustomed to perfect-looking produce, and that has been a barrier to promoting local food and a more sustainable food system.

> Consumers are used to thinking of California strawberries, which are big and firm and red and perfect, and people don't like to see the Ontario berries. They are small, [but] they're more flavorful. They complain that things are misshapen; they complain that things are small, or a little bit darker than another kind. That's another example of what consumers expect [in addition to cheap prices], but it's not a reality, we can't produce that in Ontario on a consistent basis. They have a more consistent weather down there in California.[208]

Another issue is that Canadian consumers are now highly accustomed to eating foreign foods. "Canada has a problem", a farmer says, "There's a pretty large amount of things that we eat that we can't grow; bananas, pineapples, etc; things that have almost become staple to us."[209] As such, it becomes more difficult for consumers to be willing to adopt more local diets, which would entail more social cohesion and less environmental costs.

In spite of the behavioural barriers laid out above, there has been an increase in consumers' food security education about food system and in their support for socio-environmentally friendly foods, such as fair trade and organic. "Local food is the new

[206] Region of Waterloo Public Health (ROWPH), 2004c
[207] Xuereb, 2004
[208] Personal interview with a farmer of Waterloo Region, Waterloo, summer 2007
[209] Personal interview with a farmer of Waterloo Region, Waterloo, summer 2007

black", a local chef says, suggesting how it has become popular.[210] As elsewhere in North America, Waterloo Region has also seen a resurgence of farmers' markets' popularity. [211] A neighbourhood market coordinator notes how the large community starts to take part in that:

> I think there's been this renaissance of local food that people recognize. And that's due in part to efforts like *Buy Local! Buy Fresh!* here in Waterloo Region promoting local food, but also the recognition that they taste different, and people start seeing that there's a difference. And I think everybody who came by the market for the first time, they all said "What a great idea!" […] People love fresh food, it makes them happy. It's a different feeling at an open air market, and you know you're supporting local farmers, and that yours dollars are being put towards something you believe.[212]

A region's report has showed that nearly 75% of the local urban residents shop at farmers' markets between June and October, the warmer months. In total, consumers spend approximately $20 million a year at farmers' markets.[213] Yet there is a large margin for improvement, as that represents only 2% of total food expenditures in the region (above $1 billion per year).[214]

In sum, many people in Waterloo seem to be well aware of food security concerns, particularly farmers. Many consumers have good knowledge and awareness, but their behaviour could be more representative of that. Their main concern is with health and well-being, as the appreciation for food freshness reveals; yet, many people continue to have unhealthy diets. To a lesser extent, consumers recognize the social and environmental implications of their food choices, but most still support food chains that entail large costs in those areas. In addition, local farmers point that consumers have become highly used to perfect-looking produce and to foods that cannot be grown in the region. From their perspective, that attitude has been a barrier to a more sustainable food system, as it stimulates reliance on food imports.

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[210] Personal interview with Rachel Hull, chef and former caterer in Waterloo Region, Waterloo, summer 2007
[211] Xuereb and Desjardins, 2005
[212] Personal interview with Jessica Kwik, coordinator of the neighbourhood markets initiative in Waterloo Region, Waterloo, summer 2007
[213] Fisher, 2005
[214] Harry Cummings and Associates Inc., 2003, p.98

**Feira de Santana**

Farmers in Feira de Santana have much lower levels of formal environmental literacy than those in Waterloo. Yet they seem to be well aware of ecological dynamics and of the effects of their own actions on natural systems, thanks to their practical experience with the land. That can be seen, for instance, in their traditional intercropping methods used to fortify the soil (e.g. corn and beans).

Nevertheless, farming practices in Feira de Santana are still embedded of a culture that lacks some environmental awareness. Albertino Carneiro, government official of a Bahia State agency dealing directly with farmers, explains:

> The environment is one of the less known by-products of agriculture, even in family agriculture. It is nothing more than a by-product. It is not the product that is wanted, the product that is sought, the objective. The [concern for] the environment, particularly in Bahia, is one of the things that, from my perspective, were buried with the last native they killed. […] We have to change the custom. Our agriculture is what I call "extractivist", from the times of Tomé de Sousa[215], [when] the Portuguese came to extract brazil-wood, sugar-cane, and everything.[216]

Coordinators of MOC (Movement of Communitarian Organization), a local NGO, also agree that the environment has been a concern of second or third order in Feira de Santana, even in traditional agriculture. For instance, the frequent placement of waste pits close to groundwater bodies (resulting in contamination) shows that many still lack understanding of environmental dynamics.

Apparently, that attitude is linked to the fact that small-farmers in Feira de Santana are often more interested in imitating larger producers (hoping to become as rich) than in being stewards of the land. This can be explained by poverty and their eagerness to increase gains, but the effect has often been the opposite. For instance, family farmers have sometimes spent all their savings on unnecessary machinery or on farming activities that do not suit them. Célia Firmo, a MOC coordinator, explains with an example:

> Many small farmers, as they saw large farmers and others in this region breeding bovine cattle, they thought they should do the same. But they

[215] Tomé de Sousa was the first general governor of Brazil, representing the Portuguese king. He founded Salvador in Bahia, made it the first capital of Brazil, and ruled the colony between 1549 and 1553.
[216] Personal interview with Albertino Carneiro, regional director of CAR (Company of Regional Action), a Bahia State agency working with agriculture and rural development, Feira de Santana, fall 2007

> are farmers who have a small amount of land, very low purchasing power, and they end up spending all their savings to buy a single animal which ends up dying in the first drought.[217]

In the past, that attitude also resulted in the use of agrochemicals by small-farmers, but this practice has been abandoned, due to the price of such chemicals and to their effects on the soil. "It totally weakened the land", a local farmer tells.

With regard to local consumers, a local dietician recognizes an increasing, but still low level of education about healthy eating. They also generally lack awareness and even concern about the social and environmental implications of their choices, some state officials suggest. As a local family farmer notes,

> Nowadays the young replace the products from family agriculture for worthless ones. They forgo the good things they have and go after what doesn't worth anything. It's a matter of conscience. There is a lack of food education.[218]

This lack of food education and concern has rendered consumers vulnerable to the attraction of convenience, and prone to choosing whatever costs less.

At this point, it is important to keep in mind that in Feira de Santana locally-produced foods are cheaper and healthy foods are easily accessible. This has thus created an odd context where some poor are likely to eat better than the rich. When asked about the causes of food insecurity in Feira de Santana, a local dietician made the following point: "On the one hand, the [lack of] economic resources; on the other hand, good economic resources". She explained that, because the level of food education is low among both rich and poor consumers, those who are able to buy more processed, industrialized foods, will do so, responding to the appeals of the food industry. On the other hand, the poor, who cannot afford such a "sophisticated" eating, will eat more healthily.

As such, farmers' and consumers' attitudes with respect to sustainable food security have been far from ideal in Feira de Santana, despite some favourable conditions in the food system. That is mainly due to lack of education and to choices that are primarily guided by economic interests – which is not surprising, given the low average

[217] Personal interview with Célia Firmo, coordinator of MOC (Movement of Communitarian Organization), a local NGO, Feira de Santana, fall 2007
[218] Personal interview with a local farmer in Feira de Santana region, Feira de Santana, fall 2007

income in the region. This applies to some of the farmer community, but mostly to consumers. These may opt for socially- and environmentally-friendly foods, but only as long as they are cheaper than others. (See Box 4.7)

**Box 4.7 – Summary of Criterion 5**

The attitudes and practices of farmers and especially consumers have been key to local food security in Waterloo Region and Feira de Santana. In the case of Waterloo, farmers seem to be well educated and literate on the matters of food system dynamics and sustainability. Indeed, many of them take part in the joint efforts between community and regional government to promote healthier eating and to create a more local and sustainable food system. This contrasts with the farming community of Feira de Santana, which has some traditional knowledge and practices that help make food production sustainable, but lacks general education and awareness about food system dynamics. Such a lack of knowledge will not prevent those farmers from having a healthy diet; however, it may hamper the involvement of the farming community in efforts to promote a sustainable food system. With regard to consumption, both communities show similar results: consumers are increasingly knowledgeable in the matters of healthy eating, but they are still driven mainly by taste and convenience in their food choices. To a lesser extent, some are aware and concerned of the social and environmental implications of their choices, particularly in Waterloo Region. Yet, as with healthy eating, there is a significant gap between knowledge and behaviour.

## 4.6. Summary

This chapter has examined two different communities, Waterloo Region in Canada and Feira de Santana in Brazil, and looked at how each of the sustainable food security criteria is presented in the contexts of their food systems. Waterloo Region presents features of a food system dominated by agro-industry. That has had effects on the farming community, on consumers' health, and generally on the society and the natural environment, in terms of equity, social integrity, and sustainability. For the most part, those have been negative effects. Consumers' diets are now mainly composed of calorie-

dense, fat and highly-processed foods, what has rendered more than half of the local population overweight and therefore more exposed to chronic diseases.

Increasing consolidation in the various stages of the food chain has concentrated power on a few hands, hampering governance and equity. It has also impaired social cohesion and capital, as it disconnects communities and distances producers from consumers, as well as these among themselves. Similarly, that food system has damaged the natural environment through unsustainable practices such as large-scale monocultures. Finally, the food system has made it easier for consumers to support all those harmful processes, by providing them with better accessibility to such foods and by shaping their food preferences.

Feira de Santana, on the other hand, presents less of an agro-industrial food system. Even if the agri-food industry has been increasingly present at different food chain stages and influential over consumers' habits, the region still maintains much of its traditions, such as family farming, street food vending, and a local food culture. For instance, this food system provides good accessibility to healthy foods produced in socially and environmentally sound ways. In fact, these foods are often more accessible than those coming from conventional agriculture and industry. There is, however, a significant lack of education and awareness about food system dynamics, in particular on the socio-environmental implications of consumers' choices. Thus, an odd context is created in Feira de Santana: many consumers eat healthily and often support socio-environmentally sound food chains, but unconsciously; not because they are educated and then opt for that, but because it is cheaper to do that. As such, those who have a low, but sufficient income may sometimes eat better and be more supportive of sustainable agriculture than others, richer consumers.

Table 4.3 provides a general summary of the comparison between these two food systems. In the next chapter, we draw from these findings and the literature in order to identify some major challenges to achieving sustainable food security at the local community level.

Table 4.3 – Summary of Comparison

| Sustainable Food Security Criteria | Waterloo Region | Feira de Santana |
|---|---|---|
| **Criterion 1:** Ensuring availability and accessibility to adequate food | Meets the criterion:<br>• Abundant availability of culturally appropriate food.<br>• Food in general is physically accessible to everyone, and most people have economic access to it.<br>Fails to meet the criterion:<br>• Food safety concerns with agro-industrial foods.<br>• Prevalence of foods with poor nutritional quality (usually referred as *junk food*).<br>• Despite good accessibility to food in general, healthy foods are less accessible (both physically and economically)<br>• Not everyone has a sufficient income to afford food. 5% of the population depends on social assistance. | Meets the criterion:<br>• Abundant availability of healthy and culturally appropriate food.<br>• Adequate food is physically accessible to everyone, and most people have economic access to it.<br>Fails to meet the criterion:<br>• Food safety concerns with both local and agro-industrial foods.<br>• Nutrition concerns, for although healthy foods are available and accessible, so are unhealthy foods.<br>• Not everyone has a sufficient income to afford food. There are no exact numbers, but it is widely acknowledged that part of the population experience food deprivation. |

| | | |
|---|---|---|
| **Criterion 2:**<br>Promoting equity and social integrity | <u>Meets the criterion:</u><br>• A minor, but present movement towards socially-friendly foods (e.g. food from small farms, sold at farmers' or neighbourhood markets)<br><br><u>Fails to meet the criterion:</u><br>• Large support for highly consolidated agro-industrial food chains, where wealth and power are concentrated in a few hands (i.e. hampered equity)<br>• Significant disconnection between farmers and consumers and among themselves. Few spaces to promote social integrity. | <u>Meets the criterion:</u><br>• Significant reliance on small- and medium-size food producers, leading to equity promotion.<br>• Strong presence of spaces that promote social integrity in the community (e.g. produce markets and street food vending). They also help distribute wealth, creating a living for poorer vendors.<br><br><u>Fails to meet the criterion:</u><br>• Some degree of support for agro-industrial chains that entail harms on equity and social integrity.<br>• Economic dynamics, policy-environment, and the politics in this food system tend to marginalize the poor. |

| | | |
|---|---|---|
| **Criterion 3:**<br>Sustaining the natural environment | Meets the criterion:<br>• A minor section of the food system relies on local, environmentally-sound farming.<br><br>Fails to meet the criterion:<br>• Large support for conventional agriculture and its entailed harms to the environment (e.g. biodiversity loss, intense fossil fuel use)<br>• Heavy reliance on long-distance food transport, which contributes to air pollution and global climate change | Meets the criterion:<br>• Significant reliance on farming that entails little environmental impacts (e.g. family farming)<br>• Much of the food comes from the region and its neighbouring areas, reducing environmental costs related to food transportation.<br><br>Fails to meet the criterion:<br>• Some degree of support for conventional agriculture and long-distance transportation. |

| | | |
|---|---|---|
| **Criterion 4:**<br>Creating a supportive food environment | <u>Meets the criterion:</u><br>• A farming culture that promotes, to some extent, appreciation for fresh foods and farmers' markets.<br><br><u>Fails to meet the criterion:</u><br>• Food environment with strong incentives (e.g. intense advertisement) to food choices that are unhealthy and cause socio-environmental harm. Such foods also enjoy better prices and better physical accessibility than healthier, more sustainable options.<br>• Food culture that fosters values such as taste and convenience, more than healthy eating or support for socio-environmental good. | <u>Meets the criterion:</u><br>• The food environment favours food choices that support equity and sustainability. Such foods (mainly local) enjoy better physical and economic accessibility than others.<br>• The local food culture is very supportive of healthy eating and of connections between producers and consumers. Local traditions play a strong role in determining food choices<br><br><u>Fails to meet the criterion:</u><br>• The accessibility to healthy and unhealthy foods is approximately the same.<br>• The food environment has become increasingly similar to that of Waterloo Region (more presence and advertisement of unhealthy foods, more consideration for convenience, etc.). |

| | | |
|---|---|---|
| **Criterion 5:** Adopting sustainable attitudes and practices | Meets the criterion:<br>• The local farming community is very educated in the matters of food security, and participates in local initiatives to promote healthier eating and a more sustainable food system<br>• Consumers have become increasingly educated about healthy eating, sustainability, and food system dynamics.<br><br>Fails to meet the criterion:<br>• Despite their education, consumers' choices are not always healthy, socially or environmentally sustainable. | Meets the criterion:<br>• Consumers have become increasingly educated about healthy eating and sustainability.<br><br>Fails to meet the criterion:<br>• The local farming community has important traditional knowledge that contributes to the sustainability of the practices, but they lack information and awareness about food system dynamics.<br>• Local consumers are primarily price-driven, and often lack education on healthy eating and awareness about the socio-environmental implications of their choices. Thus, they may go for healthier and more sustainable food options, but only as long as these are cheaper. |

# Chapter 5: Understanding the Challenges posed to Local Food Security

## 5.1. Introduction

There are a number of challenges to achieving sustainable food security promotion in Waterloo and Feira de Santana, many of which may also apply to other contexts. Such challenges can be grouped into three main categories. First, biophysical, or those emerging from the natural environment, such as water availability, rain patterns, soil conditions, etc. Second, socio-economic and political challenges, such as low income levels and lack of government support to local producers. And finally, cultural and educational challenges, as culture and education are important determinants of what is socially valued and of which choices are made at the individual and political levels.

As Waterloo Region and Feira de Santana have very different contexts with regard to all three categories above, they significantly contribute to a diverse analysis. At the same time, this chapter will demonstrate that, despite any contrasts, different communities may have some very similar barriers to overcome.

## 5.2. Biophysical Considerations

Biophysical differences are probably the first to come to mind when considering the contexts of Waterloo Region and Feira de Santana. The first issue to consider in this regard is seasonality. Whereas the Brazilian community is located in a tropical region and can grow food year-round, Canada is generally limited by colder seasons unsuited to most crops. This is particularly restrictive in its northern areas, but it also applies to Waterloo Region. As a result, a shorter growing season reduces the potential for developing a more local food system, making that community prone to relying heavily on food imports. As a farmer says, “We’re not in a climate where we can be self-sustainable in Waterloo Region”. He highlights, however, the role of consumer preferences: “There’s just no way, you know, unless we want to go back to eating carp and cabbage all winter long, which I don’t think anybody does.” Therefore, seasonality in Canada is not an absolute limitation (First Nations peoples lived for centuries in such biophysical

conditions), but one that is tied to the current socio-cultural context of Waterloo, as well as to its food system structure – which, as next section will reveal, does not favour self-reliance.

Feira de Santana, on the other hand, is mostly limited by rain patterns, as much of the local agriculture is rain-dependent. Rain is also a concern in Waterloo Region, according to local farmers. However, farmers in this region are much more able to afford irrigation than in Feira de Santana, which creates a mixed challenge of both biophysical and socio-economic factors. And as global climate change will probably have a strong negative impact on rain-fed agriculture, the problem is likely to become even more significant to poorer farmers.[219]

Another biophysical challenge, particular to Canada and other high-latitude parts of the world, is the limited biodiversity when compared to tropical areas. In the context of food security, that means less food variety to meet consumers' demands, a lesser potential for food self-reliance, and thereby a higher reliance on food imports. Yet, despite any biophysical limitations, one should not forget the key difference between what the region grows and what it *can* grow. According to local food system experts, Waterloo Region does have the biophysical potential to be more self-reliant, but the whole food system structure has posed socio-economic, political, and cultural barriers to the achievement of that goal.

As it is favoured by a tropical climate, Feira de Santana seems to be better endowed with regard to food diversity. Thus, even when lack of rain does not allow for grain crops, fruits, vegetables and roots can still grow year round, reducing the needs for food imports. On the other hand, there have been biophysical challenges related to water quality, now widely contaminated both under and above the ground, due to two centuries of environmentally-careless land occupation and urban sprawl. And as a local NGO coordinator reminds, "There is no food security when you are consuming contaminated water".

Each region has thus different biophysical challenges to face. In Waterloo Region, most of them are due to its geography which makes seasonality and food variety two important issues. These are not major restrictions in Feira de Santana, given its tropical

[219] Intergovernmental Panel on Climate Change (IPCC), 2007

climate. On the other hand, the Brazilian community has experienced continuous contamination of its water supplies, on which much of the local population rely. Both communities suffer from rain shortages, and that is likely to increase with global climate change. However, lower income levels make it a much more worrisome issue in Feira de Santana (as in other parts of the developing world), where most farmers depend on rain-fed agriculture.

## 5.3. Socio-economic and Political Considerations

Although Waterloo Region and Feira de Santana have significant differences in their political and socio-economic contexts, this study has also identified a number of similarities. In some cases, their conditions reflect what happens more generally in the context of the developed and developing worlds, as in the case of farming scale. For instance, whereas Waterloo Region has seen its number of farms shrink and their size increase, in a process of consolidation, Feira de Santana has witnessed the opposite phenomenon, i.e. farms that grow in number and shrink in size.

Both of those trends, however different, have been identified as important challenges to the viability of small-scale agriculture.[220] In a consolidated farming sector, smaller players cannot compete, particularly when corporate farms earn most subsidies and can afford to sell food below the cost of production. On the other hand, smaller plots of land make it difficult to maintain life on a farm. As a Brazilian government official puts it, "Those who had 5 acres and had 5 children, each one built a house on the land. What is left for agriculture?"[221]

The economic viability of agriculture seems to be a key challenge in both Feira de Santana and Waterloo Region, in part because farmers of both regions have found it quite hard to make their way into the agri-food system. As markets favour larger players who can stay in business on a smaller profit margin and who are able to provide supplies with the quantity and regularity that buyers demand, smaller players cannot compete, and are left only with the option of operating outside the conventional agri-food system. However, there they face another major barrier: bureaucracy and policy obstacles to

[220] Halweil, 2004, p.60
[221] Personal interview with Albertino Carneiro, regional director of CAR (Company of Regional Action), a Bahia State agency working with agriculture and rural development, Feira de Santana, fall 2007

currently alternative ways of marketing food (e.g. farmers' markets, street food vending). They face a myriad of legal and policy barriers, such as zoning by-laws, licensing requirements, and food safety regulations, which increase significantly the difficulty of obtaining an income from selling food. As a public health planner from Waterloo suggests,

> [That] is a huge obstacle. It is one of the biggest, I feel. But until now it hasn't got much of attention. It has always been "let's educate the public, let's educate the farmer", but the entire legal system in-between hasn't allowed it to happen. So, that whole obstacle needs to be taken out.[222]

As a public health official commenting on the neighbourhood markets initiative in Waterloo Region noted, "It is a lot of energy just to put up two tents and sell local produce".[223] In Feira de Santana, very similar policy obstacles are present (See Chapter 4), with the difference that they are not regularly enforced. From what this study investigated, those barriers can be attributed to excessive bureaucracy and short-sighted policy-making, where decision-makers were unable to assess the full impact of their regulations. From Waterloo Region, we have the example of bureaucratic barriers to establishing local food markets. Feira de Santana, in its turn, requires that street food vendors pay some taxes and abide by certain regulations that are often beyond their income, education, and understanding of the bureaucracy. So even if such policies are an attempt to organize and keep track of food vending in the city, they pose barriers that visibly outbalance any benefits they may have. However, as stated before, in Feira de Santana they are only occasionally enforced, what according to a Bahia State official "is the only good thing the local government has done for food security".[224]

The ability to sell their products in the market has clearly a significant impact on the income level of farmers, and, therefore, on their food security. Although this is an issue for smaller farmers in Waterloo Region, the problem is much harder in Feira de Santana, where poverty is more widespread. There, cash-poor farmers will sell their produce wherever they can get paid quickly, and this often means selling for lower than

[222] Personal interview with a public health planner in Waterloo Region, Waterloo, summer 2007
[223] Personal interview with a public health official in Waterloo Region, Waterloo, summer 2007
[224] Personal interview with Albertino Carneiro, regional director of CAR (Company of Regional Action), a Bahia State agency working with agriculture and rural development, Feira de Santana, fall 2007

what they could otherwise get. Even if the Brazilian government has programs in place to buy produce from family farmers, these farmers usually are not able to wait for two, four, or even six weeks before being paid. This reveals another bureaucratic barrier for Feira de Santana (and for every other Brazilian community), and corroborates the literature in its suggestion of low income level as a major responsible for food insecurity.

Given that such economic and policy barriers may exist at the local level, state support seems to be a valuable asset for communities. A supportive state would not only lift those barriers to activities that promote food security, but also engage in active action towards it. For instance, farmers from both Waterloo Region and Feira de Santana admitted that they simply cannot afford much, or any, advertisement, and they suggest that this is both a challenge and a gap that governments should fill.

It seems reasonable to argue that local governments can do a better job when their actions and initiatives take into account the multiple processes and stakeholders involved in the food system. Waterloo Region has been a good example of that, as its government has been an active actor doing research, planning, and networking to promote food security. According to the coordinator of the neighbourhood markets initiative, much of its efficacy owes to the systems approach that it has adopted.[225] The case of Feira de Santana, on the other hand, demonstrates how fragmentation in state activity can limit its capacity to create effective change. According to some farmers, debates and issues around local food production are not at all connected to public health and nutritional concerns in the state action. "They simply don't discuss the issues of family agriculture when talking about food security", a farmer says[226]. Such a fragmented approach has not only divided actors that could be working together (e.g. public health professionals and the farming community, as happens in Waterloo), but also led to ineffective action, as seen in the case of the policies and regulations in place.[227]

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[225] Personal interview with Jessica Kwik, coordinator of the neighbourhood markets initiative in Waterloo Region, Waterloo, summer 2007. See Xuereb and Desjardins, 2005, for an example of such a systems approach in the regional government.

[226] Personal interview with José Sales, farmer and director of both the Syndicate of Rural Workers and the Association of Small Producers of Feira de Santana, Feira de Santana, fall 2007

[227] Another remarkable example is that local farmers could be supplying institutional markets (such as public schools), and this would both provide them with a living and students with healthy, local foods. But instead, the two issues have been treated separately (healthy school eating on one side and farmers' income on the other), as if they were not part of the same food system.

This reveals how failure to recognize the food system in the first place can be a significant challenge to sustainable food security promotion. Political barriers, however, can go much beyond that. They may arise in any decision-making process, when political will is necessary for sustainable food security to be made a priority. There have been countless critiques against such decision-making processes at national and international levels, where lobbies and ties between government and industry have create biases in favour of larger players.[228] The same may happen at the local level. Although this study did not identify such barriers in Waterloo Region, it found in Feira de Santana farmers and State officials that were very critical of the local government. They accused it of corruption, manipulation of council meetings[229], and of two practices referred in Brazilian politics as *clientelism* and *patrimonialism*.[230] The first one has to do with the exchange of favours between politicians and certain groups of society[231], whereas the second refers to the misuse or appropriation of public money by decision-makers[232]. Such critics state that the local government operates under the principles of the "vote industry", i.e. lack of political will to empower the poor, for it is easier to harness them when they are needy and when their votes can be bought with small favours during the elections period.[233] Such an attitude and those practices are by no means restricted to Feira de Santana, but as this case reveals, they can all be huge obstacles to food security promotion.

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[228] See, for instance, Storey, 2002; and Pollan, 2006

[229] According to local farmers, the local government often hinders discussions and prevents some decisions to be made in the Municipal Council on Food Security (CONSEA), simply by having its allies not attending it and thereby preventing the council from having the necessary quorum to deliberate.

[230] Personal interviews with farmers from Feira de Santana and with Albertino Carneiro, regional director of CAR (Company of Regional Action), a Bahia State agency working with agriculture and rural development, Feira de Santana, fall 2007

[231] Normally that involves economically powerful actors, such as large farmers, but it may also happen with community groups. A Bahia State official gave as an example the mayor of a neighbouring city, who refused to burden local butchers with the enforcement of food safety regulations on the argument that they had been his supporters (obviously, this was only admitted behind closed doors).

[232] In Feira de Santana, there have been accusations not only against the mayor himself, but also against public school boards, for example, using school lunch money to promote feasts and banquets for themselves while using a minimum of it for the students.

[233] Two examples may help illustrate this point. First, a Bahia State official accused the local government of creating puppet rural organizations that actually have no power, and which are used only to raise votes – an accusation that had the support of the Syndicate of Rural Workers, who disapprove of the local government conduct. A second example involves EMBRAPA, a federal agency for agricultural research. In their closest base to Feira de Santana, they have developed a number of ways to add value to manioc root, a typical local crop. However, they have never brought their expertise to Feira de Santana, according to a Bahia State official, simply because the local government never invited them to establish a partnership.

Even if political will is necessary to promote local food security, it is not sufficient *per se*. The case of Waterloo Region and Feira de Santana revealed that infrastructure, human and financial resources are also essential. In the Canadian case, most challenges referred to infrastructure, as for example lack of storage space for neighbourhood markets.[234] More significantly, the consolidation in the food system and the consequent dismantling of local canning, freezing, and processing plants has removed much of the infrastructure the community had in place to absorb the local production.[235]

Although the global trend towards consolidation and centralized food distribution is also present in Brazil, Feira de Santana has interestingly taken some steps in the opposite direction. The farming community is working to have installed plants to process, preserve, and add value to the local production, since the limited infrastructure in place has led to significant losses of perishable foods. Fruit, for instance, simply rots in large quantities during the peak seasons. This lack of infrastructure thus poses a double challenge to food security; first preventing farmers from having a higher income, and second preventing more local, healthy food from being available.

Limited infrastructure is often a result of little financial resources, what indeed has been a problem in Feira de Santana. This also affects the availability of human resources, due to limited capability to pay staff. Such limitations also affect the enforcement of food safety regulations. A former director of the local sanitary inspections in Feira admitted: "We just don't have enough arms".[236] Similar challenges apply to state agencies in charge of providing assistance to farmers; according to a Bahia State official, there is only a handful of agronomists to deal with the thousands of family farmers in need of assistance.[237] In this regard, Waterloo Region confirms the significance of such challenges by providing the opposite example, as its good human and financial resources have allowed for an active participation of the state in food security promotion.

The socio-economic and political challenges to achieving sustainable food security are thus very complex. They involve obstacles that range from the viability of

[234] Personal interview with Jessica Kwik, coordinator of the neighbourhood markets initiative in Waterloo Region, Waterloo, summer 2007
[235] See Soots, 2003, for a discussion of this phenomenon in Waterloo Region
[236] Personal interview with Délio Barbosa, public health official and former director of sanitary inspections in Feira de Santana, Feira de Santana, fall 2007.
[237] Personal interview with Albertino Carneiro, regional director of CAR (Company of Regional Action), a Bahia State agency working with agriculture and rural development, Feira de Santana, fall 2007

small-scale farming and low income levels to policy barriers, insufficient infrastructure, and little human and financial resources for food security promotion. Much of that is clearly linked to the broader, global economic context of increasing liberalization. As Canadian farmers note, the reduction of barriers to cheaper – often subsidized – food imports has significantly impacted the viability of small-scale agriculture.[238] International trade agreements, largely negotiated outside the reach of local communities, have also facilitated the expansion of large food processors and retailers across borders, thus contributing to the dismantling of local operations.[239] Those agreements, such as the North American Free Trade Agreement (NAFTA) and those between developing countries and the International Monetary Fund (IMF) also make food policies prioritize cash crops and export markets, hindering communities' ability to create more localized, sustainable and self-reliant food systems.[240] Finally, developing countries are often tied to the IMF by external debt, which diverts resources that could be used to build infra-structure and fund food security promotion.[241] As an NGO leader from Brazil puts it,

> "[The global] market, the IMF; none of these things have gone along with food security, but with its inverse and with the concentration of resources. When I take a substantial part of the country's GDP to pay interests [of the external debt]... Brazil is a country which was ravaged, which already had its gold, its silver, and its wood plundered, and which still has to keep paying interests. And these interests that I pay prevent me from repairing roads to transport production, from improving schools, from improving the healthcare system, so I cannot say that this world system is in tune with food security"[242]

As such, many of the barriers to local food security promotion are tied to larger political and economic contexts. Nevertheless, it is the responsibility of local stakeholders and decision-makers to determine how their community will behave within the globalized world setting. As the cases of Waterloo Region and Feira de Santana

[238] Personal interviews with farmers from Waterloo Region, Waterloo, summer 2007
[239] Soots, 2003, p.63
[240] Hines, 2000; and Davis, Thomas, and Amponsah, 2001
[241] Agreements between the IMF and developing countries often included the so-called "structural adjustment programs", which required such countries to reduce their trade barriers in exchange for financial assistance. That led most of them to replace traditional food systems for export-oriented ones based on cash-crops; in part, in an attempt to pay off an ever growing external debt. Madeley, 2000, p.53-56
[242] Personal interview with Naidison Baptista, executive-director of MOC (Movement of Communitarian Organization), a local NGO, Feira de Santana, fall 2007

revealed, much depends on local policies, on the action of local stakeholders, and on which interests underscore local decision-making.

## 5.4. Cultural and Educational Considerations

Culture and education are key aspects to food security, as they underscore personal and political decision-making. In this case, an educational and cultural environment that fosters sustainable attitudes and involvement in the various stages of the food chain could be a significant asset for communities and individuals. On the other hand, when culture and education are not in tune with sustainable food security principles, these same determinants may severely undermine it.

A first educational challenge can be simply lack of information. For instance, farmers need some degree of economics knowledge in order to understand market dynamics and be successful in current capitalist food systems. This has been a deficiency of the farming community of Feira de Santana, for example.[243] Consumers' choices are another example, as they need some understanding about their food system in order to give preference to sustainable food options. Similarly, they also need some notion of healthy eating in order to eat well, whether in the form of nutrition expertise or of traditional food knowledge.

Although the lack of information can pose important barriers, the challenge is much harder when culture and/or education transmit values that contrast with sustainable attitudes. As the last chapter revealed, that has happened in both Feira de Santana and Waterloo. Global trends towards urbanization, agro-industry, and food choices based on convenience have certainly affected education and food cultures in local communities, shifting those in ways that are highly contrasting with sustainable food security promotion. For example, the increasing urbanization of communities worldwide has entailed a depreciation of rural livelihoods, to a point that even education taking place in

[243] According to Adriano Costa, coordinator of a local NGO, that has been a significant barrier to farmers' attempt to market their products, what has had a negative effect on their income. For example, they do not know how to prepare business plans, and for lacking economics education they find themselves often in disadvantage when dealing with middlemen.

rural areas often undervalue that environment.[244] In addition, as a large percentage of the population was removed from farming-related activities, much traditional agricultural knowledge is currently being lost. "And once you lose that, it's really hard to get that back; the expertise, the skills of farming", a Canadian farmer notes.[245]

The loss of skills, however, is not limited to farming. Consumers' decreasing ability to preserve and prepare foods has also been a major challenge in more urban, industrialized food systems. As a Canadian chef notes, people in such contexts have lost their sense of taste[246] and simply do not know much of what to do with the food.[247] This has certainly resulted from a number of socio-cultural changes in the last decades, such as a faster-paced lifestyle, more women in the labour market, but also an increasing appreciation for convenience foods. According to JoAnn Jaffe, from the University of Regina, the loss of such food skills has weakened what she calls "consumer sovereignty", and therefore increased the power of retailers and manufacturers to manipulate tastes and desires.[248] As it is well established in the literature and this study confirms, agri-food companies have used that power extensively to drive food cultures towards nutritionally-poor diets, and this has been a huge barrier to food security promotion.[249] As a public health official from Waterloo Region puts it, "Being able to offer healthier options to people […] and show them to be as appealing as the things that are marketed by the big food firms is a big challenge."[250]

Brazilian and Canadian public health professionals identify such a culture of convenience foods, associated with poor food education and skills, as a major cause for unhealthy diets. That may, in fact, foster a whole attitude of negligence for aspects such as proper nutrition, the social dimension of eating, or the origin of the food and the

[244] This study identified that as a challenge in both communities. Canadian and Brazilian farmers and government officials agreed that the depreciation of rural livelihoods has been a barrier to mobilize the farming community, as well as to make agricultural issues seem important to urban dwellers.
[245] Personal interview with a farmer from Waterloo Region, Waterloo, summer 2007
[246] The chef is in tune with local farmers' critique that consumers have got used to prioritize appearance and not taste. According to her, this is why they will often go for perfect-looking but tasteless fruits and vegetables, because they have simply lost the notion of (or in some cases, never knew) how they are supposed to taste.
[247] Personal interview with Rachel Hull, chef and former caterer in Waterloo Region, Waterloo, summer 2007
[248] Jaffe, cited in Halweil, 2004, p. 164
[249] See, for example, Borzekowski and Robinson, 2001; Story and French, 2004; and Linn and Novosat, 2008
[250] Personal interview with a public health official of Waterloo Region, Waterloo, summer 2007

impacts of its production.[251] As Pat Vanderkooy, public health nutritionist of Waterloo Region suggests:

> It comes in how people view our food system, how worried they are about farmers' plights and sustainability in agriculture. Some people really couldn't care less about all those issues of local food and sustainability, because, as long as they can eat what they want to eat, what they like to eat, they don't really care about where it comes from.

She goes on to point out that the negligence for healthy eating may come simply from unawareness, or even from convenience itself:

> You know, I think it's largely a matter of "you don't know what you don't know". People who are overweight, who grew up on pop and chips, don't know what it feels like to be healthy. So they don't know what they're missing. […] I think sometimes that our biggest barriers are our own affluence and our sort of reluctance to do anything that would be construed as work or have any kind of sacrifice involved. "Oh my goodness, why would I eat my fruit without a tablespoon of sugar sprinkled on it? I like it with sugar, therefore I will eat it.[252]

All these values and attitudes are present in agro-industrial food systems, particularly in North America.[253] They have found fertile ground in consumers that have diminishing levels of food skills and knowledge (or, to use Jaffe's terms, less "sovereignty"), and pose serious challenges to sustainable food security promotion. That seems to be less of a problem in communities that have strong traditional food cultures, as it is the case of Feira de Santana. Yet, as that same case demonstrates, local food cultures can also offer unhealthy choices, and uneducated consumers will be particularly vulnerable to them as well. In sum, most challenges arise when food education is deficient and the food culture is not in tune with health and sustainability. That renders consumers highly vulnerable to the lures and attractions of the food industry, and less prone to work towards their own food security and that of their community.

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[251] Personal interview with Rachel Hull, chef and former caterer in Waterloo Region, Waterloo, summer 2007. See also Slow Food, 2008b

[252] Personal interview with Pat Vanderkooy, public health nutritionist of Waterloo Region, Waterloo, summer 2007

[253] Pollan, 2006

## 5.5. Conclusion

Barriers to sustainable food security involve multiple biophysical, socio-economic, political, cultural, and educational factors operating in an intricate manner. To a large extent, they are not solely a product of local communities, but often of national or global processes such as the expansion of agro-industry and the increasing globalization of food systems. This is not to say that such trends are inherently negative, but to acknowledge that they have entailed a number of challenges to food security promotion. The examples of Feira de Santana and Waterloo Region illustrate well how such challenges are widespread and create similar barriers even in very different contexts.

Given the global dimension of those challenges, one could think that most action is outside the reach of local communities. However, as the next chapter concludes, even though the state/provincial, national, and global levels offer important spaces for action, there is much to be done locally.

# Chapter 6: Promoting Sustainable Food Security

## 6.1. Introduction

Sustainable food security promotion faces numerous and complex challenges. This is certainly the situation in the cases of Waterloo Region and Feira de Santana. Yet, there is certainly much that each level of governance can do to overcome those barriers, particularly local communities. They are the most suited to work within the specifics of each locality, as they can better recognize needs in their particular context, explore potential, and create the necessary network for local action. Finally, communities can initiate bottom-up changes, provided the upper levels of governance are willing to learn from local experiences.

This chapter focuses on what can be done in and by local communities in order to promote sustainable food security. It offers specific recommendations for Waterloo Region and Feira de Santana as well some broader suggestions as to what communities in general can do. It is divided into four main sections, each addressing recommendations to a different actor of the food system: consumers, community organizations, the local government, and the private sector.

But before moving forward to those recommendations, we need to see whether the sustainable food security criteria still remain the same after being tested on the field. In general, the findings were very supportive of them, and key-informants of both communities were very much in tune with the concerns discussed in Chapter 2. At the same time, they suggested the incorporation of two new elements.

A first suggestion was that access to adequate food through assistance, aid or charity should not be considered food security. Instead, people should be sufficiently empowered to be food-secure without having to depend on assistance. Another suggestion was that the food system needs to be embedded in a culture that relates eating to culture, health and sustainability – something this study has already considered, but which it now makes more explicit in the criteria.[254]

[254] A third suggestion was that food needs to be religiously appropriate; however, this study has considered religion as an intricate part of culture. So when it states that food needs to be culturally-appropriate, this already includes religious requirements.

Taking those suggestions into account, sustainable food security criteria and definition were amended, and are now presented as follows:

1. All people have stable physical and economic access to healthy and culturally-appropriate food, *without having to depend on assistance or food aid*.
2. The food system respects and promotes equity and social justice, strengthening social integrity.
3. The food system contributes to biophysical sustainability. It promotes biodiversity and ecosystems integrity.
4. Consumers have a food environment with favourable conditions to choosing foods that meet the three criteria above, *including a food culture that drives them in that direction*.
5. People make choices and have attitudes that are beneficial to the promotion of sustainable food security.

Therefore, s*ustainable food security exists when all people have and exercise a stable access (physical and economic) to healthy and culturally-appropriate food,* without depending on assistance*, in a food system that contributes to biophysical sustainability, social integrity and social justice, and which offers favourable conditions for attitudes and choices that help promote these goals. Finally,* the food culture should be in tune with that*, and people must indeed have such attitudes and make such choices.*

The chapter now turns to what each actor of local communities can do, and how that state can be achieved.

## 6.2. The Individual: Behavioural and Attitudinal Changes

Even if there is much to be done by governments, community organizations, and businesses, all changes must first start with individual decisions. As such, the promotion of sustainable food security depends on the adoption of behaviours and attitudes in tune with its principles. As the public health nutritionist of Waterloo Region puts it,

> The statement I make through my choice can make a small difference. And if everybody chooses to make a small difference, I still think there is a big difference to be achieved. […] It has a ripple effect because I have three children and I have a husband, [and] when I invite people to come to an open-house dinner in our backyard, the choices I make, the foods that

> are served, the signals I give out to people, it still does make a difference.[255]

A major way that individuals influence their food system is through food consumption.[256] Subsidies aside, it is the money of consumers that provide economic support to the food system, as a Canadian chef recognizes: "I really feel like where I spend the dollars I have is really how I vote for the way I want the world to be."[257]

In the case of Waterloo Region, consumers need to give a higher priority to health in their food choices, and to be more supportive of local food initiatives. As seen before, food expenditures at farmers' markets represent only 2% of the total in this region[258]. But even in such alternative spaces there is a fair bit of conventional foods, so consumers still need to look for and give preference to local options. They should also replace foreign foods for local alternatives as much as possible, and go for organic and fair-trade options when the latter are unavailable (e.g. coffee and tea).

In Feira de Santana, consumers need to recognize the full value of their abundant local food alternatives. This means seeing produce markets and street food vending not as unsophisticated options exclusive to the poor, but as a precious resource through which everyone can support low-income producers, the environment, and the local economy. As in the case of Waterloo, it requires a whole attitudinal change in the direction of health and sustainability, and away from the alienation to the impacts of their food choices. Along the same lines, a higher valuation of food skills and preparation would contribute significantly to both health and culture in those communities, helping consumers avoid the lures of ready-made and convenience foods.

These same recommendations can be largely extended to other communities. The context of Waterloo Region bears major resemblance with other North American food systems, as Feira de Santana's has strong similarities with other communities all across the developing world. Individuals from these latter should start to support and give a higher value to their food culture, and try to keep the traditions that the modern agri-food

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[255] Personal interview with Pat Vanderkooy, public health nutritionist of Waterloo Region, Waterloo, summer 2007
[256] Adapted from Allen, 2004, p. 65
[257] Personal interview with Rachel Hull, chef and former caterer in Waterloo Region, Waterloo, summer 2007
[258] Harry Cummings and Associates Inc., 2003, p.98

model has undermined (e.g. customary eating habits, traditional farming practices, neighbourhood markets). Local communities in developed countries, on the other hand, already lost much of that, and are now experiencing a "renaissance" of farming cultures and local food.[259] In this effort to rescue rural traditions, their consumers can also take advantage of the increasing immigrant communities, and learn from them in order to make the food culture richer and more diverse.

In sum, what individuals need to do is to embrace the principles of sustainable food security in their attitudes and everyday activities, particularly in food purchasing. This should drive them to explore and make best use of the alternatives they have available, as well as to help build and support new ones. As much of this action has to be collective, next section examines what civil society organizations can do, and how they may contribute to promoting sustainable food security.

## 6.3. The Community: NGOs, Farmers' Organizations, and Others

Action to promote sustainable food security can gain considerable strength when performed by organized actors, such as farmers' cooperatives and NGOs. This "third sector" can play an important role orchestrating efforts, developing initiatives, and influencing other actors in the food system. As such, this sector represents an opportunity for the civil society to become empowered, and for grassroots actors to have their voices heard by the larger public.

FoodLink in Waterloo Region and MOC (Movement of Communitarian Organization) in Feira de Santana are good examples of how non-state organizations may contribute to food security promotion. They have worked closely with the community, particularly with farmers, and provided an important assistance in terms of counselling, fund-raising, advertisement, and representation before government agencies. A good example of results from that action is FoodLink's *Buy Local! Buy Fresh!* initiative[260], which includes the labelling of local products and also a map which shows to consumers where to find them. MOC, for its turn, has helped farmers deal with bureaucracies, obtain licenses and government funds. It has also provided them with technical and marketing

[259] Personal interview with Jessica Kwik, coordinator of the neighbourhood markets initiative in Waterloo Region, Waterloo, summer 2007
[260] See Xuereb, 2005b, for an evaluation of its effectiveness in Waterloo Region.

assistance (e.g. teaching them how to prepare business plans), which the local farming community has recognized as a precious help.[261]

All that assistance helps individual farmers or their cooperatives sell food locally, at farmers' markets for example. Community organizations should, however, ensure that these alternative spaces are not being hijacked by conventionally produced foods chains, as seems to happen often in Waterloo Region.[262] Farmers from Feira de Santana have taken this idea to a next level, and started to develop "agro-ecological markets" with the support of MOC. These markets are managed and staffed by the farmers themselves, and only allow foods produced locally and through sustainable methods.[263] With an adequate infrastructure (e.g. accessible location, or equipment to meet food safety standards), such markets can offer more than healthy, sustainable food options; they can also be a desirable space for promoting social integrity, conviviality, and environmental literacy.[264]

Another alternative way of marketing local foods is through produce auctions. Since 2004, Waterloo Region has hosted the Elmira Produce Auction, a wholesale market for local fruits and vegetables (producers from more than 75km of Elmira need a special approval to sell there). Owned and managed by the farming community, that auction has played an important role providing sustainable food options to consumers, as well as a market to local producers.[265]

These are all ways through which community action can foster and promote sustainable food security locally. Community organizations in Feira de Santana and Waterloo Region mainly need to boost such initiatives, expand their networking, and create more opportunities for small-scale farming to become economically viable.[266] For instance, they could link local producers to entities that buy food for donation, creating one more market for food producers and providing high-quality foods for those who

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[261] Personal interviews with Terezinha Lima and José Sales, leaders of farmers' associations in Feira de Santana, Feira de Santana, fall 2008

[262] St. Jacobs Farmers' Market in Waterloo Region, for instance, is widely advertised as a place for local foods, but it is not rare to find there produce from as far as Chile or Argentina.

[263] These agro-ecological standards incorporate organic features (e.g. no chemical inputs) but go beyond them, requiring for example that the products come from small-scale and polyculture farming.

[264] See St. Clair, 2003

[265] See FoodLink, 2008c

[266] Several authors have pointed the viability of small-scale farming as a key element in sustainable food security promotion. See, for example, Halweil, 2004; Norberg-Hodge, Merrifield and Gorelick, 2002; and also Shiva, 2002

depend on assistance. Those organizations should also lobby governments to open institutional markets to family agriculture (e.g. public schools, prisons, hospitals), which would provide the same benefits described above, but on a much larger scale. Finally, they can invest in what Brazilians have called "solidarity economy" or "solidarity markets", which means communities and associations purchasing food from their own peers. [267] Along with efforts towards education, improved networking, and technical assistance from NGOs, that can make a significant difference for local communities – as it has already made in some parts of Brazil.[268]

Provided they are adapted to the specifics of each locality, those ideas and recommendations can be largely extended to other communities. In fact, much of that is already being applied in other places with success, as it is the case of the *Buy Local! Buy Fresh!* map in other Ontarian regions[269] and the agro-ecological markets in other parts of Brazil[270].

## 6.4. The Local Government: Favourable Policy- and Decision-Making

Local governments are another strategic actor in the promotion of sustainable food security. As an NGO leader in Feira de Santana notes, it is through policies that nations, regions and communities are oriented, and it is based on policies that decision-makers spend the public money.[271] Therefore, there is much local governments can do to promote food security.

Governments can act in two complementary ways: acting directly to promote sustainable food security and reduce barriers to the action of other actors. A first step in that direction should be taken within government facilities and public institutions; for instance, creating healthy food environments for government employees, and sourcing

[267] Vasconcelos refers to such a solidarity economy as something grounded on cooperative work, mutualism, and community self-governance, in a very particular rationality that contrasts with profit-seeking and usual market imperatives. According to him, its benefits go beyond economics and reach social and political dimensions, as it increases social capital and enhance the capacity of the community to have its voice heard and be a political actor. Vasconcelos, 2007, pp. 263, 274, and 281
[268] See Branco, 2005
[269] See FoodLink, 2008b
[270] Personal interview with Naidison Baptista, executive-director of MOC (Movement of Communitarian Organization), a local NGO, Feira de Santana, fall 2007
[271] Personal interview with Naidison Baptista, executive-director of MOC (Movement of Communitarian Organization), a local NGO, Feira de Santana, fall 2007

adequate, socio-environmentally friendly foods for state-owned institutions. This involves the so-called "institutional markets" (e.g. public schools, hospitals, prisons), which some authors have pointed as a great opportunity for governments to support sustainable agriculture.[272] As the executive-president of a local NGO highlights, those are markets where small farmers can find a constant demand and also avoid the competition with large producers. As he exemplifies, "Just the school lunch, if we could supply about 20% of it, that would be sufficient for a revolution here in the region and a very strong improvement of the local economy".[273]

Another issue is the hiring of staff to work in state agencies. As a Bahia State official from Feira de Santana observes, technicians, planners and experts often are not themselves committed to the principles of sustainable food security.[274] Therefore, attention to that in the selection of employees seems necessary in Feira and other communities. Such a committed staff can initiate or assist the community in projects such as those last section described, with expertise, funds, advertisement, space, and infrastructure. Moreover, they can raise awareness about food system dynamics, highlight the importance of a healthy farming community, and promote campaigns to educate consumers along those lines.

Ideally, these state actors should operate in partnership with the community, as for example through a multi-stakeholder council to assess and develop local food security initiatives.[275] That could be a first step in integrating different food security concerns in policy- and decision-making, and reducing the usual disconnection (or even conflict) among different branches of government administrations.

Those are ideas that can be adapted and applied broadly by local communities. In the specific case of Waterloo Region, the government should make the policy environment around food vending simpler and less fragmented. In other words, it should have a single, articulated agency to issue all necessary licenses and approvals, as well as

[272] See, for example, Allen, 2004, p.68
[273] Personal interview with Naidison Baptista, executive-director of MOC (Movement of Communitarian Organization), a local NGO, Feira de Santana, fall 2007
[274] Personal interview with Albertino Carneiro, regional director of CAR (Company of Regional Action), a Bahia State agency working with agriculture and rural development, Feira de Santana, fall 2007
[275] Both Waterloo Region and Feira de Santana count on that sort of council, respectively the Food Systems Round Table and the Municipal Council of Food Security (CONSEA).

less bureaucracy for local food markets. As such, those initiatives would be much less expensive and time-consuming – or in other words, more viable.

In Feira de Santana, the government needs to be more transparent and committed to sustainable, small-scale agriculture. As farmers' associations and NGO leaders agree, there is much more the municipality can do, starting from joining community efforts and establishing partnerships. A stronger enforcement of food safety regulations is also necessary, but not without creating alternatives to those who currently live on "illegal" activities (e.g. selling raw milk). In the particular case of street food vending, the government should make the licensing process simpler and cheaper, eventually with tax exemptions to poorer vendors.

Local governments can effectively make a difference by adopting such initiatives. But often decisions are beyond their jurisdiction, so they should also be ready to advocate for changes at upper levels of governance (and in the case of Canada, down at the township level).[276] This includes lobbying to higher levels of government on issues that affect communities, such as farm and trade policies. Finally, local governments should be willing to exchange experiences, learn from other communities, and possibly adopt and adapt programs that were successful elsewhere.

As much as governments can be partners and facilitate the action of community actors, they also can do it with businesses. Tax incentives could be provided for food retailers selling local food, and zoning by-laws could restrict some urban areas for small, independent businesses. In addition, local governments could provide incentives to industries willing to work in partnership with the farming community, for instance, to process, preserve, or add value to local foods. This would not only absorb the local production and increase its availability in local markets, but also create jobs and provide farmers with a higher income. Following up on these ideas, next section explores in more detail what businesses can do for sustainable food security promotion.

[276] A successful example was the lobbying of the Toronto Board of Health on the Ontario Ministry of Health to amend a food safety regulation and allow for more diverse street foods. Before the amendment in 2007, the regulation allowed only hot dogs to be sold on the streets. Now it allows for a much larger diversity, which includes fruits, baked goods, and a variety of ethno foods. See City of Toronto, 2007

## 6.5. The Private Sector: The Role of Businesses

Even though businesses tend to put their economic self-interest first, they can play an important role promoting sustainable food security in local communities. As such promotion tend to empower consumers and boost the local economy, it seems even advantageous for local businesses themselves to join efforts in that direction.

A first recommendation for businesses in general is that they start promoting sustainable food security principles within their own institution, providing a healthy food environment to the employees (e.g. at their cafeterias), with foods that also meet socio-environmental requirements (e.g. serving local and organic foods, fair trade coffee)[277]. But opportunities for action are not limited to the businesses' own structure; they can actually engage in projects for the community, as sponsors, partners, or initiative promoters. In these cases, it is always important to consult with the community in order to be aware of the problems, needs, and priorities of each locality.

That sort of action, such as sponsoring, can be taken by any business. Food businesses, however, have much more opportunity to act. Processors, for example, could source more local foods, establishing partnerships with the farming community. This is likely to cost more, and there are also logistical barriers, as food processors usually work with centralized distribution and few large suppliers.[278] However, government incentives (e.g. subsidies or tax breaks) could cover the additional costs, or they could be simply added as premium into the final product. These schemes could take place at least in the harvest peak seasons, when local production is available. Food processors, therefore, would need to make contracts which allow them to source food locally during that period. As consumers become more concerned about the socio-environmental impacts of the food system, demand for such products is likely to grow. Thus, these schemes could be initially aimed at niche markets, and then become more mainstreamed.

That would be an adaptation of current food processors. However, new businesses could also be set locally to preserve and add value to local foods. In Waterloo Region and other temperate areas, freezing and canning plants for local vegetables and fruits could

[277] See Eat Smart!, 2008, for its Workplace Cafeteria Program and others.
[278] These barriers would be less of a problem if farmers are organized into cooperatives and thus able to supply food more regularly and in larger quantities.

assist local farmers, as well as make local foods available year round. Moreover, such industries would remove the need to have local consumers learning again how to do that by themselves. In Feira de Santana, that would be an excellent form to utilize the abundant fruit harvests, which currently rot to a large extent. Such businesses could be costly and would obviously depend on a demand for local products. Government support and partnerships with the local community, however, could significantly reduce those barriers. Plant operations could be adjusted to the needs and the supplies of the community, while the government could provide tax exemptions, help advertise local foods in order to increase demand, or simply buy such products for state-owned institutions.

Food retailers, too, could significantly contribute to such initiatives. They could, for instance, provide more and better shelf space for local foods, what could be accompanied by forms of advertisement that highlight their socio-environmental benefits and better taste. These initiatives could also take advantage of different food varieties, such as purple raspberries grown in Waterloo Region and goat milk, common in Feira de Santana. That helps make a difference in the local product, which can also justify a higher price. Although premiums can be used, it is useful to highlight such advantages of the local products, as well as to conduct surveys to know how much more local consumers are willing to pay for those. According to a public health planner, that additional cost should not be beyond 10% in Waterloo Region.[279]

As food retailers also work under contracts and with centralized distribution, they would need to perform the same changes suggested for food processors. Similarly, they would substantially gain the forms of community and government support described above. This reveals that, although businesses can take initiatives and engage in voluntary action, such action is much likely to succeed when different social actors play their roles together.

## 6.6. Summary

Despite numerous and complex challenges to sustainable food security in local communities, coordinated action among the government, businesses, and civil society

[279] Personal interview with a public health planner of Waterloo Region, Waterloo, summer 2007

groups could overcome many barriers. However, it is necessary, first, to foster individual actions, particularly in consumers. It is ultimately the money spent on food purchases that support all activities in the food chain; therefore, different consumption behaviours can work to stimulate changes in the direction of a healthy and sustainable food system. But this will not be sufficient without broader socio-political changes. Therefore, civil society organizations can play a role networking, organizing, and assisting the community (farmers, for instance), raising awareness and also lobbying other actors. The government, in turn, could create an appropriate policy environment to sustainable food security promotion, reducing barriers to local food marketing and providing more opportunities for it to be economically viable (e.g. the institutional markets). Finally, the private sector could help local foods make their way into processing and retailing. Differences in taste and socio-environmental benefits could be highlighted, which would increase demand and at the same time educate the public.

As much as the current agri-food system relies on those various actors (e.g. price-driven and environmentally unaware consumers, government policies that favour inequality, unsustainable business practices), so does a healthy and sustainable food system. It demands, however, that all those actors shift their attitudes accordingly; not in isolation, but through integrated action.

# Chapter 7: Conclusion

## 7.1. Achieving Sustainable Food Security in Local Communities

This thesis started with the realization that the widespread state of food insecurity in the world is not an isolated fact, but something deeply rooted in the ways food systems operate. Despite increases in trade and production, current agri-food dynamics based on industrial agriculture and export markets still denies access to food to the world poor. Moreover, socio-environmental costs have been high; the system has raised inequities in terms of wealth and power, undermined social integrity, and placed a heavy burden on ecosystems.

Given such a global scenario and its effects on local communities worldwide, this thesis adopted a systems perspective to investigate the problem and propose effective solutions that account for its complexity. It associated food security with the concept of sustainability, to build the idea of sustainable food security, a state in which food needs are met through socially and environmentally friendly ways. This filled important gaps in standard food security definitions, which have not expressed such concerns. In this effort, the study also filled other gaps in an expanded definition, to include the issue of overconsumption, concerns over the socio-environmental impacts of the food system, the importance of providing healthy food environments, and the need for consumers to effectively use the access they might have to adequate food.

The study gathered such concerns into five sustainable food security criteria, and tested them on the field in two very different communities in Canada and Brazil, Waterloo Region and Feira de Santana, using a case study methodology. With these case studies and an extensive literature review, this thesis has highlighted the challenges and the opportunities of achieving food security, noting that many findings from those communities may also apply to other communities. Despite, their considerable differences, both Waterloo Region and Feira de Santana face a number of similar challenges with respect to food security. They include unpredictable rainfall, reduced economic viability of small-scale farming, policy barriers to marketing local foods, political decisions that favour larger players, food environments that do not favour healthy eating, and consumer attitudes that are not based on socio-environmental

concerns, but primarily on prices and convenience. Given those similarities in two very different settings it is reasonable to assume that those factors would be present in many other parts of the world.

This study refutes the idea that so-called developed countries are food-secure and developing countries are not. On the contrary, it has demonstrated that food systems which are more integrated with agro-industry and global markets pose much more formidable barriers to a state of sustainable food security. As this study has demonstrated, many of the current challenges to local food security are linked to global trends such as the consolidation of agriculture and the dietary shift towards convenience and nutritionally-poor foods.

Finally, the thesis has provided useful recommendations to improve the particular situation of food security in Feira and Waterloo themselves, as well as broadly in other local communities. Those recommendations include the adoption of a systems approach to food security (including the various aspects incorporated in the criteria), the use of foods from family farming in state-owned institutions, agro-ecological farmers' markets, and a policy environment that facilitates local food marketing. As such, this thesis makes a difference in both practical and academic terms, taking a new step in the food security debate and, potentially, in the actions to promote it.

## 7.2. Recommendations for Further Research

Further studies with respect to food security could be quantitative and qualitative. Much of the data available for Waterloo Region was nonexistent for Feira de Santana, so this is a gap to be filled with quantitative research. It could investigate the incidence and degree of food insecurity; total food expenditures and percentages of where they take place; the average distance traveled by the food (the "food miles"); consumer preferences and motivations; and relationships between income level and diet. Answers to these questions provided a fair bit of baseline data for Waterloo Region, so they would be also a contribution in Feira de Santana and other communities.

More qualitative research is also necessary in order to take further steps in the promotion of sustainable food security. Investigations could consider, for instance: how to reconcile healthy street food vending and adequate safety standards; how local foods

could be made more accessible; barriers and opportunities to the inclusion of family farming products in institutional markets; and how Canada and Brazil, being two food-exporting countries, may reconcile their international trading practices with the development of healthy and sustainable food systems for their communities.

A final recommendation is that the sustainable food security criteria developed here be applied to other communities. This would test them further, as well as allow for a broad assessment of other food systems.

## 7.3. Final Considerations

The food security issue invokes an important reflection upon our attitudes and the way we organize the society. Food is a very specific subject because, not only is it an essential resource, but also something that has deep connections with cultures and traditions. It affects all three dimensions of health and well-being: biological, mental, and social. Similarly, it connects all levels of decision-making, from the individual to the global level. And as an emblematic example of environmental studies, it binds together biophysical, social, and economic preoccupations.

When asked about why this should an issue of concern, a family farmer put it in very simple terms, and argued that "it only makes sense to protect the things that you love, and whether that's your family, whether that's your land."[280] This reveals that different realities demand different attitudes, more grounded in solidarity, care, and a sustainability ethic. These are the necessary grounds for action, for only then effective contributions can arise. Thus we join that farmer when he says: "That's what we do".

[280] Personal interview with a farmer of Waterloo Region, Waterloo, summer 2007

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# Appendix I: Maps

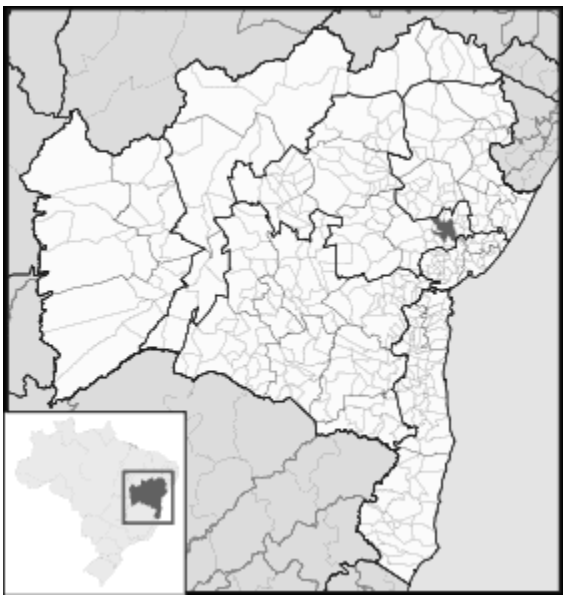
## Map 1: Region of Waterloo


Source: www.newcomerswaterloo.ca, retrieved March 23rd, 2008

## Map 2: Bahia and the Five Regions of Brazil


Source: www.brasil-turismo.com.br, retrieved March 23rd, 2008

## Map 3: The Municipality of Feira de Santana



Source: www.uefs.br, retrieved December 16th, 2007

# Appendix II: Questionnaire for Key-Informant Interviews in Waterloo Region and Feira de Santana

(***For the interviews in Feira de Santana, all questions were translated into Portuguese***)

## 1) Questions for interviewing FARMERS

*- Profile Questions*

How long have you been farming?
Why did you become a farmer?
What do you produce?
How much do you produce?

- ✓ **Ensuring Availability and Accessibility to adequate food**

How healthy do you think the food is in Waterloo Region / Feira de Santana?

Do you think the food available in Waterloo Region / Feira de Santana is adequate? When answering this question, please define adequate.

What do you see as the major barriers to promoting adequate and available food for everyone in the community?

Can you buy food within walking or biking distance from your home?

- ✓ **Promoting Equity and Social Integrity**

Do you have any support from the local government? What kind?

Do you think you get a fair price for what you produce?

Who are your competitors? Is it difficult for the small farmer to stay in business? Why or why not?

How close are you to the consumers of your produce or other commodities?

Who primarily buys your products?

What problems do you have in maintaining your farming operations?

What do you see as the barriers to ensuring your product gets to different groups in Feira?

Do governments assist or hinder your ability to sell and distribute your products?

To what extend do your competitors inhibit your ability to be productive?

- ✓ **Sustaining the Natural Environment**

Do you use any kind of chemicals on your farm, such as fertilizers, pesticides, hormones, etc?

Could you describe your agricultural practice? In terms of procedures, the methods you use for cultivation, etc.

Do you recognize any positive or negative effect of your activity on the natural environment? Do you believe that makes any difference to the consumers?

Do you think that it is important to use organic farming methods?
(If yes) What are the difficulties in doing so?

- ✓ **Supportive Structures – Private and Public**

How do you think the municipality could help local farmers produce more effectively?

Do you see any outside influence (from dynamics and decisions at the state/province, national, or global levels) on your activity? Which influence?

Who has the most influence on your ability to be competitive?

What could be improved in the system to enhance your ability to farm effectively?

Have you heard of food security? Where?

- ✓ **Cultural Attitudes and Practices**

How would you define food security?

In your opinion, what would be a healthy diet? How similar is it to the diet you have?

Where do you prefer to buy the food you do not produce? Why do you prefer such place(s)?

Do you think there is a difference between buying food from this region and food that comes from elsewhere? What would it be?

In your opinion, is it important to protect the natural environment? Why?

How do you think we can achieve sustainable food security for Waterloo Region / Feira de Santana?

## 2) Questions for interviewing PUBLIC HEALTH PROFESSIONALS

- ✓ **Ensuring Availability and Accessibility to adequate food**

Do you think Waterloo Region / Feira de Santana has enough food for everyone including those without much of an income?

Do we provide healthy food in general?

How is a healthy diet and how could we foster it among the population?

What is the importance of a healthy diet? To which extent do you think people are aware of such importance?

Do you believe a healthy diet is accessible to everyone in the region, both in terms of physical and economic access?

Do you think one could have a healthy diet eating only foodstuffs that are typical of the local culture?

In terms of nutritional value, is there a difference between fresh food and packaged food? Between fresh food and products transported from elsewhere?

What do you see as the major barriers to promoting adequate and available food for everyone in the community?

- ✓ **Promoting Equity and Social Integrity**

Do you think the current structure of the local food system affects social justice? How?

Do you think the current structure of the local food system affects social integrity? How?

What can be done to the food system in order to reduce poverty and improve the quality of life of the local people?

- ✓ **Sustaining the Natural Environment**

Which environmental features are important for public health? What is their current condition in the region?

Do you think the current structure of the local food system affects the natural environment? How?

- ✓ **Supportive Structures – Private and Public**

Do you find easier to a healthy or an unhealthy diet in this region?

In the daily life of a person in Waterloo Region / Feira de Santana, which structures do you find supportive of unhealthy eating habits?

In the everyday life of a person in Waterloo Region / Feira de Santana, which structures do you find supportive of healthy eating habits?

How do public health concerns and policies affect farmers' markets and food vendors in the region? Are there any regulations facilitating or posing obstacles to their activity?

Do you see any outside influence (from dynamics and decisions at the state/province, national, or global levels) on the food system of Waterloo Region / Feira de Santana? Which influences?

Have you heard of food security? Where?

- ✓ **Cultural Attitudes and Practices**

How do you define food security?

How do you think we can achieve sustainable food security for Waterloo Region / Feira de Santana?

From your experience, do the local people know how to eat healthily? Do they do so?

Where do you prefer to buy your food? Why?

Do you know where the food you eat comes from? How relevant do you think that is?

## 3) Questions for interviewing Food System Experts or Researchers

- ✓ **Ensuring Availability and Accessibility to adequate food**

Do you think Waterloo Region / Feira de Santana has a good and adequate food system for all sectors of the society?

Do you think the food available in Waterloo Region / Feira de Santana is adequate? When answering this question, please define adequate.

How healthy do you think the food is in Waterloo Region / Feira de Santana? How do you think we could make it healthier?

Do you think the food available in Waterloo Region / Feira de Santana reflects the cultural needs of the population?

What do you see as the major barriers to promoting adequate and available food for everyone in the community?

How easy is it to go to the places where you can buy food you consider to be healthy? What could be done to improve people's physical access to healthy and adequate food in the region?

What about the price of food in Waterloo Region / Feira de Santana? What could be done to make food more economically accessible to all groups in the region? Do you feel that everyone can eat nutritiously regardless of income?

- ✓ **Promoting Equity and Social Integrity**

Does the regional or municipal government support local farmers produce or sell their food? What kind of support?

Is there any kind of policy or incentives to attract food businesses to the region, such as supermarkets or fast-food outlets?

Do you think the current structure of the local food system affects social justice? How?

Do you think the current structure of the local food system affects social integrity? How?

What can be done to the food system in order to improve the quality of life of the local people?

- ✓ **Sustaining the Natural Environment**

Do you think the current structure of the local food system affects the natural environment? How?

Are there local policies to ensure food production in the region is environmentally-friendly?

Where does most of the food in the region come from? Are there any policies directing this?

- ✓ **Supportive Structures – Private and Public**

Do you find easier to a healthy or an unhealthy diet in this region? Why?

What could the regional/municipal government do to make healthy diets more accessible?

What could the regional/municipal government do to make local food production more supportive of social justice?

What could the local government do to make local food production more environmentally-friendly?

How do public health concerns and policies affect farmers' markets and food vendors in the region? Are there any regulations facilitating or posing obstacles to their activity?

Do you see any outside influence (from dynamics and decisions at the state/province, national, or global levels) on the food system of Waterloo Region / Feira de Santana? Which influence?

Have you heard of food security? Where?

- ✓ **Cultural Attitudes and Practices**

How would you define food security?

Do you think there is a difference between when consumers buy food from this region and food that comes from elsewhere? What would it be?

How do you think we can achieve sustainable food security for Waterloo Region / Feira de Santana?

## 4) Questions for interviewing CONSUMERS

- ✓ **Ensuring Availability and Accessibility to adequate food**

How healthy do you think the food is in Waterloo Region / Feira de Santana? How do you think we could make it healthier?

Do you think the food available in Waterloo Region / Feira de Santana is adequate? When answering this question, please define adequate.

What do you see as the major barriers to promoting adequate and available food for everyone in the community?

Can you buy food within walking or biking distance from your home? In your opinion, is there something that could be done to facilitate your physical access to food?

What about the price of food in Waterloo Region / Feira de Santana? Where do you find the best prices? Does your income allow you to have an adequate diet?

- ✓ **Promoting Equity and Social Integrity**

How well do you know the people selling the food you buy? You think this is important? Why or why not?

Do you know where the food you eat comes from? How relevant do you think that is?

Do you think that, as a food consumer, you somehow affect the level of social justice in the region? In other words, when you choose where to buy, do you think about to whom your money is going?

Do you change your food choices according to cultural festivities? If yes, where is it easier to get food which is typical of such events?

- ✓ **Sustaining the Natural Environment**

Do you think that, as a food consumer, you somehow affect the natural environment? In other words, when you choose where to buy, do you think about what kind of activity your money is supporting? Why or why not?

- ✓ **Supportive Structures – Private and Public**

Do you find easier to have an unhealthy or a healthy diet in this region? Why?

How influenced by the media are your food choices?

Which factors do you see pushing you towards (healthy diets, with) fruits, vegetables and whole foods?

Which forces do you see pushing you towards (unhealthy diets, with) soft drinks, packaged snacks, and other items rich in fat and sugar?

In terms of food, what would you like to buy, but you cannot? (Because of expensive prices, or because you can't find).

Do you see any outside influence (from dynamics and decisions at the state/province, national, or global levels) on your decisions as a food consumer? Which influence?

Have you heard of food security? Where?

- ✓ **Cultural Attitudes and Practices**

How would you define food security?

Could you describe a healthy diet? How similar is it to the diet you have?

Where do you prefer to buy your food? Why?

Would you prefer to buy food produced without pesticides? Do you buy food without pesticides?

Would you be willing to pay more for food produced organically? Why or why not?

Do you think there is a difference between buying food from this region and food that comes from elsewhere? What would it be?

How do you think we can achieve sustainable food security for Waterloo Region / Feira de Santana?

# Appendix III: Selected Narratives on How to Achieve Sustainable Food Security

"I think we need to continue work on a policy level, to advocate for income support for those who don't have enough money to buy healthy food. I think we have to continue to work to try to support our local farm community, so that they exist in the long-term. And I think we need to continue the examination of food access and see how it can sort of bring food to more into communities and neighbourhoods through urban agriculture and community markets, and sort of community food programs, to just use food as a tool for social connectivity, and vibrancy and fun. So it's not like an academic exercise, it's just a way of being. There's something about getting together around food that is quite inspiring. It's joyful."

- Public health official of Waterloo Region

"First you need to have a goal. You cannot go anywhere if you don't have a goal. If your goal is to promote justice, to allow people to have a chance in life and in the world, if you want to live in nature and preserve it for others to live of it too…If you have this collection of elements that makes a goal for you, that will underscore your actions and you will work towards that. So maybe that is a first step. Then there is a second element that is key: these things do not happen naturally, they are built socially. So, if they were built, they can be dismantled, unbuilt, and we can build something different in their place. People are able to create knowledge to be able to do that. So this is a second key element.

The third one, for me, is that the organization of people is the key to work on any perspective of change. In isolation, one here and another there, nobody builds anything. It stays in the realm of conscience, etc, etc. Nothing changes. The significant social changes, they all came from the social organization of people – all of them. Even Jesus Christ, he took 12, made a group, etc. Any of those, the great philosophers, the great thinkers of Antiquity, they all had their disciples to create groups and improve the society. This is the organization of people. And these organizations make projects, implement ideas, and above all, they must interfere in the policies. If some day we give up on changing the policies, we are doomed, because then nothing will change. MOC or any organization may elaborate a lot of cute projects, but it is in the policies that you have the orientation of the nation, of the region, of the municipality, and the money to invest into action. […] So we need to strengthen our interference in the public policies. And finally, [we need to] believe that History is there to be written. Some changes we will see, and some changes other people will see, as we now see those that others certainly desired and contributed for."

- Naidison Baptista, executive-director of MOC (Movement of Communitarian Organization), a local NGO in Feira de Santana