# Urban Agriculture to develop Food Sovereignty

Lessons from and to Havana

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SUSTAINABLE DEVELOPMENT – INTERNATIONAL DEVELOPMENT TRACK



Figure 1: Urban Organoponicos in Habana del Este

Source: photo edited by author

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### LIST OF ACRONYMS

ACTAF: National Association of Agriculture Techniques

ANAP: National Small-scale Farmers Association

FAO: Food and Agriculture Organization

FS: Food Security

FSV: Food Sovereignty

GNAU: National Group of Urban Agriculture

INIFAT: National Research Institution of Tropical Agriculture

MINAG: Ministry of Agriculture

NGO: Non-governmental Organization

**ONE:** National Office of Investigation

**TSN:** Transnational Food Corporation

UA: Urban Agriculture

UBPC: Basic production Cooperative Unit

**UN: United Nations** 

UN-HABITAT: United Nations Human Settlements Programme

### ABSTRACT

In Latin America, the combination of the Green Revolution effects and of the globalization of the food systems merged with the high rates of urbanization provoked remarkable levels of urban food insecurity. Urban Agriculture (UA) is a practice diffused across the region, in particular by low and middle income groups. In Cuba, this movement born to escape a chronic crisis occurred during the 90s, as a solution to become food self-sufficient. However, this urban agricultural movement was a top-down and state-controlled movement, and its effect on sovereignty of the producers and consumers is undermined and unclear yet. The purpose of this thesis is to verify the possibilities of developing food sovereignty in urban agriculture by examining results of the agroecology revolution occurred in Cuban cities. The thesis explores the current importance of UA in Havana and to what extent urban agriculture contributes to better livelihood conditions of farmers and consumers, with a focus on the social, environmental, political and economic dimensions, all retained fundamental pillars of the Food Sovereignty discourse. There are identified the opportunities for further implementations and the challenges that are faced by the actors involved in the UA systems. The results proved that although the UA movement has been implemented as a top-down initiative, through large State investments, these must be associated with grounded-based activities, giving priority to farmers and consumers' needs.

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## 1. Introduction

In the last decades, defeating hunger, better nutrition and ensure access and availability of food have been priorities on developing countries' agenda. International organizations and NGOs studied and implemented solutions to solve the issues, giving urgency to the enhancement of food production, through the establishment of modern and industrialized agricultural methods. The world food crisis occurred in 2008 revealed the limits of the Green Revolution and let questioning about the effectiveness of Food Security as a framework in development research and practice (Altieri &Holt-Gimenez 2012b). Such issues, mixed with the rapid urbanization trend, exacerbated the livelihood of urban dwellers in the Southern Globe's cities and rise the concern on further issues. The UN, among others, recognized the need for a new urban agenda based on equity and more appropriate policies to extend opportunities and increase the commons through appropriate urban planning (UN Habitat, 2016).

The new debate opened the discussion upon themes until then only little explored and redesigned methods and objectives. Urban food insecurity, has gained the attention of development research, as the process of urbanization goes hand by hand with the growth of urban poverty. Among the solutions proposed, Urban Agriculture is one of the most noteworthy. Although a traditional and ancient practice, only recently has received the worth attention, for being a potential complementary solution to urban food insecurity (Smith, 2013). Nowadays Urban Agriculture (from here also referred as UA) is widely applied in developing countries, especially by low-middle income groups. The fashion of producing within the cities reduces dependency from external inputs and increases resilience of inhabitants while they develop self-sufficiency (Murphy, 2006). Nonetheless, as a mean to rise Food Security UA while implemented, must take the social and the environmental dimensions into account. UA, in this way, must be re-designed so that, while providing solutions to hunger in urban areas, it generates further positive outcomes for livelihoods of the communities involved.

Therefore, it became clearer that although the potentials of urban farming have been previously proved by the literature, there are also underestimated limits that need to be considered. The challenges faced by farmers are many such as the lack of knowledge and experience, lack of capitals and access to credit, lack of dialogue with external experts, lack of resources as water and fertile soil. In this sense, the role of UA is complex as much as are the consequences of its development for the urban producers and consumers. In other words, the potential of UA to reduce urban poverty, and reduce hunger have been largely proved. What is still uncertain is the potential of UA in its implementation, development and effects, in providing the necessary capabilities to the farmers involved. Hence, less is known about its role on a social, economic, political and environmental perspectives. In fact, the analysis of UA within a Food Security framework would reveal quantitative information about access, availability, use and nutritional parameters. However, in such way other elements are left apart, such as the rights and the entitlements of farmers to decide and develop

their own food production, their access to resources and knowledge. Hence, there is the need to complement Food Security's analysis with further dimensions as social and environmental sustainability, fair economic growth and political participation.

The attention of academics has been increasingly dedicated to Food Sovereignty paradigm (hereafter also indicated as FSV). This latter concept, born to complement Food Security, has challenged development researches and practices toward a new type of analysis of the food systems. Coming out as a critic to the global food system, the discourse represents an answer to the industrialization imposed in the field and to the lack of rights diffused among millions of farmers around the world, a call for attention to small scale farmers as agents and on the respect of their traditional and sustainable methods (Escobar, 2012). FSV's most famous promoter, La Via Campesina, the farming and peasant movement internationally operating as a counter proposal to the ongoing neoliberal Food policies on agri-food systems, argued that FSV is a logical and necessary precondition for the achievement of Food Security itself (Via Campesina, 1996). It therefore results as a broader discourse, which embrace ideals and goals previously left apart, by dealing directly with political forces and with the large economic interests represented by the transnational food corporations (TSN). Rural grassroots movements welcome the concept of FSV as it represents an alternative to the neoliberal approach to solve the world's food issues (Altieri &Holt-Gimenez 2012b).

Cuba is an interesting case for two main reasons. First, because of the large investments the government addressed in urban food production, shown in policies and in the creation of *ad hoc* institutions. Second, in Cuba, due to political circumstances, Food Security discourse has been considered from the 60s, and it is now evolving into a more exhaustive paradigm, embracing agroecology principles. The application of sustainable methods in the traditional form of agriculture either in rural or in urban areas, is related to the aim of achieving food sovereignty. Sovereignty, is a well-known concept in Cuba, though often conceived with a different significance due to the historical-economic context. Every Cuban association, office or institution assume as priority the defense of the Revolution and the country's sovereignty, against foreign imperialism and economic neocolonialism. Sovereignty is part of every law, every political decision and action, as an ideal funding the public policies, meant as the fight against foreign invasion and corruption to the socialist system.

The financial and technical support the State provides, in form of top-down initiatives, results in a rapid development and growth of the national food production. The country represents a unique context for development studies. Analysing specific socio-economic patterns that characterize the Island, there are some advantages and drawbacks. History and geographic location, make Cuba an unusual example of developing country. Nevertheless, although its singularity, it has the potential to show examples of sustainable practices that can be exported in either develop either developing settings. As an example, the efforts dedicated to developing an efficient UA system to enhance Food Security in urban areas while applying sustainable techniques, it can be studied by different disciplines among social and natural sciences. In Cuba, UA implementation was not a matter of choice. As presented by the literature, it was introduced as a necessity led by hunger, through the extreme efforts carried out by Cubans (Reardon, 2010).

In this research, it will be referred to FSV with the definition provided by La Via Campesina (1996, refer to chapter 2.). In other words, the attention is directly given to the presence or absence of capabilities by studying what farmers and consumers are enabled to achieve. Indeed, there is studied to what extent these actors are entitled to decide and determine their production and consumption of food. From such results, there are derived the conclusions and recommendations for further application, individuating limits and positive results. There is the attempt to assess how FSV can be achieved through UA or how the latter can reinforce FSV as it is currently conceived.

To sum up, the research aims:

First, to explore benefits and risks a developing Cuba faces by relying on UA, concerning urban farmers' employment in the urban food system.

Second, to analyze the level, if exists any, of FSV through the lens of UA, retained the most relevant and noteworthy example of sustainable agricultural production developed in the last 30 years in Cuba. There is the presentation of the agroecology methods applied in Havana, based on the study of three specific municipalities presented in the regional framework. The attention is put on consumers and producers as retained both fundamental actors playing a role in the urban food production dynamics and for the achievement of food sovereignty's goals.

Third, to extrapolate more context-specific definition of FSV derived from the main voices collected on the field. Through the analysis of such information, some recommendations for future development practices in the agri-business are extrapolated.

In order to build the established picture, the thesis is outlined as follows. First, the literature review sets up the theoretical framework (Chapter 2.). The review presents the main theories related to Urban Agriculture and Food Sovereignty, in Latin America. As a last section, the chapter presents the conceptual scheme from which the research questions are derived. Chapter 3 presents the context where this research took place, by introducing Havana, some historical and geographical coordinates and the main actors participating in the scene of urban farming. In chapter 4, the methodology is discussed, and applied, the limitations of this research are identified. Chapter 5, presents the main finding with the discussion on the most relevant data gathered by reference to the existing the literature. The conclusion summarizes the most important lessons that can be derived from this study.

# 2. Theoretical Framework

# 2.1 Urban Agriculture

The Food and Agriculture Organization estimates that almost 800 million farmers around the Globe are urban (FAO, 2011). A definition of UA can be retrieved from Mougeot who describe it as "an industry located within, or on the fringe of, a town, city or metropolis, which grows and raises, processes and distributes a diversity of food and non-food products (re)using largely human and material resources, found in and around that urban area, and in turn supplying human and material resources, products and services largely to that urban area" (1999, p.10).

UA, although a traditional practice, is receiving only recently attention from development researchers studying food and agriculture, who have been for a long time largely devoted to rural contexts (Smith, 2013). Only in 1996, in fact, during the Habitat II Conference organized by the United Nations, it was recognized the need for research and support UA studies (Yap, 2013).

At the peripheries of urban settlements, where rural and urban coexist the access to basic services, food and employment are harder to find (UN Habitat, 2016). Millions of city dwellers around the globe, take advantage of green areas of such transition zones, and re-adapt the ancient practice of urban farming, with the primary aim of sustaining families by guaranteeing a basic access to food (Deelstra & Girardet, 2000). It has estimated that urban dwellers spend on average 30% more in food items than rural inhabitants. Urban farming, by shorting the supply chain, makes food available at lower prices, assuming also a role in enhancing Food Security (FAO, 1998).

Urban and peri-urban agriculture are part of the urban system as activities. Thus, to be implemented, these require human, financial and natural resources. It is a practice highly influenced by geographical conditions, as well as by the policies and the regulations.

UA, while having much in common, is distinct from rural agriculture for several reasons. The most evident diversities are based on space availability, techniques, production systems, destinations, actors, aims and revenues. Urban farmers must deal with shortages of space, in fact, it is based on the concept of reusing plots otherwise unused. Farmers dispose of these spaces such as communal areas, terraces, rooftops or private gardens and transform them into productive fields for family's self-consumption or for market-oriented productions (Richter et al., 1996, Mougeot, 1999).

Considered the smaller space available and the higher value per square meter of fruits and vegetables, urban farmers are keener to produce perishable food. Moreover, another consequence of the small land available is the likelihood for urban farmers to apply innovations and techniques to augment productivity, spread more easily in an urban dynamic environment rather than in the countryside (Mougeot, 1999). Hence, such products division between rural and urban areas is also marked by another factor. In many developing countries, urban farming is more commonly devoted to urban consumption, whereas rural agriculture is

often aimed to export tropical fruits, spices, tobacco, coffee sugar flowers and other items that cannot be grown in the richest northern hemisphere (Nugent, 1999).

Producers and consumers are part of the same picture. In fact, urban agriculture shortens the distance between these two categories. Moreover, considering urban production as an economic activity, it is based on the demand proposed by the consumers, which in many cases overlaps the farmers as well. Indeed, urban agriculture practice does not interest only producers but merges together the interests of a whole community. In these terms, while studying UA phenomenon is necessary to consider the interests of the entire community by maximizing the popular participation (Cowley, 1997). Moreover, farmers are first of all consumers, and only by capturing both of these two components it is possible to depict the whole picture of UA.

### 2.1.1 Urban Agriculture Opportunities

Urban farming is a practice that worth development research's attention because of its potential in enhancing Food Security, proved in development research. Indeed, there are many advantages in the adoption of UA.

First, it provides a fundamental source of fresh, perishable food, especially where lack of transportation system or refrigeration impedes rural products to reach urban settlements. Having fruits and vegetables available at the urban markets contributes to change also dietary parameters enhancing the nutritional values (Roughouts, 1999). It complements the rural supply of staple food as rice, potatoes and grains in general that can by contrast, be easily stocked and preserved (Jacobi, 1999; Aubry et al, 2010). Therefore, such practice betters the variety of urban dwellers' consumption and make available different nutritional values such as vitamins and minerals retained fundamental for a healthy lifestyle (FAO, 2006).

Second, it reduces the supply chain's length, cutting off distances between producers and consumers either in a physical dimension either limiting the need for intermediaries. The short supply chain has a bench of consequent advantages besides lowering items' prices, such as strengthening the social networks and the reduction of carbon emissions related to long-distance transportation (Moustier, 2007). Thus, in many case, this activity incorporates the use of urban organic waste, recycling the nutritive substances useful as natural and organic composts. In this way, the production is more closely related to the direct consumption, and the consumers benefit from a local based and directly managed production.

Third, urban farming is developed by occupying empty or unused spots. Therefore, it requires the recycling of urban abandoned areas, with the consequent reconversion of these damaged or degraded areas into green spaces (Sarmiento, 2013). Urban settlements, either in the North hemisphere either in the Southern, although densely populated, present small unused segments of soil, that can be reused or reconverted into green areas for the municipal community. Farmers rely on terraces, rooftops, post-industrial areas or in the suburban surfaces. Seen in the light of its sustainable development potential, this activity must be re-considered while designing urbanistic plans not only as a recreational, alternative activity but also for the benefits it generates to the community in general (Mougeout, 1999).

UA has the potential to alleviate hunger while being a socio-political significant activity. Thus, it is recognized for being an important livelihood strategy (Nugent, 1999). It has many positive impacts, concerning the pure social dimension. Urban farming welcomes young as much as elderly people. Indeed, it helps to alleviate the social issues related to youth unemployment and with the aging of the population. Coming from diverse backgrounds, these groups share knowledge and skills, reinforcing human and social capitals. For that reason, it can be stated that UA helps the creation of important social networks, not only between consumers and producers by cutting the supply chains but also among the same group of farmers (Nugent, 1999). The urban context impulses a more rapid circulation and application of technologies and experimental organic methods, reducing the human footprint on the environment (Gonzalez Novo & Murphy, 2000).

In economic terms, it contributes to the creation of low-cost jobs, even in critical periods. It produces a new source of income for the household while reducing the expenditures related to food consumption, allowing investments in other income generating activities.

Its success depends on the availability of natural and financial resources, social and human capital as well as on the institutions set in that environment. Therefore, there is the need to study the necessary precondition for a fair and sustainable development of this activity.

### 2.1.2 Urban Agriculture risks

Although the several advantages presented by urban production, it is unlikely that urban farming can substitute the rural form, entirely. The two practices are complementary to each other and must coexist to satisfy national food demand first, and eventually to be sold as cash crops.

Hence, besides the environmental, social and economic advantages, urban farming's application faces also risks. The most solid obstacle is represented by the integration of such practice within urban settlements' social and economic life. The limited space available is one of the most important limits, since cities, are for definition highly inhabited and spaces are clearly more expensive than in rural areas. Municipal administrations are more likely to dispose of empty cells by establishing more remunerative activities of the secondary, tertiary or even quaternary sectors (Mougeout, 1999). Thus, often an urban empty space is not considered profitable by administrators if dedicated to an agricultural practice. This discourse is deeply connected to a cultural issue too. In fact, urban farming, is not only less profitable in economic terms, than any other economic activities, but also culturally associated with poverty and ignorance (Cruz & Medina, 2003).

Moreover, the practice of farming is usually connected with the lowest social classes composing the social pyramid of a modern societies, for which only the less literate segments of society can practice it with dignity. There is a perceived social discrimination for whom practice agriculture for living, as it became a denied economic activity, avoided and forgotten especially by the new generations born in urban areas (Cruz & Medina, 2003).

Seen from a social perspective, urban farmers need also to overwhelm the lack of previous experience and knowledge as much as the limited access to instruments and technologies (Mougeout, 1999). In many cases, 5

as confirmed above, farmers approach the practice to provide sustainment to their families, even if they have little or even none previous experience in the field. In these terms, the creation of social networks between experts and scientists, through workshops, courses and training, results a fundamental step in the creation of sound activities.

Developing urban gardens requires also the creation of collateral offices and institutions to represent, assist and provide farmers adequate instruments and services. In practical terms, farmers from low-middle income face serious challenges in getting access to resources as land, credit and financial support (Mougeout, 2006). Indeed, urban farming, especially when implemented in less developed countries as Cuba, requires the coordination of several actors and institutions. This clearly is not always happening. The access to land appears in the literature as one of the most severe challenges, rather than land availability (Mougeout, 2006). In these terms, agrarian reforms and regulations are fundamental parts of the scheme. One of the proposed solutions to that is to ensure access to lands it by encouraging the formation of associations and cooperatives.

The risks appearing while UA is established in less developed countries are several. Actors from different spheres such as urban planners, public health, environmental management need to communicate and merge their interests together to direct their efforts toward the same goals. Their contributions must unify collective experiences to integrate UA into the city's fabric considering social interests and sustainable principles (Mougeot, 1999).

#### 2.1.3 Urban Agriculture and Food Security

It was the Food and Agriculture program of United Nations (FAO), that named Food Security for the first time in 1974 at the World Food Conference, when it was defined as "[the] 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" (UN, 1974, cited in FAO, 2003). The paradigm has been largely applied in Southern Globe's countries from the 70s onward. The goal was to promote rights and access to food, relying on high-inputs methods and foreign investments.

According to Besthorn food insecurity is an issue that interests directly urban areas, where issues as accessibility and availability became even more exacerbated than in rural areas (2013).

According to Besthorn food insecurity is an issue that interests directly urban areas, where issues as accessibility and availability became even more exacerbated than in rural areas (2013). UA became recently and increasingly interesting topic in planning urban food systems as a solution to reduce food insecurity (Smith, 2013) in urban areas. Hence, UA has been one of the most applied solutions to defeat hunger and malnutrition in developing countries in the last decades.

More recently, however, conventional approaches to reduce hunger and improve Food Security revealed weaknesses and limitations. In addition, rapid and unexpected trends influenced by globalization augmented the negative outcomes of many implemented projects. International development organizations have been increasingly recognized the need to reframe such paradigms to align Food Security with other factors such as socially and environmentally sustainable practices (Otsuki, 2014).

The Green Revolution, which revealed negative effects such as the erosion of the soil, the over-exploitation of resources (Yap, 2012; Rojas et al, 1999), and the growth of food prices, reduced the access to food items for the already vulnerable groups especially in urban areas (Yap, 2013). Consequently, some criticism rose against the high-external-input agriculture, considered unsustainable for its effects on the environment and because retained inefficient in bettering livelihood conditions of small-scale farmers (Lang, 2012).

Therefore, in development practice, the attention moved from a state-centered idea to an actor-based perspective for which it was recognized the right to food as a basic human need, there it was confirmed the need for agrarian reform enhancing small-scale farmers' decision making, the application of agroecological principles and the protection of natural resources against human misuse.

Food Security is a framework limited to guarantee sufficient and adequate access to food for less advantaged countries' inhabitants (Yap, 2013). To reconvert the current trends of hyperconnected food systems, it is important to give priorities to local based food production, by designing projects considering the empowerment of producers and consumers also in a qualitative way. In the current global food systems, there is almost no single state, able to produce and provide enough food to sustain sustainably its population without relying on the international trade. In this setting, Transnational food corporations, have gained more power in the last decades, influencing the market trends and imposing prices. From a sustainable development perspective, there is the need to develop strong food industries locally based, to promote small scale production against the interests of few large companies. However, small producers and handcrafts food makers suffer from the competition imposed on the global food markets, unable to compete even at local scale.

The horizon should be expanded. While designing new policies for the sustainable development of a developing country, Food Security must be considered as a starting point and not as the eventual goal.

In the debate, in fact, studies proved the increasing complexity of food related issues, stressing on the need for stakeholder's dialogue, answering dwellers' needs, while raising public investments. The constraints and risks are usually related to ineffective public policies in the management of UA and the un-regulation of such, whilst other researches call for a more comprehensive regulation of urban food system and UA policies targeting vulnerable groups (Mougeot, 1999). Hence, there is the need for further investigations on the potential roles of urban farming, as an instrument or a channel to convey access to capitals and enhance the capabilities and sovereignty. The efforts should be directed to a more complex task, not solely limited to the achievement of Food Security. Urban farming, although a traditional practice has gained attention from development research only recently due to its high potentials in reducing hunger and malnutrition while enhancing livelihood standards. The activity has been already largely studied under a Food Security perspective, and many academics the showed the improvements UA provides on a local scale especially in terms of better nutrition and access to a larger variety of food items. Proved that the urban gardens are widely beneficial for improving Food Security, what still needs to be questioned is whether the same practice can enhance Food Sovereignty meant as better livelihood standards and enhanced capabilities. It is necessary to consider UA as an economic activity that rises levels of decision making power on production and 7

consumption, for producers and consumers of a local food system. While enhancing the development of a strong and competitive local system, UA can contribute also in protecting producers and consumers against the threats of Transnational Corporations' competition.

FSV, even if more complex and debated concept, is retained the adequate framework to answer all producers and consumers' needs.

# 2.2 Urban Food Sovereignty

Sovereignty was first brought to attention at the World Food Summit by FAO in 1996, then championed by La Via Campesina. The movement argued that the political arrangements within a country are necessary parts of Food Security. Thus, FSV is declared a "logical precondition for the achievement of Food Security and the right of each nation to maintain and develop its own capacity to produce its basic foods respecting cultural and productive diversity" (La Via Campesina, 1996). In these terms, advocates of FSV recognized the fragility of the Green Revolution and associated it to a Western technocratic program that does not consider local dimensions.

FSV emerged as a paradigm critic to the global food system and to the lack of right to food interesting millions of farmers and consumers around the Globe. Under a theoretical approach, it can be associated with anticonventional scholarships and post-development schools, attempting of redesigning the developmentrelated concepts. The same A. Escobar (2012) advocates this counter perspective on development, defining FSV as an answer to the Green Revolution imposed by globalization, stating that the attention should be addressed to the actors instead, agency and their traditional, low-input methods of production and consumption (Escobar, 2012). FSV represents an update of the previous framework, that allows diversity, takes the specificity of each different setting into account, i.e. the right of all people to define their own policies (Martinzes-Torres, 2014). FS discourse has been challenged because it says nothing about who produce, how much and where (Rosset, 2003). FSV, by contrast, is a complex policy proposal that encompasses social and political discourses, challenging current food regimes. It offers a perspective to reclaim control over transnational, globalized and modernized food system, by re-calling decision making back to a local dimension (Storey, 2016).

The proposed framework relocates the attention to the capabilities policies bring to people and it has been designed by La Via Campesina as:

"[...] the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems. It puts those who produce, distribute and consume food at the heart of food systems and policies rather than the demands of markets and corporations. It defends the interests and inclusion of the next generation. It offers a strategy to resist and dismantle the current corporate trade and food regime, and directions for food, farming, pastoral and fisheries systems determined by local producers. Food sovereignty prioritizes local and national economies and markets and empowers peasant and family farmer-driven agriculture, artisanal fishing, and food production, distribution and consumption based on environmental, social and economic sustainability. Food sovereignty promotes transparent trade that guarantees just income to all peoples and the rights of consumers to control their food and nutrition. It ensures that the rights to use and manage our lands, territories, waters, seeds, livestock and biodiversity are in the hands of those of us who produce food. Food sovereignty implies new social relations free of oppression and inequality between men and women, peoples, racial groups, social classes and generations" (Via Campesina, 2007).

In a general sense, it can be circumscribed as the conditions permitting who produces, manufactures, distributes, consumes food, to control mechanism and policies of food production. The power is in this way attributed to people and not left anymore in few corporations' hands. The paradigm implicates the promotion of favorable trade policies and practices for the people, entitling them to safe, healthy and ecologically sustainable production (Peoples Food Sovereignty Network, 2002). Klein, (2007) recognizes the need for other conditions to subsist simultaneously to obtain sovereignty, comprehending cultural rights, security of housing, limits to capitalist development and to GMOs. The environmental side of the quest deserves the core of the attention, as a fundamental element in sovereignty. Indeed, Global Change Now (2016), asserts that food production and distribution system must be able to protect natural resources and reduce carbon dioxide emission, limiting the harm for the environment.

In practice, the enhancement of FSV occurs when adopted at small, local scales. Municipalities are expected to draw policies to facilitate the process of increasing ability to produce essential food supplies for the inhabitants. The importance of the local scale is testified by Dubbeling (2003) who noticed that higher scale's actions, i.e. at national or regional scales, are not as effective as food projects activated on the ground, at municipal, local base.

The aim of La Via Campesina, defining such discourse (FSV) was to address concerns not just to farmers but also of fisherfolks, pastoralist, consumers and others. The perspective shifted from producers and production only, to go beyond. According to La Via Campesina, food as in integral part of local cultures calls for the shortening of gaps between production and consumption (Martinez-Torres, 2014).

According to Yap (2013), who re-elaborated La Via Campesina framework, there are seven principles necessary but insufficient for the constitution of the entire framework. These elements are namely, Food as a basic human right, Agrarian reform, Democratic control, Protection of natural resources, Reorganization of food trade, Ending globalization of hunger, Social peace.

FSV must be considered as the pre-condition for Food Security, therefore must be put at the core of development practices. Although a fresh discourse, some developing countries as Bolivia, Venezuela, Senegal and Nepal, have already incorporated its principles in the constitutions (Altieri & Funes-Monzote, 2012a).

The risk, as can be deduced, is to face a diversity of definitions and consequent challenges, causing misunderstandings of the objectives to be achieved. As Pimpert states there are misuses of the term FSV, which in some cases is confused with the achievement of self-sufficiency and a protectionist measure to isolate the economy, without considering the need for the areas to be connected as they are often

complementary (2013). FSV is more in depth and heterogeneous paradigm than the previous approach, that can lead to misunderstandings in development practice. Thus, it must be designed clearly. In this research, there is proposed a mix different definitions aimed to identify the main pillars and adapt them to the analysis of Cuban context.

Though it has evolved since its formal definition in 1996, the main elements basing the concept of FSV remain unique, focusing on the need to recognize food as a basic human right accompanied by agrarian reforms rising the role of smallholders, supporting traditional and organic, sustainable techniques. The idea is to give attention to the actor's agency while addressing responsibilities and tasks to the governments and the State that are called to protect local producers from global economic forces.

### 2.2.1 Agroecology

As a key factor basing FSV discourse, agroecology needs to be presented within the theoretical framework. Agroecology is a recent discipline positioned in opposition to the industrial and chemical-based methods applied largely during the Green Revolution. As can be seen in Table 1, agroecology represents the application of sustainable principles in agriculture. Considered the purpose of this research, it will be used a unique definition of agroecology, mentioned by Altieri (Altieri &Holt-Gimenez 2012b). In his study, he associates agroecology with traditional agricultural methods that exhibit five features such as higher level of biodiversity regulating the ecosystem, resource management and conservation, diversification of food products, traditional methods mixed with innovations and technologies, the presence of cultural roots and rituals (Altieri &Holt-Gimenez 2012b).

Agronomy principles (1959-1989)	Agroecology principles (1989-onward)
High input, of chemical substances and resources	Low input, of natural substances and resources
Low need of human labor	High need of human labor
Large latifundium in rural areas	Small plots in urban areas
Long supply chain	Short value chain
Monoculture	Diversification of production
Export oriented	Sustainment consumption, sell in local markets
Pollutant, hazardous for soil and resources	Part of a value chain, related to small industries and
	local consumption of fresh, nutritious food.

Table 1: Agroecology principles. Comparing two agricultural practice in use in Cuba from the Revolution of 1959. Source: composed by the author based on information retrieved from Altieri, 1999.

According to Altieri (1998) small-scale farmers adopting agroecology are more productive than the ones using conventional methods. However, besides the proved benefits of adopting organic, low input and sustainable methods, Jansen (2015) argues that FSV movements must consider many other aspects before adopting agroecology entirely. He states in fact that there can emerge risks and limits as the small access to fertilizers, the volatility of prices induced by the conversion from traditional to organic system, that would

reduce for a moment food availability, and the effective higher productivity, the diverse natures of the soils and the access to natural resources.

Nonetheless, the application of agroecology methods in the urban gardens, either collective either private has several advantages on a social, economic and environmental scales. By using organic methods farmers achieve higher yields. Thus, intermediaries and sellers can retail at lower prices, increasing the access and the availability of food. Furthermore, the application of organic methods reduces harms for the environment, especially concerning the use of soil and natural resources.

The discipline of agroecology is deeply connected to the principles of FSV, so that the former can be considered as the mean through which, the latter is partly enhanced. Indeed, many agroecology principles overlap FSV's ones.

First, agroecological initiatives encourage local food production based on tradition or indigenous innovations, implying the guaranteed access for farmers to lands, natural resources, credit and markets. Hence, from the application of agroecology, there are several positive outcomes not solely related with the natural environment, but also to the society itself (Altieri &Holt-Gimenez 2012b). If agroecology is correctly promoted by public institutions, is a mean to convey knowledge and spread awareness about the sustainable use of natural resources. By promoting local production and consumption, producers and consumers benefit from the shorter supply chain (Altieri &Holt-Gimenez 2012b). Moreover, through product diversification, consumers have greater access to food variety and enrich diets with nutrients.

Second, agroecology is a practice that requires more workforce than industrial methods, leading to the creation of employments. Farmers, need to share and deepen their knowledge to increase yields through natural methods. In order to do so, cooperatives and farmers' association are created, giving importance to community participation. Agroecology requires the lowest consumption of hazardous substances, reducing the environmental and social risks related. By applying these principles, agriculture enhances the quality of people's life.

Third, by reducing the dependence on industrial and high-tech methods, developing countries reduce the economic dependency on imports and purchase of expensive tools and through an adequate financial resource re-distribution, a fair economic growth can coexist.

Considering these themes among others, it appears clear the meaning of agroecology for the enhancement of urban food sovereignty. Therefore, it appears clear that the application of agroecology in urban gardens is an instrument to enhance Food Security and might have several consequences on other aspects of producers and consumers' livelihoods not considered by Food Security's paradigm.

The literature about agroecology, Food Security and food sovereignty, tends to overlap the themes, however do not offer clear outcomes of the constraints, risks, potentials, and benefits offered by UA to farmers and consumers. It has already been proved that Cuba through the agroecological revolution in urban gardens, achieved elevated levels of food production to overcome food insecurity. However, UA effects on producers and consumers have received little attention in literature yet. The research, therefore, aims to explore major risks, potentials and benefits of UA. Indeed, the intention is to deepen the knowledge about the collateral consequences that Urban Agriculture produces on the small-scale farmers and consumers involved

# 2.3 Conceptual Scheme

The theoretical framework presented leaves room for a further exploration of the role of UA in enhancing Food Sovereignty and to what extent such activity can bring social, economic, political and environmental benefits to the actors involved.

In sum, the application of urban FSV paradigm, involves the following categories, as shown in the following Table (2.) social sustainability (a.), fair economic growth (b.), political participation (c.) and environmental sustainability (d.).

a. Social sustainability	b. Fair Economic Growth	c. Political Participation	d. Environmental Sustainability
<ul> <li>-Nutritional value: presence of healthy and culturally appropriate food</li> <li>- Equality between genders and age</li> </ul>	<ul> <li>Regulations: Resist to corporate trade and food regime imposed by TSN</li> <li>Economic Policies designed to Defend Local production:</li> </ul>	-Agrarian reforms ensuring power to define their own food system - Rights to use and manage natural resources such as	- <b>Sustainable methods</b> : fight against GMOs, application of agroecology principles and protect the natural environment
<ul> <li>access to courses</li> <li>and training</li> <li>Cooperatives</li> </ul>	Strengthen local/national economies	lands, seeds, water - Rights to <b>participate</b> intervene, discuss and	
<b>-Consumers</b> enabled to control their consumption	-Promote transparent trade and access to credit	participate for farmers	
	-limit capitalistic development		

 Table 2: Main food sovereignty's themes considered in the analysis of urban farming.

Source: author, based on the literature provided

### a. Social Sustainability

The aspects retained attention worthy according to different authors are namely, to prioritize the actors involved, creating bottom-up initiative through grounded methods and promoting cooperatives as much as associations and cooperatives (Escobar), to empower peasants through courses and training and improve gender equality (La Via Campesina), to prioritize cultural rights to traditional and nutritional food, (Klein), to promote social peace (Yap), to ensure the control over food to consumers (LVC).

### b. Fair Economic growth

Economic policies must present a protection and control against Transnational Corporations influences in the national market (Storey), so that the attention is given to the regulations established to favor the local

economy first. Economic policies must be designed to defend local production and strengthen the local and national economy and market. The state must guarantee favorable trade policies (People Food Sovereignty Network), the access to credit and there must be imposed limits to the development of strong capitalistic measures (Klein, Dubbeling).

#### c. Political participation

The farmers must be entitled to define their own production methods and to actively participate in the decision-making of any economic activity through appropriate agrarian reforms (Martinez-Torres, La Via Campesina). Moreover, the institutions covering roles within the development of Urban farming must lead to a democratic control of such activity (Yap). In this way, there are considered the civil as much as the political rights of the farmers involved in UA activities. Furthermore, as a fundamental pillar in the FSV's discourse, norms and policies need to be designed to enable farmers' access to natural and technical resources.

#### d. Environmental sustainability

Finally, the application of agroecology principles must go hand in hand with the implementation of urban gardens, ensuring the protection of natural resources (Yap), the protection against uncontrolled GMOs (Klein) and the appropriate use of traditional farming methods (La Via Campesina, Altieri), while protecting the natural resources.

To sum, these variables are used as parameters to assess the level of FSV in the specific case study selected. Taking La Via Campesina definition as the starting point and then by looking into further literature, some themes come out as the core, as the pillars of FSV discourse. Therefore, these variables are used as parameters. Basing on the case study of Havana and taking UA as the object of study, there is verified the presence or absence of such variables highlighting their specific characteristic concerning UA. UA is a mean, a vehicle to increase Food Security standards. Exploring UA for how it is conceived, implemented, developed and managed in Cuba, it is possible to assess to what extent UA can enhance also other aspects concerning the livelihood of the communities.

## 2.4 Research Question

Considering the presented literature review, and referring to UA as a mean to better Food Security and as potential mean in the future to increase FSV, this research aims to answer the following research question:

#### What contributions does the development of UA bring to the achievement of FSV?

To explore this question, the research elaborates on a case study of the city of Havana, Cuba where the UA movement has been active since the 90s. The case study presents important insights that can be applied to other dimensions, not only in the region of reference, Latin America but also worldwide. The specific economic, social and political preconditions are taken into account as eventual bias and limitations for the development of food sovereignty.

The research presents a description of the potential role of UA as much as its limits that will lead to the production of policy recommendation useful to the next strategies. More specifically, to answer the main research question requires the following sub-questions:

- 1. How is Urban Agriculture in Havana is developed involving producers and consumers?
- 2. To what extent are the actors involved in UA entitled to a sustainable food production and consumption and how do they perceive FSV?
- 3. What are the advantages and drawbacks of the development of UA to enhance FSV?

In the methodology section (Chapter 4.) are presented the methods used and limitations to data collection to answer these questions.

# 3. Regional Framework

# 3.1 Introduction

Since the beginning of the Socialist Revolution, but more especially from the commencement of the Special Period, in 1989, Cuba dedicated large efforts to address the Food Security challenge. The historical reasons were many, among which namely, the US trade conditions imposed by the embargo first, then the collapse of the principal commercial supplier, the Soviet Union (Premat, 2003). Indeed, at the beginning of the 90s the Pearl of the Caribbean, was facing a tremendous food crisis so that the daily average caloric consumption decreased by 30% (Companioni, 2002). Among the most important strategies implemented as solutions, UA is one of the most noteworthy whilst innovative. Through a set of agrarian reforms and a structural restructuration of the agricultural system, urban production received supports, investments and increasing attention by state agencies (Chias & Pavon, 1996). In fact, the attention of the State was oriented to urban settlements, as the core protagonists of the projects, considering the rapid urbanization the country faced in the 80s and 90s (Companioni, 2002). The innovative approach has become famous with the name of agroecological revolution and led to impressive results in the reduction of hunger and malnutrition in Cuban urban areas. However, in Cuba almost the 90% of food production is state owned and managed and leaves small rooms for independent leaderships and for the development of firms. UA, seen as the most important solution introduced in Cuba to alleviate urban poverty and food insecurity, in one hand is a useful instrument, in the other, for how it has been developed, leaves almost no room for decision making from the small-scale farmers.

In this chapter is presented an overview of the evolution of the agricultural sector in Cuba, with a focus on the urban one, that synthetizes how the State has increased Food Security with agroecological techniques. Most these data have been retrieved directly from the field, since, information about Cuba are difficult to retrieve from on-line databases. Therefore, such information come from national statistics retrieved from Cuban public libraries and from direct interviews with experts.

# 3.2 Agriculture in Cuba: from conventional to organic

The history of agriculture in Cuba is long as its discovery from the Spanish Empire in the 15<sup>th</sup> century. The Spanish Empire once occupied the island, connected it to the large venue of colonies in the 16<sup>th</sup> century. For almost three centuries the Pearl of the Caribbean was the world largest suppliers of a sole product, sugar cane, accounting for a third of the world's production in mid-1800s (Brenner, 2008). At the beginning of the 20<sup>th</sup> century, after the Spanish-American War, the Spanish empire give up on its possession and left Cuba in US hands. The island was officially named as independent republic, although its businesses and foreign affairs were directly controlled by the US (Brenner, 2008). This overarching economic control, manipulate Cuba's imports and exports and allow North American land owner to buy large pieces of lands. Consequently, Cuba started the 20<sup>th</sup> century facing a new form of colonization, with the principles economic sector in American hands, such as land, resources, industries and transportations. The wealth was unevenly distributed among 15

the population, which instead was characterized by a large fragmentation between the landowners and the largest share of farmers, slaves and workers, suffering from hunger (Premat, 2003).

This situation was not accepted by a small group of revolutionaries who wanted the American domination to collapse. Fidel Castro, the leader of the Revolution, in 1959 ended the dictatorship of Fulgencio Batista and opened a new chapter of Cuban history (Perez-Lopez, 2002).

The 1959 Revolution brought to Cuba, among other effects, a strong attention toward food production. Hence, from the 60s, it has been endorsed primary food production in all Cuban cities, to face periods of food scarcity. Food scarcity was exacerbated by the geopolitical crises between Cuba and its main economic partner before the Revolution, the United States. Indeed, the Revolution, brought as the most dramatic and famous consequence the establishment of the *embargo*, an economic block of commercial relation between Western countries and Cuba. The latter, during the Cold War, was then obliged to find new allies among the Soviet bloc. The Revolution leader, Fidel Castro, was then forced to redesign the national economy, investing in a diversification of agricultural production while finding commercial partners in the ex URSS and in other Caribbean countries (Mesa-Lago, 2006).

The main concern was the need to become independent and self-sufficient. Therefore, Castro promoted reforms in agriculture to intensify use of agrochemicals and farming machinery, according to the worldwide Green Revolution's guidelines. From a legal perspective, the most important laws have been three. These determined the evolution of agriculture in Cuba from the Revolution onward. With the first agrarian reform in 1960, the 45% of agriculture land was ensured to the State and about a hundred thousand of small-scale farmers obtained a piece of land. The second reform in 1963, increased that share up to 65%. Such value grew until 1980 when the 80% of the entire arable land was under the socialist regime control (Premat, 2003).

In this period, favored by trade terms established with the Soviet Union, the government chooses to prioritize the production of sugar and citrus, to exchange them with cereals and staples from the latter countries. With this agreement, Cuban Green Revolution started. Indeed, in this period Cubans developed a strong dependency on food import and on the monocrops for export (Companioni & Hernandez, 2002). To increase the production, there have been used abundant chemicals fertilizers and pesticides, not bearing in mind the ecological risks provoked on natural resources. The Soviet Union was responsible for providing the 85% of Cuba's import, among which it supplied oil and derivate as pesticides and fertilizers, machinery and technologies, needed for the food industry and of course, food, counting for 50% of the proteins and 90% of fats of the total Cuban consumption (Pérez-López, 2002).

It was estimated that by 1980, Cuba with a population of 10 million could produce food for 40, counting the calories, although most of it was sugar cane (FAO, 2011). From the Revolution, indeed, the national commitment toward the achievement of national Food Security, remained central in governmental policies, but only centralized in rural areas, inclusive of high technology and high input systems. For decades, the State

has been the primary food provider by keeping a monopoly over food. However, the most drastic change occurred in the last decades of XX century, a historical moment Cubans name Special Period.

The big shift occurred mainly because of the collapse of Cuba's first commercial partner, the Soviet Union. In parallel, the strengthening of the *embargo* measures was a dramatic resolution for Cubans. The Special Period, or *Periodo Especial*, began with the Torricelli Bill signed by President Bush in 1992, aimed to tight more the economic bloc (Altieri, 1999; Wylie,2012). Thus, Cubans almost overnight had to deal with an extreme scarcity of oil, food supplies and other commodities. This moment signed another turnover in the management of the agricultural sector in Cuba. Researches, investments, efforts remained stable, but the methods and the applications changed dramatically. Cuba, unable to purchase oil and derivate after the Soviet Union collapse, transformed its economy from fossil-fuel-import dependent, into a sort of green and sustainable economy (Companioni & Hernandez, 2002). The crises suffered in the 90s was extended to all the economic sectors, agro-business included. The first and most dramatic consequence was the extreme food shortage. Fidel Castro decided to invert the production systems, investing in development and research to establish a long-run sustainable agriculture to sustain internal demand. Within only a decade, he achieved this result, at least in terms of sustainable methods. Foreign experts from Germany, Australia and Canada were invited to share their knowledge about agroecology and permaculture. Innovation, knowledge and modern technologies were imported and implemented (Chaplowe, 1998).

From a development perspective, it is interesting to notice a big shift in the State role. Until 1989, the State was the central actor, the core of the whole food system, managing the rationing system, distributing food to schools, hospitals and work places while being the only authorized buyer at the markets from private farmers. In the following phase, urban farmers become important actors in the food system scene, proving that the State alone cannot guarantee a well-developed service to communities.

In the literature, the Special Period is referred as an example of post-oil crises (Wright, 2009), and it is indicated as such a dramatic period of crises, to be compared to a war-time (Murphy, 2006). Malnutrition, food shortages, lack of distribution and transportation, famine become suddenly a threat for all urban and rural citizens. It has been calculated that in only 3 years, from 1991 and 1993, the average Cuban lost nine kilos as the daily caloric assumption decrease from 2700 kcal to 1800 kcal from 1988 to 1993 (Cruz and Medina, 2003). The consequent economic crisis was very deep under diverse points of view. The national GDP fell around 35% between 1989 and 1993 (Rodriguez-Nodals et al, 2006).

Nevertheless, Cubans were found ready. Castro's interests in a sustainable and efficient agriculture born earlier than the food crises itself. Between the 80s and the 90s, he decided to invest in researches and technologies for the development of a robust, traditional and sustainable agriculture (Rosset et al, 2010). Under the threat of the US President Ronald Regan who was about to cut of oil provisioning, Castro promoted research to find alternative food production systems requiring no need of oil-derivate inputs.

The research's results have been applied in urban context. In suburban areas, plenty of unused lands were taken and converted to gardens (Febles-Gonzales et al., 2010). The population was called to participate by

using the local resources and by applying principles of agroecology. By doing this, they shorten food supply chains within rural and urban areas. Cuba became an experimental lab on how to survive without oil, external aids, commercial partners and technology (Altieri &Holt-Gimenez, 2012b). UA, a practice until then remained marginal, increased rapidly importance and extension between the 80s and the 90s in most of Cuban cities. In a sense, it reflected the rapid movement toward a political and economic decentralization spread in Cuba after the URSS' collapse.

Despite the government commitment, the living conditions of the population worsen dramatically. The intake calories and proteins decreased by 30%, leading to the emergence of nutritional deficiency related diseases. An economic emergency program was implemented to overcome the effects of the crises at the lowest social cost as possible (Rodriguez-Castellon, 2002). Castro was obliged to implement adjustments in the economic paradigm characterized by the opening of considerable space to free market mechanisms (Rodriguez-Nodals et al, 2006). Considered the danger of an economic collapse from the demise of the Soviet Union, in 1992 Fidel Castro introduced a rapid restructuring of foreign trade. All the transformation demanded a change in the constitution, dated 1976, that was then agreed in 1992. Through such changes, the State eliminated the state monopoly on foreign trade, it recognized the development of mixed properties and introduced the direct election of representatives into the national assembly (Chias & Pavon, 1996).

In that time, it was extremely necessary to increase food production and open space to the private sector to grow. A substantial part of the state farms was converted into Basic Units of Cooperative Production (also named UBPC). Thus, although lands remained formally state own, mixed cooperatives could be formed and grow in such lands, by paying a percentage of taxes. Only in 1994, free pricing markets were approved for the sale of agricultural products (Chias & Pavon, 1996).

This historical moment draws different consequences in the social-economic patterns of the country, as, among others, the shift undertaken by a large part of the working class from services providers to employed in primary activities (Prenat, 2012). It was for the first time encouraged the form of private agriculture aimed to the commercialization and to subsist family's self-provisioning. In a political sense, this reflected the transfer of responsibilities concerning food production from state level to a more individual dimension. These families for the first time started to rely also on non-state institutions as foreign NGOs. From the 90s therefore, the citizens were more autonomous and responsible for their own well-being. In 1991, the first civilian *organoponico* -a particular kind of urban garden- was put into practice in the first experimental area, in the neighborhoods of Miramar, Playa, La Havana (Cruz & Medina, 2003). Different organization were created to overlook the introduction of *organoponico* in the Havana's scene. These were merged then into the UA National Movement (Bohrt, 1997).

This phase, featured by economic and industrial crises although, was endorsed by a cultural and social spring. Cubans played a fundamental role to build the basements, the structures and the links necessary to face the dramatic change. For these unique historical contributions, Cuba nowadays is a global reference for being a successful example of reconversion from mechanized, high-input, industrialized rural agriculture, to low input, locally based, organic and urban production. These significan- shifts in production strategies, land access and use reflect the results achieved in terms of Food Security (Companioni & Hernandez, 2002).

Although Cuba nowadays is considered an international reference for large-scale conversion from highchemical dependent to sustainable agriculture, this shift did not occur overnight. It required efforts and commitment from all the actors involved, from small-scale producers to the highest state institution. The results, need to be assessed considering all the aspects FSV framework encompasses.

## 3.3 The Case Study: Havana

The research is focused on the case study of Havana. The decision is motivated by different advantages in conducting data collection within the city. It is the base for most official and international organizations operating in the fields of UA and right to food. Moreover, it represents not only in numeric terms most the UA examples, from which nearly 80% of the urban population retrieves source of food as fruits and vegetables (Leitgeb et al, 2016), but also in qualitative terms the major variety that can be found on the entire island (Cruz & Medina, 2003). Producers and consumers are advantaged by the services the capital provides, but also disadvantaged by space scarcity, pollution and other city-induced problems.

It is the country's largest city, the most multicultural and dynamic. With a population of over two million people, represents almost 20% of the total island's population (Oficina Nacional de Estatisticas de Cuba, ONE, 2012). However, whilst the global trend is the urbanization from rural to urban areas, Havana is not growing since the 80s and its numeric composition results stagnated for nearly 30 years (Schmidt & Pena Diaz, 2008). Its extension covers 727 km<sup>2</sup>, around the 0,67 % of the whole territory and the 0,4 % of the arable land in the entire Cuba (Companioni et al, 1997). Considered the whole spatial extension, 110 hectares are productive, of which 166 very productive and used for agricultural purposes. The city of Havana constitutes itself one of the 15 Cuban provinces and is itself divided into 15 municipalities or *municipios*. Furthermore, such municipalities are subdivided into 105 *Consejos Populares* (popular councils). Geographically, the city is also divided in the renovated part and in the deep Havana. The first constitutes the blue strip, located on the sea side, collects most of the touristic and commercial functions of the city. By contrast, deep Havana, is a patchwork of old neighborhoods, where less touristic attractions can be found. Deep Havana has not a single order neither identity and in general, the average revenues of its inhabitants are lower than the ones perceived in the blue strip (Altieri et al, 1998).

It is interested by a tropical climate, characterized by high humidity all year long (80% on average), an average rainfall of 1400 mm and a medium annual temperature of 25 degrees. As most of the island it meets two different seasons, the dry occurs between November and May, month in which starts the rain seasons, when tropical phenomena as hurricanes are unfortunately common to happen (ONE, 2014). Such tropical influence on the climate is favorable for crops as sugar cane, cocoa, coffee and tobacco. However, Cuban

geographical ubication in the Caribbean makes this island vulnerable to hurricanes and tornados. These natural events are expected to worsen consequently to the climate change (Sims & Vogelmann, 2002).

Concerning social figures, Cuba and its capital city, Havana, shows rates and values similar to a developed country. Indeed, in terms of life expectancy, literacy rates, gender equality, health care and education, the figures highlight positive outcomes of the Revolutionary policies (ONE, 2014, see table). Education and health care are two of the major focus of Castros's regulations since the beginning of its government (Cruz & Medina, 2003). How he developed social services and made them largely available for the population is however in contrast with the lack of political liberties and the limited freedom of expression and opinion.

Urbanization	8.3 out of 11 million live in urban areas (almost 80%)
Life expectancy	76 years for man, 80 for women, the average is 78
TFR	1,5 child per women
Access to water and sanitation in urban areas	97,4%
Literacy	98%

Table 3: Cuban population Social Facts

Source: ONE, 2014

### 3.4 UA in Havana

In the first half of the XX century, Cuban main cities knew already a little of UA. Then, the crises experienced between the late 80s and the 90s involved the entire agro-industrial sector, including urban zones. Negative effects were reflected in the low quality of seeds and plants and in the lack of traditional species. These were accompanied by the limited capacity of public institutions to collect products, efficiently transport them and distribute perishable items on time through the weak channels and unpaved roads.

The revolution that interested Cuban agriculture in general, takes its most representative form in the urban expression. Both rural and urban areas were interested by the shift from industrial agronomic to agroecological methods, however, what happened in urban dismissed areas and around the city's belt, was far more impressive (Altieri, 1999).

Before the Special Period, UA was perceived as a practice of poverty and underdevelopment, then, little by little this cultural stereotype started to change, thanks to the state institution created *ad hoc* and based in Havana.

The UA involved farmers with little if none experience in the specific agroecology sector. Nevertheless, farmers were highly motivated and used any instruments available, occupying all the lands accessible. Legislation become friendlier and families started to use roofs, balconies, back and side gardens.

The results of the agroecological revolution are impressive. In 2000s urban production alone provided to Havana's inhabitants around 150-300 grams per capita/day, of fresh vegetables and fruits. Within only 10 years, in fact, Havana transformed its gardens from a mere subsistence production to an activity aimed not only for consumption but also for commercialization, based almost exclusively on the use of local resources,

by recycling substances and by reducing transportation costs and harms (Cruz & Medina, 2003). Privates have been slowly admitted in the process. In fact, the number of privates involved grew from 1,6% in 1981 to almost 5% in 2010, while the state enterprises diminished in numbers from being 91,8% to 75% (Cruz & Medina, 2003). The remarkable outcomes of the agroecology's revolution is linked to the work of families together with ACTAF and ANAP (see the section 3.5 below), small scale farmer associations, created through top-down initiatives, with the aim of assisting farmers in the delicate shift (Altieri et al, 1998).

Nowadays there exist almost four types of UA in Cuba: patios, parcelas, huertos intensivos and organoponicos. According to Cruz & Medina, the only type of private owned are the patios, mainly used to self-provisioning of food for the households, whereas the other named typologies are mainly state-owned addressed to the commercialization of the product and reach up to one hectare of extension (2003). Huertos intensivos and organoponicos are almost the same kinds of garden with the only distinction that in the former farmers cultivate in the underground. If the prerequisite of a healthy and fertile soil is not met, they raise beds to add a surplus of adapt soil and build the *organoponicos*. These constitute an alternative to hydroponic, the traditional form of urban gardening, although limited in application, highly based on the supply of chemicals inputs. The *organoponico* as a counterpart uses organic substrate composed of crop residues and domestic organic waste. In this way, the soil increases its fertility due to higher inputs of nutrients and moisture. It has the advantage that can be applied in building sites, lots, terraces, roofs and if necessary, can be disassembled and replaced somewhere else. In the FSV movement, there is a dedicated attention to agroecology, which represents an alternative to industrial, highly pollutant agriculture. Among the different typologies described above, organoponico is the largest in dimension and distribution and for workforce employment. It condensates the more attributes of agroecology's principles. Moreover, it shares features generalizable to almost all cases of organoponicos built in Havana and elsewhere in Cuba. These gardens are usually located at the peri-urban sites of the cities. They are usually state-owned and managed through the form of public cooperative (Jansen, 2015).

The special period signed a fundamental shift from an industrial approach to an organic one and left some heritage on the actual food system, either rural either urban. Among others, a structured system of food distribution and a greater variety of species are the most significant improvements. Cuban's per capita caloric consumption has recovered the standard acceptable level of the 80s. Nevertheless, Cuban diets still depend on imports and, whilst is retained a good diet when compared to a third-world standard, it is not nutritionally sufficient neither economically sound yet.

Such themes, highlight the need for further investigation concerning Havana's and other Cuban cities capacities of building sustainable urban production, based on agroecology methods. The independence process has started. Cuba is moving forward the import substitution, to become entirely self-sufficient and sovereign. However, although the effects of the agroecological revolution are proved to be beneficial for achieving Food Security, such changes must be accompanied by social and economic reforms to extend actors' freedom and capabilities.

### 3.5 Actors

It is noteworthy that in Cuba there are many official institutions and organizations working to address the challenge of Food Security and sustainable food production within the cities. The actors involved are therefore several, either with a national relevance either only cooperating into a specific municipality. During the years of establishment of the UA practice, many movements and organizations were formed to alleviate food crises and enhance food self-sufficiency (ACTAF, 2009). Through a set of agrarian reforms, the greatest part of national lands has been fragmented and distributed to individuals in small plots and to cooperatives through the norms named 300 and 305 (Koont 2009). At the beginning of the UA movement, the sector grew exponentially and an overarching organization was needed to pulse logistical and technical advice. In 1997 took birth the GNAU (National Group of Urban Agriculture), based on the national INIFAT (National Institution for Investigation on Agriculture). This group is called to set policy guidelines and provide stimulus to all the activities in UA while supervising and controlling the local efforts (Koont, 2009).

Another actor operating on a national scale is the Asociacion Cubana de Tecnicos Agricolas y Forestales (ACTAF) promoting agroecology application to reinforce food production (ACTAF, 2009). These projects were supported by the national Ministry of Agriculture (MINAGRI), which is still playing a fundamental role in maintenance of urban gardens and in research and development techniques, and by DPPFA (Provincial Urban Planning), which operating more on local scale, is dedicated to the issues induced by using urban areas for gardening.

In parallel, ANAP (National Association of Small Farmers) took birth, from the effort of 100.000 families members who decided to apply agroecology in their small plots and urban gardens. Popular movements are sustained also by non-governmental organizations, operating in the field as the most famous *Antonio Nunez Foundation* (FANJNH) that counts more than two decades of operates in Havana and throughout the country.

Moreover, the government, in the 90s let in international groups, as NGOs from Western countries that helped a sustainable growth of Cuban agro-sector. Examples of these actors are the Australian Conservation Foundation, the Evergreen Foundation from Canada, and much more from Germany (Chaplowe, 1998).

Considering the entire share of urban farmers, there are 13.700 families in Havana having access to lands, of which only 500 are direct owners, and the rest dispose of fields in free usufruct (ONE, 2014). Since it is calculated that the farmers involved in this activity are 80.000, there can be imagined that most of them, work for cooperatives or firms, without having any direct right on lands. Hence, the clear majority of urban farmers have no private property, however entitled to get free access to lands. The same is valid for other forms of natural resources fundamental for agricultural practices such as seeds, water, fertilizers, compost. The social composition of urban farmers is mixed and heterogeneous, being formed by both genders in an interesting ratio (60% men against 40% women), and by groups of youth and old people almost balanced. The middle age instead, is little represented since this category is usually dedicated to other forms of employments.

Among Urban farmers, there is an important share that dedicates to agriculture only a few hours a day, as a part-time activity. Most of them, are interested in subsistence farming only and are not related to markets at all. It is more likely to meet families that dispose of their terrace or patio to grow vegetables, without caring about sustainable and organic methods, whereas agroecology is more spread among full-time farmers with a market-oriented strategy. The ones directly employed in state or mixed agri-business firms, earn an average of 513 Cuban Pesos per month in 2012, a value that increased steadily from the 420 in 2007 (ONE, 2014).<sup>1</sup>

# 3.6 Conclusion

Cuban history influenced its economy as much as social and environmental development. Its socialist regime is now under study by the international press. Fidel Castro's death may have signed the moment of the definite shift of Cuba toward a neo-liberal, open and hyperconnected economy. However, the influence of socialism is reflected not only in its long attempt to become auto-sufficient in many production systems, often without succeeding, but it is also reflected in the high investments in education and research, as the academic class of scientists who brought Cuba out of oil consumption that represents a good example for other Latin American countries.

As it came out, UA in Havana cannot be dissociated with the sustainable principles of farming. The projects implemented in the public gardens based on agroecology, considered in the literature to be a sustainable form of agriculture.

*Organoponicos* are relevant examples of the organic revolution occurred in urban-agricultural-system. I choose to focus on *organoponicos* because retained to be the most representative sample of the UA development in Cuba.

The aim is to derive benefits from the Cuba examples and export the lessons whilst depicting a reality that will not survive to the lift of embargo, suffering from the competitiveness of the global food system. In one hand, there is the relatively locked Cuban food system, able, through laws and regulations, to protect the national production and the farmers. In the other hand, this shortage of links produces a lack of access to capitals for the pillars of this food systems, producers and consumers. In this sense, the specific social and political history of Cuba is a favorable precondition for the constitution of a strong food system, while being responsible of the lack of capabilities of the small-scale farmers and urban consumers. In these terms, while presenting the Cuban examples of UA, its specific historical, political and social context, must be considered.

Urban farming has been the fundamental boost to reduce hunger and malnutrition and the solution in which the country invested most of its human and economic resources. What is still unclear is how this practice can be modified and developed in order to better the capabilities of the farmers involved in terms of access to capitals and freedom to determine their own way of production, through bottom-up initiatives.

<sup>&</sup>lt;sup>1</sup> 513 Cuban Pesos correspond to 21 USD approximately, with the exchange rate set at 24:1, whereas the previous data of 420 corresponds to 17,5 USD.

Once it is recognized that Food Security cannot be the only and eventual goal for the food-relate policies, the solutions must be re-designed and built according to a heterogeneous and extensive set of scopes that encompass FSV discourse.

Agroecology is the most efficient method, in practice, to enhance Food Security and to build a sustainable food system. However, its application in urban gardens requires the intervention of healthy and responsible institutions, adequate policies and regulations, international actors as NGOs, links and connections between the involved actors. Agroecology in urban gardens must be a starting point and not the eventual goal.

# 4. Methodology

# 4.1 Study areas: three municipalities

Within the capital city, there have been studied three municipalities, namely Habana del Este (Figure 2a, 2b), Miramar (Figure 3a, 3b.) and Plaza (Figure 4a, 4b). These three areas show differences in terms of social composition, main economic activities, and geographical asset, however overall interesting for the research purpose for several reasons. Indeed, these districts represent the first spots where urban farming was developed and still after 30 years are the leading neighborhoods considering the whole production in La Havana.



Figure 2a & 2b: Habana del Este Source: Google Maps, Photo edited by author



Figure 3a & 3b: Miramar

Source: Google Maps, photo edited by author



Figure 4a & 4b: Plaza Source: Google Maps, photo edited by author

Three different neighborhoods presenting different strategies to defeat urban food insecurity and develop FSV through UA. By studying these areas, it was possible to verify on one hand the role of public institutions operating in UA practice, on the other hand the importance of other actors as experts, researchers, associations and cooperatives constituting diverse dynamics according to the resources available.

### 4.2 Data Collection

The need for a fieldwork is motivated by several factors. First, the small availability of official and non-official sources, as texts, articles, journals, periodic, discourses retrievable online about the specific case study, the themes of investigation and about the social and political system. Therefore, it was necessary to visit by person archives and libraries there, to get access to such sources and information. Second, as FSV is an idealistic goal promoted by farmers for farmers, there is the need to an effective dialogue with a sample of them, in other to draw the most realistic picture of the chosen topic. Only by interviewing farmers directly it is possible to get informed about their practical access to instruments, their freedom and their *de facto*, capabilities.

The actors I need to deal with can be synthetized in three main categories such as experts in the fields of food production, UA and urban planning, consumers and producers. Considered the urban food system as the frame containing the research, these three groups of subjects represent the most important agents playing a role in the entire scheme.

To catch the most complete picture as possible, the ideal approach is a mixed one complementing qualitative and quantitative methods. The results are complemented by analyzing secondary sources from academic and non-academic literature, by the consultation of experts on the field through open interviews and by addressing a survey among urban farmers and consumers. Secondary data, from local media and governmental documents, are a complementary source of information to understand livelihoods in Havana concerning food production and consumption through urban gardens. (see Table 4) I used to buy the local newspaper, listen to the radio and local television, attend to public libraries to get access to historical archives, to build a substantial context, fundamental to understand the local dynamics around the main themes of interests.

Experts from different sectors and backgrounds have been interviewed. This set of data represents the main qualitative instruments of the entire research. Semi-structured interviews are used to deeply understand the dynamics characterizing the food system, the current structure of urban farming and the future projects.

Concerning the survey, the sample has been composed through snowballing techniques. The goal was to collect a consistent number of questionnaires addressed to farmers and consumers, of different ages, of both genders, interviewing them about their access to food and its availability, rights to the land, their access to natural resources and technology, to courses and education, about their dialogue with the institutions, the challenges they face, their relations with the market, the most stressing limits they face as producers and as consumers.

As complementary methods, I integrated a traditional way of data gathering with alternative ones, such as notes collection and informal chats and interviews. These, either in form of life history interviews or through video recording or exchanging informal chats, have been important bricks in the presentation of the findings.

Research sub-questions' aims	Data collection method
1.Individuate the links and the actors of Urban	1.Secondary source, official sources, semi-
Agriculture' atructure in Havena	structured interviews with actors from MINACDI
Agriculture structure in navalla.	Subcured interviews with actors from MinAGRI
	and official organization working in sustainable
	urban systems.
2.Understand the dimension of social sustainability,	2.Survey addressed to consumers and to urban
fair economic growth, political participation and	farmers about their methods of purchasing, their
environmental sustainability, by looking at three	habits and the limits they face.
municipalities.	
1	
3.Identify the benefits and the limits given by urban	3.Secondary sources, survey, semi-structured
farming to this system and to the enhancement of	interviews.
food sovereignty.	

Table 4 Scheme describing the ways to address each sub-questionSource: edited by author.

The theoretical framework was constructed before the data collection. However, the structure has been modified during the fieldwork, due to a series of bias and limitations.

### 4.3 Bias

The expected major bias to be faced were related to the authenticity of information obtained from the interviews and secondary sources as official national statistics. Cuba has been under the regime for an extended period, so that info and data are affected by the socialist propaganda and deviated, the reason why while studying upon official documents, a double sense of critics is needed to avoid ideological concerns overwhelming empirical facts. Sometimes I realized that even the official documents were far from being considered scientific and empirically based. While facing such ethical bias, due to the insufficient reliability of some documents, I decided to use them only if taking in mind the political context of reference and by mixing official with grounded data.

As a second source of bias, the qualitative research is often open-ended and based on personal interpretations and perspectives. The exploratory nature of this research can affect the interpretation and the analysis of the data.

### 4.4 Limitations

Before leaving for the fieldwork, there were expected certain limitations that afterward have been proved to be true.

The main practical limitation was imposed by the Visa restriction for EU visitors. As an EU citizen-student I was only allowed to apply for a tourist visa, limited to 90 days. To get access to many offices and to some interviews I was expected to present a student visa instead, proving I was doing a sort of educational program in Cuba. Consequently, I was rejected from many interviews because of my limited permission.

Time shortage is the most common limit faced by researchers. By having more time available it would have been possible to expand the research to more aspects of FSV here not considered. Or, it would have been possible to compare different agroecology activities in different urban settings in Cuba.

Another issue concerning data gathering was referred to the secondary sources. It was difficult to get access to updated and reliable data about the state of art of Cuba's agriculture. Even attending to the most renown libraries in the capital, I was only allowed to access to articles from the 80s, which certainly were not consistent with this research.

As a result, many difficulties have been met in creating reliable findings due to the shortage of available information and due to my personal limited access to data and people.

# 4.5 Conclusion

Although the expected bias and limits, during three months of fieldwork it was possible to collect a certain quantity of data. The methodology changed from the one originally planned and it has been re-shaped due to 28
fieldwork's limitations. Therefore, there have been collected 69 valuable questionnaires (addressed to farmers involved in the practice of urban farming), 9 open interviews (addressed to experts of the field as an academic professor, associations' managers, cooperatives' presidents) that are presented in the appendix. These data represent the largest share of the total amount and have been complemented with alternative methods such as observation, informal interviews, secondary data exploration, and photo collection within the farms or at the urban markets. Hence, the research assumes an exploratory mode.

To implement the research, the attention has been put on two categories of actors, namely producers and consumers, related to UA, in three different neighborhoods presented hereafter in the findings.

## 5. Findings

"El hombre es el unico importante. Para el correcto desarrollo de la agricultura urbana se necesita validas incursiones, conoscimientos, passion".

"The Man is the only thing that matters. To develop urban agriculture, we need valid resources, knowledge and passion"

Mig5uel Salcinez, Vivero Alamar, 21st december 2016

## 5.1 Introduction

Hereafter are outlined the findings following the research process implemented. As first, the UA system, its main actors, what are the weaknesses and highlights. A further section is dedicated to the comparison of three municipalities from which some lessons are learned. Then, there have been considered the advantages and disadvantages of urban farming in the achievement of FSV, as they are perceived by the consumers and the producers. As last, the potential of the applied instrument to reduce hunger, UA, has been analyzed to identify limits and potential future improvements.

## 5.2 Findings

## 5.2.1 Urban Agriculture in Havana: the supply chain

Urban production in Havana is for the largest share dedicated to tomato production, along with other fresh vegetables as pumpkin, cucumber, chard, spinach, cabbage, leek and fruits such as plantain, avocado, mango, guava, papaya, herbaceous and medicinal plants and flowers. The entire chain is short and the main character is the State, incorporated, into every step of the chain from the seed to the final consumption, passing through harvest, distribution and eventual transformation and commercialization.

The tomato is produced at winter time, planted in late August and harvested between January and April. Considered the average diet, is a product of interesting value because it represents an important share of the entire vegetable consumption among Cubans. There are distinct species of tomatoes but within urban gardens in Havana there is one preferred and mostly diffused, (*Solanum lycopersicum*). Tomato seeds are distributed and sold by the State every year to the interested farmers (Camporredondo, 2006). In most of the cases (80%) is grown by using organic fertilizers and pesticides, coming from public institutions as research centers and universities. These products are most commonly grown in *organoponicos* where the principles of agroecology are largely applied. Once ready, is harvested and starts its rapid path to the consumers, as refrigeration system in Havana is limited to the tourism industry. A part of the harvest is sold directly to the community nearby the garden in internal markets, whereas the largest share of it, is collected into mechanic trucks or traditional coaches and distributed through other channels. Once arrived at the markets, products remain there until they are sold. The distribution to public or private markets occurs twice or three times

per week and usually, demand overwhelms the offers, so that is common to enter an empty, unfurnished market. At this point, the tomato is usually conserved in private refrigerators, even if these are considered a luxury good for several Cuban families and consumed in fresh salads. Prices on locally produced items do not follow market fluctuations as they are set at the beginning of seasons, thanks to the official forecasts produced every year. Prices are exposed at the entrance of markets (see Fig.4) valid for any consumer throughout the entire year. Fruits and vegetables, the largest shares of product grown in urban gardens, are not guaranteed by the *libreta*, the ration system explained afterward.



Figure 5 Urban Markets. Source: photo edited by author



Figure 6 Prices set outside the market entrance

### 5.2.2 The core role of the State

So far, the supply chain structure appears simple and linear. Hereafter are presented the actors involved in such dynamics as farmers, consumers, the state, public institutions and non-governmental actors as associations and NGOs.

Urban farmers are the first consumers. Most of them, even the market-oriented producers, work in UA to provide sufficient food to families. Havana's population is made up of more than 2 million inhabitants, that represent the largest share of consumers. In addition to them, there are tourists, that eat local fruits and vegetables in copious quantities. Urban products, however are considered by most of the local consumers as a luxury. Indeed, with the money earned, they first purchase staple food and meat, then, if some money is left, they buy fresh items at local markets. Therefore, if production is not sustaining demand, and food scarcity occurs, new policies need to be implemented taking into consideration also tourism-induced consumption. By talking to people at markets and by exploring the local culture, it came out that consumers are not very interested in purchasing fruits and vegetables. This has been proved also through the interviews with some experts concerning the lack of an adequate food education program. This inadequate food culture, summed up with the little knowledge about the origin of food is a clear sign of lack of policies about education, and of course, the presence of a deep-rooted poverty.

Noteworthy is that in every single step of the supply chain the State is the main actor involved. The State can be represented by the single farmer, as guarantor of his salary, or by a cooperative, in every service related to UA, in the collection and distribution of products, during the sale, or ultimately in the consumption. The food supply chain is deeply influenced by the contract the State presents to farmers at the beginning of the season. Every year in fact, farmers who have no access to land or if belonging to mixed or public cooperatives, are contracted to produce a certain quantity of food, to be distributed and sold, to get the land in free usufruct. The most usual form of urban farm enterprise is the UBPC (Basic Units of Cooperative Productions). These are cooperatives in most of the cases by top-down initiative, in which farmers' revenues depend almost entirely from the society's production. The cooperative is, in fact, responsible for the salaries and for the services the farmers could need. Most of Havana's farmers, between 75 and 80%, (ONE, 2014) belong to cooperatives. A standard time-slot for a farmer is 7 to 14, Monday to Friday and their salary vary between 350-700 CUP a month (14-28 Euro/Month), according to their role and experience. Cooperatives are not entitled to set their own prices. According to the contract, they must sell, a certain quantity of products, at a fixed price. However, if the cooperative is able to collect a surplus, it is entitled to set its own price and sell products to specialized markets. In most cases, due to the prohibitive costs, transportation and distribution are avoided operations. Cooperatives more frequently decide to sell products directly from their corners located next to the gardens. Through the set contract, the State provides lands and instruments, although very basic ones, to the cooperative for free, in exchange of a tax, set around the 10%, proportionated to the total income earned at the end of the year. Seeds, technologies, soil, fertilizers and many other necessary items are not provided for free but sold by the State to each cooperative at fixed prices.

Moreover, through such contracts, there are also established the shares of products that will be destined for social purposes. There are many public offices and groups that benefit from these services, such as militaries, hospitals, schools, public offices, municipalities and so on. According to some interviewed farmers, to distribute fresh vegetables for social purposes is something to be proud of. The State, in fact, tries to ensure fresh and healthy food to public offices at very low prices or for free, e.g. at schools.

Overall, the main actor benefitting from the activities of urban farming is the State. Through these contracts, the State can monitor and take advantage from urban production. Moreover, the State imposes every farmer to follow a set of rules, integrated into the contract, such as agroecology principles<sup>2</sup>.

As stated above, the State plays a fundamental role in the economic sector in general and more specifically in the agro-sector. The political framework based on socialist principles is reflected in any institution and office that manage, protect, monitor and overview the agricultural sector and UA production.

The urban food system as seen before is simply structured and there is almost no external intervention by any foreign or private actor. Urban farming has become a very institutionalized system with dozens of public actors playing a specific role. Whether they draw the general guidelines, give technical advice, teach and introduce new techniques, produce the organic matter or do investigation, everyone is a fundamental ring of the chain.

Cuban State intervenes directly also in food access, availability and consumption with *la libreta*, the ration system. It consists of a small book containing a list of products sold at very cheap prices or for free to every household's leader, based on the family's composition. In this way, many products such as coffee, rice, beans, meat, bread, eggs, milk, gas, matches, sugar are guaranteed to families. Products' quantity has been reduced since the beginning of its application in 1990, however, for most families is still a fundamental source of food. Nonetheless, the stock of these products is not able to satisfy Cubans' needs. In fact, concerning for instance animal proteins as chicken and eggs, the warehouses where such items are stock, contain insufficient quantities. Therefore, during the first days of the months, in front of specialized shops, there can be seen long lines of Cubans waiting for their share and hoping to get it. These products are produced within the country or imported, most of them come from rural areas and while constituting a fundamental source of food for Cubans it represents another part of the urban food system, in Havana as in other Cuban cities, not considered in this study.

From many informal interviews obtained during the fieldwork, consumers are annoyed by the limited food items availability. Most of them remembered the time when such disposition was enough to cover almost entirely a family's needs. Though, if seen under a social development perspective this measure is a positive outcome of Socialism, it can be derived that neither rural production or the import are sufficient to cover population needs.

<sup>&</sup>lt;sup>2</sup> There is no fixed disposition, but in general agroecology application in Cuba is set when there subsists the use of organic fertilizers, biological pest control, animal traction and an intensive soil conservation (Altieri & Holt-Gimenez 2012b).

Basing on what has being said earlier, the State is the main actor of the entire food system. However, it must be noticed that Cuba is slowly changing and facing a political and economic transformation started with Fidel Castro abandon of his historical political role in 2006, and the beginning of the new government run by his brother Raul. Agriculture is being reshaped, basing on new regulations and laws (Wright, 2009). Step by step, the country is opening to private properties and welcoming foreign investments. The presence of external actors, however, is very limited. During the advent of urban farming, there were different NGOs coming from Western countries that have been allowed to enter the economic system, guiding and training the new generations of farmers (Chaplowe, 1998). Nowadays the role of international cooperation is reduced. Nevertheless, some non-governmental organizations, born in Cuba during the last decades, are still fertile and contribute dramatically to the agricultural trends in different Havana's zones. Among others, the Antonio Nunez Jimenez foundation is one of the most representative for the category. Speaking with the president, it was possible to understand the importance of these independent groups for the education and training of urban farmers.

Recently, due to the rapid development faced by UA, the Ministry of Agriculture decided to establish a separate organ, GNAU. GNAU answers to farmers' complaints concerning their activity. Besides that, there are 28 Granjas Urbanas (literally, Urban Groups) spread in every productive municipality aimed as popular councils. However, according to many interviewed, these councils have no efficiency.

Among others, ANAP is one of the most important public institutions that relate with farmers' work, capabilities and needs. Born in 1961, represents almost all the small-scale farmers in the country, either urban either rural. ANAP is directly related to the Ministry of Education to plan and administer courses about agroecology to farmers and students.

From the interviews with the expert from International Relation of this group, it came out the key role of ANAP to defend and protect the Revolution's principles as much as the farmers subscribed. Cuban history determined the need to re-invent the relation between human and the environment, coping with the only resources encountered in the Island, because unable to count on import nor external supports. This historical moment, associated with the Special Period, is the main reason behind the strong State commitment toward the achievement of sovereignty, in every single sector, food included. With laws 259 and 300 (approved in 2010), the State declared its commitment to the enhancement of internal agriculture production to limit and eventually extinguish the need for import. With these norms, the State confirmed the importance of becoming food self-sufficient and limit import dependency, while reducing imports from TSN companies.

A consequence of such state centered management of UA, leads also farmers to incorporate principles as they are presented by the propaganda. The common idea of sovereignty is not perceived as related to personal freedom or entitlements, but to a larger perspective of being free from economic imperialism or TSN group's competition. In general, the concept of food sovereignty tent to be associated with the idea of national sovereignty, for which Cuba must be food self-sufficient and substitute imports.

### 5.2.3 Urban Food Sovereignty in Havana: three municipalities

Hereafter are presented three neighborhoods under exams, by looking at the variables of FSV presented in the theoretical framework, leaving room for a consequent discussion.

#### A. Habana del Este

This neighborhood is well extended, however, it is the least densely populated of the entire urban area of La Habana. Most of the population reside here in the coastal area. Life in here, compared to the noisy downtown, is less expensive and calmer. Green spaces are sufficient for the families employed in urban gardens, and the ratio built houses/green areas are still marking a positive rate. This is an area where most of UA production is concentrated in few cooperatives' activity. There are different so-called organoponicos, in which community members, if unemployed or retired can apply for a job. Cooperatives here are well-structured and deeply integrated in the social context. Indeed, they became during the years, a reference point for the community's needs. They provide to inhabitants the fundamental services otherwise too far to be reached daily with public transport. In this area, I studied two example of cooperative, born from a bottom-up initiative by a group of professionals who after the 90s' crises resulted unemployed and with a scarce possibility to sustain their families. From a limited group of three people, occupying an area of half of hectare, these two cooperatives grew rapidly until reaching the actual size (4 Ha) and stability (150 employees). Although I was not allowed to ask for facts and figures concerning their revenues, expenditures and production quantity, by asking to consumers, it can be derived that the community relies heavily on cooperatives' production. Indeed, since the foundation of such cooperatives, the inhabitants changed slightly their consumption patterns toward more responsible and healthy diets. It was remarkable the production of stevia, a natural sweetener introduced in the area to limit household's sugar consumption.

Through the interview with *Vivero Alamar*'s president, a bottom-up formed cooperative, it came out that their revenues although limited, let them to hire employees and pay them better than in state enterprises. Higher revenues and discounts on food purchases, allow the 150 farmers involved to address their revenues into other expenditures either books or bicycles for their children. Within these specific cooperatives, women cover positions of relevance and management. Gender equality is a fundamental key in the management of the firm.

It is important to consider that cooperative's revenues would not be sufficient to cover costs. A part of such costs is covered by the sale of products to luxury hotels and restaurants, set downtown, e.g. they dedicate 10% of the entire efforts to mint production. Mint is the essential ingredients for the most famous and sold Cuban cocktail, the mojito. The *Vivero Alamar* cooperative, transport and sell mint directly to the most renowned five stars' hotel in Havana. Only the mint, as the most required and well-payed product, worth to be produced and transported. The rest of the cooperative's production is unable to reach different markets because of the limited budget available for transportation. *Vivero Alamar* is renown in the region for its commitment to agroecology practices, becoming a school for the neighbor cooperatives as well. In the area, the employees dedicate largely to innovations and sustainable systems to irrigate, protect plants against diseases and promote natural fertilizers. In their fields, they also introduced medical plants, to provide the

community a sort of natural resources to common sickness. For how the cooperative is managed it can be stated that there is a strong commitment to increment farmers' participation in decision-making processes. Farmers are called to participate each month to assemblies and decide about different themes.

#### B. Miramar

In this area, urban farming born as a social practice almost contemporary to what occurred in Habana del Este. Set outside of touristic tracks, the *barrio*'s economy relies on the use of natural resources as UA and fishing. This area was historically populated by the richest families in Cuba and now is turned into a decadent area where gentrification is re-designing public and private spaces. The social composition is different and less mixed than the ones in other areas. Here, most of the population is adult or old. Urban gardens are spread unevenly in the empty green areas. Some of them are followed and sponsored, at least in term of training, by a local-based association that promotes a healthy relationship between men and environment. Indeed, the Antonio Nunez Jimenez foundation , oversees farmers' needs in terms of technical assistance and formation about gender equality, sustainable practices, agroecology and nutritional education. Although based on agroecology techniques, here UA is still little productive, and most of it is aimed as subsistence farming

This area once suffered from an environmental contamination led by the pollution in the river's water. The river's water has been used for agricultural purposes for decades although contaminated. Farmers in this area after the dramatic consequences of having used this water are now keener to a responsible use of environmental resources. In Miramar, UA can be retained almost 100% organic and sustainable, more than in the other areas.

As a side note, Miramar is being studied by national research centers as the most viable area to experiment GMOs. Only recently, Cuban government declared its interests in the application of GMOs as a normal procedure to enhance productivity. From the interview with Maria Caridad Cruz, an expert in UA and president of Antonio Nunez Jimenez Foundation, this decision is scary and counterproductive. For decades Cuba was distinguished for its sustainability in environmental use. Now, this long-term project will face the risks of GMOs application. Unfortunately, the reduced freedom of speech limits experts' intervention about this subject, making communication unilateral and leaving no space for public debate in this regard.

This is a dangerous risk, because can potentially undermine the solid consciousness about sustainable agriculture, taught and learned by generations of farmers. By contrast, GMOs application can potentially free Cubans from shortages of food items and increase availability of assorted products all around the year.

From the study of this area it was possible to highlight the limited power of intervention that interest urban farmers and experts. Experts from universities and research centers, although present on the territory, are not considered in the urban planning or in the policies design. Lands, even in this case, are not assigned directly in farmers' hands, whereas farmers gain only access to these, without having a word on the best practice to adopt. In this area, more than in others it is fundamental the application of sustainable principles, because geographically more subjected to strong climatic events such as flood, due to the soil composition and the closeness to the sea.

### C. Plaza

The neighborhood of Plaza is small but located in a central area of the city. Highly populated, it represents one of the main touristic districts in town. Although it is very densely populated, some green areas remained untouched from urban sprawl. These areas were slowly converted into urban gardens during the last decades. Most of them are managed by independent farmers. Independent farmers represent only 8% of the entire urban farming category. Independent, in this case, means that they do not belong to any state group or enterprise. Farmers in this *barrio* asked the Ministry of Agriculture to get access to small plots of land. Year by year they realized it was easier and more remunerative to merge single plots together, unifying knowledge, experiences and resources. In this way, there are autonomous form of collaboration and shared responsibilities that helped enhancing the average income. Here the production is smaller than in larger cooperatives and almost entirely aimed for auto-consumption. However, a small share of production is addressed to feed public employees working in public structures as hospitals and schools, as expected from the contract.

Most of the farmers here simply take advantage from their own<sup>3</sup> plots, terraces, rooftops. It appears clear that these form of UA is very reduced due to spatial limitation and the production is almost solely related to auto-consumption. To a certain extent, by talking to farmers harvesting independently, it was possible to perceive a degree of freedom in their production modes. They are not entitled by laws to determine their way to produce, however they are not directly monitored, and if willing to can also apply chemicals inputs to achieve better yields.

This area suffers from contamination induced by an inappropriate waste management and the traffic concentration. Pollution and use of chemicals as fertilizers provoked a reduction in quality production and therefore, in remuneration. Apart from national organizations, there are no independent associations working in the area to guarantee the correct application of agroecology and monitor the use of natural resources, that hava been previously damaged and need a requalification strategy.

#### **D.** Comparison

From the comparison of these three municipalities inside Havana, some reflections must rise. Norms, regulations and economic policies are valid on local or national scales, therefore shared by most of the farmers living in the three areas. The differences concern more the social and the environmental aspects.

In general, these three neighborhoods are very different and the local food production based on urban gardens is heterogeneous. The context plays a key role in the establishment of sustainable UA. Space availability, municipalities' management, historical backgrounds, average GDP per capita, are all factors that influenced the outputs of urban farming. The social composition also varies from area to area and generates different patterns in the economic activities relates to UA. Being close to offices, associations, to MINAG or

<sup>&</sup>lt;sup>3</sup> It is important to notice what does "own" mean in this case. Only recently, in 2006, a new law established the form of private property for housing and gardens. Since then, Cubans are properly entitled to sell and buy houses according to market prices, but not the empty lands available, which instead remains state owned (from the interviews with ANAP).

other groups helpful for the agricultural practice, is very important and influence the garden's yields or use. Means of transportation count as a resource and determine the possibility for farmers to distribute and sell their products and in which quantity.

While integrating urban farming within the urban fabric, the context plays a fundamental role. The nature of the soil, the urbanization rate, the municipalities' main economic activities, social composition, the presence of infrastructure and natural resources are all factors that can determine the success of an urban garden. According to J. Pena, Ph.D. at the Polytechnic university in Havana, in the next future, urban farming in Havana is going to move more often into suburban areas, benefitting of more space availability and limiting the risks induced by contamination and pollutions. Hence, there is the need to reconnect urban farming to its specific context, creating a contemporary traditional agriculture based on the resource locally available by dealing with urbanistic issues. Green areas as urban gardens should be integrated into strategic urban plans, as these areas are fundamental productive spots within cities. Green gardens should be opened to non-professional visits and touristic tours as well, to create different revenues channels and improve the general understanding of such sustainable practices.

Urban gardens, seen in the specific cases presented, are clearly beneficial for the involved communities, however also evidently insufficient to communities' needs.

Although Cuba is an example in the region but also worldwide for its massive development of sustainable urban gardens, the path to achieve FSV is still long. Producers and consumers should deal with limits and regulations led by the Socialism paradigm, that obstacles freedom and freelances. At the same time, contextual characteristics play also a key role in determining the success or failure of urban gardens. The capillary distribution of institutions is not sufficient to cover farmers' needs, that are better addressed by the few independent associations working in such fields.

### 5.2.4 UA and the limited social sustainability

FSV's paradigm requires food productions to be sustainable in social terms. Producers must be entitled to control their production system and consumers need to have a safe and fair access to appropriate and nutritional food at any time. Institutions must favor small-scale production and empower farmers through courses and training and free them from any sort of oppression by limiting inequalities among genders and age. Moreover, cooperatives and associations should be encouraged to spread knowledge and services among the needy farmers.

UA brings remarkable positive outcomes in the increased nutritional values and the availability of food items. This is confirmed by the data gathered and it is aligned with the literature about UA and Food Security.

According to the survey, the 60% of respondents prefer eating cooked food instead of raw, eat at least a portion of meat, either pork or chicken, per day, whereas consuming only one portion of vegetables, as a side dish for their meat-based main courses. Despite their traditional habits, the presence of local markets selling urban products as fruits, vegetables and herbs, provoked a sort of cultural evolution in the average diets, introducing more vitamins and nutrients. Therefore producers, distributors, sellers of urban products and 38

consumers living nearby have changed their average diet directly or indirectly, incorporating more vitamins, year by year. Cubans, according to a report from FAO in 2015, are food secure and have exceeded the recommended level of vegetable consumption per capita (300 g/day). This change in trends occurred mostly in public offices and schools. This value is interesting but should be considered as an average and not necessarily a standard. Not all Cubans in fact, are enabled to afford vegetables, and instead, rely on staple food provided by the *libreta*. Moreover, consumption is strictly related to the seasonal availability of products and on the ration system. If the household's leader is not able to purchase food, during a month, the family gives up on buying fresh food coming from urban gardens. Almost the entire sample interviewed showed the preference of buying products at small markets nearby their houses. Convenience in prices and distance to markets are two main factors that intervene in the daily food baskets purchase. Another important theme to rise is the absence of superstores and markets. Although there are a few of them, named as superstores, located at the peripheries of the capital, they are far from the western definition of supermarket. Indeed, there can be found processed and imported products such as powder milk, instant coffee and jams, that cannot be found anywhere else. But the offer is very limited and the presence of these cannot be associated with an increased access to food variety, considered insufficient yet.

Indeed, consumers complain about the little species variety available as one of the most serious challenge. Depending on climatic factors, farmers produce, distribute and retail only few species per season. During the winter time, the period when data were gathered, consumers could only get access to few species, such as tomatoes, lettuce, carrots, beetroots. Moreover, I have been told that winter is a favorable season compared to the humid spring/summer time when there are even less vegetable available, but more fruits.

Moving ahead to others social sustainability considerations, it is remarkable the efforts in UA management to reduce inequalities. By analyzing the sample of respondents, it is perceived the homogeneity in gender participation. Indeed, almost half of respondents is composed by women. Women participate into the practices in urban gardens as much as men and earn the same revenues, without suffering from any discrimination. Within cooperatives they also cover responsibilities roles becoming chiefs and head manager in many cases. Women are in fact protected by laws and by national associations promoting gender equality in every step of urban food production.

A similar positive outcome derives from the analysis of the social composition of urban farmers in terms of age. Youth and elderly represent the two largest share of respondents. Youth, between 18 and 30 years old cover almost the 35% of the sample. Elderly, between 55 and 75, another 30%. Hence, two third of the sample is composed of these two categories. In general, cooperatives either public either mixed, tend to prefer these two categories for distinct reasons. Young people are more likely to attend to superior courses about agronomy and ecology, so that can bring advanced knowledge and ideas. By contrast, elderly people are more likely to become supervisors of the fields due to their long-time experiences. This social composition can be found almost everywhere in urban farms. This must be evaluated as a social benefit for the communities involved, and a measure to enhance the human capital within a group, a firm, a cooperative.

For most farmers, UA is the only economic activity that occupies most of their spare time and it is usually scheduled from 7 am to 2-3 pm. This means in practice, that the farmers involved in UA rely solely on the revenues of this practice. Their salary, considered the GDP per capita<sup>4</sup>, is lower than the average, oscillating between 15 to 20 dollars per month, except few cases. Their limited revenues depending on their fixed salary is the main reason why they are particularly motivated to better their production, to achieve a surplus to sell at the market. Most of the urban farmers come from the rural areas and joined the city to find a better job after the crises occurred in the 90s. Although 60-70% of workers had a previous experience in the fields, they need to be trained about the agroecology methods and the different technologies available, since most of them came from the sugar cane sector, clearly very different to urban garden ones. The access to courses is provided by GNAU and other national associations, to increase farmers' knowledge of sustainable urban farming. However, according to most of the respondents, not all the state cooperatives guarantee enough courses.

The motivations to get involved in UA are several. As first, for both part-time or full-time employees, farmers are interested in enhancing food baskets for their families. Either way in fact, whether they are marketoriented farmers or subsistence ones, their primary goal is to be food self-sufficient to provide safe and healthy food to their relatives. Among young respondents, there is more the attitude related to the healthiness aspects of food consumption and new awareness, due to higher educational degrees achieved. Among elderly, it is more important to stay active, even after being retired and to get access to outdoors activities that keep them in shape and relaxed. Another reason is the good occupational role related to the contact with nature, allowing farmers to socialize and learn from the others.

However, it must be noticed that although such activity in many cases around the world born from grounded initiatives, in Havana's most of the gardens are State owned and controlled, created as a top-down proposal. There is limited space for private enterprises and cooperatives to act individually as a single unit, considering the entire system. The cooperative is and must be considered as a fundamental component of the food system, in which the management of the resources is auto-determined as much as the market dynamics. In Cuba, this cannot be the case until the Socialist regime collapses entirely. Although the theme of cooperatives is, however, limited. The first cooperatives born in the 50s resulting from the Revolution's acts, to free lands. Nevertheless, the problem is cultural. Cuba is not a country in which the tradition of cooperative is well rooted and structured as it is in other Latin America's countries. What is missing, is the feeling of belonging. The cooperatives born from land expropriation from private foreign investors as an essential part to achieve the Socialism. From the big enterprises closed by the revolution, heads and manager become presidents and managers of the newborn cooperative, with an obvious little experience in that specific sector. This process did not reflect a change in the bureaucracy about these enterprises.

<sup>&</sup>lt;sup>4</sup> GDP per capita in Cuba is 6485,7 USD per year. It increased steadily from the value of 5271.1 of 2006. (World Bank, 2017)

### 5.2.5 UA as socialist economic activity

Urban Agriculture is an economic activity and must be treated as such to ensure a sound and fair economic development. Following FVS principles, the related institutions must defend interests of next generations by promoting regulations to resist to corporate trade and unfair competition from TSN. The State must defend local production by strengthening local economies and promote transparent trade. Economic policies are therefore a fundamental key factor in the outcome of sovereignty's discourse. Hereafter some of the measures the State imposed since the beginning of the agroecology revolution to enhance FSV.

By analyzing data some consideration must be presented.

Concerning fresh food, there is no import. Cubans consume only vegetables and fruits produced indoor. Despite this, nearly the 60% of total food consumed is imported from supporting countries and represent the staple food basing Cuban diets. Cuba, being unable to produce them in sufficient quantity, imports cereals, rice, beans and in a lower dimension, meat. Among the State goals, promoted since decades, large investments are addressed to stop food imports at all. The goal is to achieve autarchy in the food production and consumption without relying on the expensive imports from foreign countries, among which Canada, Vietnam, China, Spain are the majors.

Trade policies are planned to protect farmers from the disadvantageous competition induced by transnational corporations. Food import is indeed severely controlled at the country's boundaries where foreign companies pay high duties. Most of the food items retrievable in the rare supermarkets as jams, instant coffee, powder milk, tomato sauces, olives, snacks, biscuits, are imported to satisfy tourism industry in first place, considering that are too expensive for most of Cubans' pockets. In Havana, the so-called-supermarkets sell industrial food coming from Nestlè and other major transnational corporations. In fact, in the last years, despite the economic bloc, some large companies have started to penetrate Cuban markets, although with little success.

The risks of this opening are several, and therefore there is the need for educational programs about nutrition and sustainable food consumption. Unfortunately, as seen before, there is little food culture in Cuba. Consumers purchase what is available and accessible at markets, without an appropriate foodconsciousness. The forecasts are not encouraging. In the last years, the government approved to open to foreign companies the access to the food market. The risk is that without an appropriate nutritional education, Cubans will be attracted by the cheapest offer. The most affected will be the youngest generations, more likely to be overexposed to the commercialization of imported processed foods, unhealthy and unnecessary for their diet, but cheap enough to be attractive and diffused.

As seen before, concerning national food production, there is no surplus, which means that Cuba is not food self-sufficient yet. Everything that is grown in urban farms is first aimed for auto-consumption, then addressed to internal markets. This occurs even if in Cuba 4700 thousands of hectares are employed in agriculture (ONE, 2014), because, in rural areas, large fields are addressed to cash crops, such as coffee, cocoa but most important, tobacco and sugar cane feeding the minor industries of cigars and rum.

The use of rural lands for cash crops is questionable. What is unclear is why public fields are not employed for internal food production instead, since one of the main government goal is to become food self-sufficient. This strategy reflects the history of Cuba, a country that dedicated to cash crops most of its efforts and built its ancient welfare on the export of sugar and plantations. Such a long history and tradition will not be eradicated overnight, although resulting anachronistic nowadays. This approach represents the Socialist approach to economic policies. In one hand, there is the attempt to impulse local economy and industries, e.g. cigars and rum, on the other there is not a parallel modernization of ways, modes, technologies, practices, to develop local and national economy properly. The small industries located in the countryside refining sugar cane are very old, born at the beginning of the Revolution. The limited trade is reflected in this lack of external inputs, aids, shared knowledge that limits Cuba's economic growth, although, at the same time, it clearly limits capitalistic development, as FSV's discourse wants.

Together with the land use, there is another issue that limits food production and obstacle food selfsufficiency, related to logistic and technologies. Indeed, there is no an appropriate stock and flow management. Refrigeration system is missing and transportation is limited to the available infrastructure and means of transport, remained the same from the 60s.

Food prices are set, by the Ministry of Economics and Prices. Indeed, according to the forecasts elaborated at the beginning of the year, it sets prices that stay fixed until the expiration of the products. E.g. at the beginning of the year, the state sets the price of tomato at 4 CUC/Lb<sup>5</sup>. Such value, unless of catastrophic climatic events, is unlikely to change throughout the entire year. As a result, there is no room for internal market competition. There is only one category of producers who can set autonomously prices, represented by the UBPC also known as cooperatives. They can set prices only for the surplus produced, but of course they are influenced by the prices set by the State. In other words, cooperatives need to fix a price sufficiently higher to earn enough for cooperatives' needs, but sufficiently low to be competitive on the local market. Consumers, according to the survey, are not likely to spend more for the same products. The only conditions for which they are keen to spend more are the closeness to the market, whether they are in a good relationship with a specific seller or if such products have a better quality. This measure, showing the strong political position of the State limits the market competition and in a sense, the capitalistic development. Only recently, in 2011, farmers have been entitled to set their own prices and establish contract with tourism industry (Nova Gonzalez, 2012). Prices however remain very influenced by the ones promoted by the State. In addition to this, farmers have no access to any form of credit.

In general, looking at Cuban *lineamientos* (laws), one can state that the trade is generally fair, safe and protected. However, with the explosion of the tourism industry, a dangerous phenomenon is occurring.

Privates, involved in the tourism sector, usually foreign investors or simply enriched Cuban families, are enabled to spend more for the same product. Thus, a tomato retailer, would more likely sell his small quantity at higher prices through black markets, to the foreign buyer rather than earn less, selling it through the

<sup>&</sup>lt;sup>5</sup> Almost 30 Euro cents/Kg

official channels. This mechanism probably was not expected at the beginning of tourism development, but is seriously challenging the fair trade within local producers and consumers. In this way, consumers receive less access to products and limit their diet variety. Moreover, land use has been influenced by touristic invasion too, the lands became more expensive and municipalities in the central areas are unlikely to assign free plots to UA activities.

### 5.2.6 Political participation in theory and limited access to resources

To realize Food Sovereignty in its different components, policies and institutions play a determinant role. The State, considered as the core actors in UA dynamics, must present tailored made policies based on farmers' needs while promoting political rights and civil rights. Policies must be designed to empower peasants to define their production system, to intervene, discuss, participate as much as to use and manage lands and natural resources according to their own will and needs.

Concerning civil rights of participation and dialogue with the institutions, in theory, laws are in favor of active participation in the management of the *res publica*. At the local level, in fact, are established the *poderes populares* (popular assemblies) in which every member of the community, farmers and consumers included, is entitled to join, discuss and raise up important questions every month. Moreover, through these local institutions, it is also possible to attend to courses and training concerning agroecology practices and organic farming. Courses are administered for free in most cases, but rare and insufficient to cover farmers' needs, so that in many cases are covered and managed by international NGOs.

In practice however, concerning public political participation, there is almost no room to dialogue and discuss. In other words, if farmers face for instance an issue with the administered seeds, they are entitled to report such problems and complain. But there is no a concrete network able to incorporate these problems and provide rapid solutions to them. Freedom is under this perspective, once again, limited. The network that in other developing countries is retained necessary for a healthy development of the agricultural sector, is in Cuba almost completely absent. Farmers have little relations with others from different gardens. If needing assistance or services, they can rely on few available organizations and to ministries. There are no social-working-networks basing the fabric of this economic activities. Farmers are left alone, relying only on the insufficient support from state institutions.

The norms about land use must be clear and fair, in order to ensure access to all farmers. Nevertheless, the security of having access to land is more important than gaining the right to private property on the same land (Altieri &Holt-Gimenez 2012b). Indeed, the State provides different solutions to guarantee the fair access to lands, as through renting contracts, ensured by both tenant and farmers.

In one hand, farmers are empowered by the laws, who protect them and contract them. In the other hand, they cannot be considered free to decide ways of production, which instead is constantly monitored by the State. Seeds are distributed at the beginning of the year. Seeds are selected, refined and constantly studied by the research centers promoted by the State. The State supports research and development in the agro-

sector, trying to find the best practices to enhance productivity while applying agroecology principles. However, there are provided only few kinds of seeds for production type.

Concerning the access to resources for the farming activity, the question is delicate. Several *liniamentos* have been recently approved to favor the access for farmers to unused lands and technologies. Suddenly, Cubans gained access to lands in free usufruct. If a farmer is interested, the process is simple. He needs to contact the municipality and apply for a piece of land, normally less than 1,5 ha. A contract between the parts is established, in which there are mentioned the expected results from the next harvest. The farmer is therefore obliged to fulfill the contract's requirements. Among these requirements, there is imposed the sustainable use of lands and resources. The production is then divided. Part of it goes directly into state's hands, another share is destined to the farmer's family. The surplus can be sold at the markets. Through this contract, the farmer is entitled to get access to instruments and technologies although usually, unfortunately, insufficient. Aside, he receives, behind payment, seeds and technical assistance.

However, the quality of the resources provided is generally scarce. The soil, for instance, is imported from suburban or rural areas, since the urban one, suffered erosion and contamination. Moreover, the soil is poor in nutrients, and needs to be implemented by large quantity of compost. The creation of compost, clearly requires more labor and time, but it is a form of recycle of the organic trash. Water availability is a problem generally diffused in Cuba and in the capital city, in particular. Most of the water used for agriculture, come from the largest river, Almendares River, which unfortunately collects urban residuals and wastes. In peripheries, were the urban density is lower, water is purer, however, its supply can stop for days. Pesticides and fertilizers are necessary equipment for farmers. Under request, are provided at fixed prices by GNAU offices spread around the cities, together with seeds. National legislation prosecutes use of chemicals inputs however, in some cases they are found at black markets. Nevertheless, in large *organoponicos*, all the farmers accomplish to rules and use natural methods to defeat plant plagues and augment production.

Every resource needed for farming is state owned. The use and dispose of them is controlled and monitored. In this sense, there is no freedom to dispose of resources and instruments according to own will and needs, neither to purchase stuff and dispose of them. The rules are fixed for everyone and there is no land market. This clearly reflects the Socialist political ideology. In a socialist system, there is almost no private ownership, nor enterprises or activities. The direct consequence, is a limited liberty in decision making. Such regulation is highly reflected by cultural attitude and behavior of people. Cubans are passive subjects in the State. According to the survey, they are not interested in owning private space and instruments if having free access to them. The political structure in these terms plays a beneficial and a disadvantageous role at the same time. In one hand, it provides instruments, knowledge and resources to everyone. In the other hand, it imposes farmers to follow the same steps, the same rules, and it asks them to be consistent with the contract established, without allowing internal competition.

### 5.2.7 From Agroecology to GMOs

According to FSV's discourse, agriculture must be shaped according to agroecology's principles.

Cuba, considering its tradition in small scale sustainable UA is becoming a leader in the Latin American region for methodologies and results. Through the establishment of dedicated institutions, agroecologists reduced the environmental risks and hazards led by chemical inputs, by adopting organic fertilizers and pesticides. The soil, once damaged is now gaining new potential and fertility. *Organoponicos*, the UA form most largely applied in Cuban cities, is a perfect example of agroecology's principles. Spread in different neighborhoods in Havana, according to the survey all the farmers apply sustainability principles presented by FSV's discourse. In almost the entire cases studied in fact, the gardens are managed without the use of chemical substances.

Farmers are expected by contract, to fulfill to sustainability practices. Only a small segment of them, the independent ones, farming in their own rooftops and terraces, since not being monitored directly, are able to adopt also chemicals input if available. However, as mentioned above, the means and instruments necessary for UA production, are very limited and sell to farmers from the State. Farmers in many cases complained about prices and the limited variety of organic fertilizers or seeds.

Nevertheless, Cuba suffers the effects of critical events induced by climate change. The east side of the island is subjected to the uneven meteorological events such as hurricanes that in the last decades destroyed houses and infrastructures. These effects are expected to become even more evident and for this reason, it is beneficial for Cuban farmers to increase product diversification to increase resilience and mitigate the climate change's effects. Limited seed diversification means limited products diversification that leads to increased vulnerability to market fluctuation and climatic events. In these terms, diversification is required.

The risk with agroecology is that if not adequately applied, the yields are lower than with industrial methods. Farmers are entitled to attend to specific course and training, however from the survey it comes out that these training are insufficient to cover farmers' needs.

As mentioned above, demand is overwhelming urban production of vegetables and fruits. To increase yields, experts and researchers must be taken more into account in the education and training systems. By interviewing some experts, it was perceived that either coming from universities either from independent associations, experts are not integrated into the implementation of urban gardens, although their knowledge and skills will be useful to farmers. Instead, the answer to the deficit of production, is being addressed with the development of GMOs seeds. Public universities have recently started a research investigation around possible stronger and more resistant plants to be adopted in the urban gardens. Talking to M. C. Cruz, president of Antonio Nunez Association, her concern was risen by these ultimate state plan to adopt chemical seeds, into an agroecology setting.

As a further point, from these interviews, it shows that although the protection of natural resources must be a consistent part in every agroecology projects, in Havana this is missing. There is no adequate cure and conservation of natural resources. Havana's dwellers are not educated enough to prevent pollution and reduce harms on the natural ecosystems that constitute the city and its boundaries.

## 5.3 Discussion

Hereafter are discussed the main findings highlighting the positive outcomes and the drawbacks UA brings to the enhancement of FSV.

1. UA contributes to better nutrition for producers and the consumers.

The data gathered, proved the positive effects of UA in enhancing Food Security (Altieri et al., 1998; Murphy, 2006). The average Cuban diet has changed since the implementation of urban gardens in Havana, becoming richer and more variated. UA brought an increased access to fresh and healthy food, herbs and natural medicines. This is considered as a sort of cultural evolution in the average diet, especially true at schools and public offices, receiving as first, urban production.

However, there are some limits to this positive achievement. First, this consideration is valid only if applied to consumers living close by the urban gardens or the markets. Consumers are driven in their food purchases by the cheapest and the closest offer. Many of the respondents are not willing to explore other markets if their own is out of stock. In these regards, some measures must be taken as providing favorable means to commercialize and distribute UA items.

Moreover, the production is insufficient, since the demand overwhelms the offer leading consumers to rely solely on the products provided by the ration system.

Ultimately, consumers complain about the limited species variety.

In order to better public services, it is desirable this cultural shift to be accompanied by top-down initiative as the inclusion of vegetables and fruits within the ration systems, for instance. Otherwise, it is recommended to better food education at schools or through other organization among adults. Furthermore, once increased the production through adequate measures presented below, more markets should be spread around poorest neighborhoods. For last, product diversification is a necessary measure not only to satisfy consumers' needs but also to increase resilience and become less vulnerable to climate events or prices fluctuations (Patel, 2009).

2. UA reduces inequalities among genders and age.

Indeed, urban gardens either public either mixed, welcome and encourage the participation and the employment of both genders as much as people of any age. This is particularly interesting considering how generally women are treated in many Latin American countries' work sphere (Monsalve, 2006). Moreover, by mixing farmers with different backgrounds and experience, a richer and more interesting working environment is created.

In these terms, this is a positive outcome that should be exported elsewhere. Through the interviews with women in the field, it was easy to perceive their enthusiasm in covering roles of responsibility and being treated with the deserved respect, being payed as much as men. 3. UA reduces food expenditures for farmers.

Most of the farmers get involved in urban gardens with the specific aim of augment household's food basket. Apart from subsistence farmers, also the ones employed by state groups, by being trained are keener to purchase at lower prices from the same firm, fresh fruits and vegetables. This has a double advantage. In one hand, producers can limit food expenditures and address their revenues to other needs, in the other hand, people involved in urban agriculture become more aware of sustainable food consumption and nutrition.

This clearly enhances the knowledge about sustainable production and consumption and helps to generate a virtuous cycle. Concerning food consumption, in fact, some arrangements must be implemented in order to better consumers' awareness about health and food production systems (Otsuki, 2014).

4. There is no room for private firms or grassroots organizations' development in UA

In Cuba, freedom is limited. Agriculture as a fundamental part of national economy, is controlled and managed entirely by the State. Only recently, with the new agrarian reforms, privates are enabled to form cooperatives (Cruz & Medina,2003), although only through rented lands and by respecting the contract imposed by the State.

Concerning the scope of this investigation, there are some consequences to this approach that require attention.

First, FSV's discourse wants the encouragement of cooperatives and small-scale farmer organizations (La Via Campesina,1996). In Cuba there exist many, however, their freedom is limited by the lack of resources, as seeds, lands, water and by the fixed prices. Most of the cooperatives in Cuba born as an effect of the Revolution, from the reconversion of private enterprises (Santana & Albelo, 2005). However, they have not been accompanied by the transformation of the related bureaucracy, leaving farmers without an enabling institutional framework. There is the need to transform norms and laws, accordingly to the presence of these new cooperatives. At the same time, a cultural discourse must be risen. Cuban are not used to cooperatives and lacks the necessary training. Thus, most of the farmers belonging to coops, feel almost no sense of belonging or attachment to these. It is recommended to increase the educational programs, to train farmers and mangers.

Moreover, grassroots farmers' associations must be allowed. In the FSV's discourse, these are considered as necessary preconditions to share skills, knowledge and augment social cohesion and human capital (La Via Campesina 1996, Klein 2007).

5. There exist policies to protect farmers from international firms' competition and encourage national urban production

In Cuba, local and national productions are advantaged. Due to the historical economic block experienced from the 60s, Cuba has been tried to become self-reliant in every economic sector, by reducing the imports. However, from 2006, this historical trend has been re-discussed. Raul Castro is opening to foreign

investments and markets and some TSN are already dominating the few supermarkets available. Although it is too early to verify if the new regulations are bringing positive effects on the development of Cuba, it is already clear that these measures lead to negative impacts too and must be managed wisely.

6. Cuba is not food self-sufficient yet and the urban gardens are not covering the city's needs.

Although the efforts and the strong political commitment to solve food insecurity issues, internal food production is still insufficient to cover demand. There is the need to increase yields and to expand urban practices. The tourism industry is taking a large share of urban food production, and unfortunately, tourists and privates can pay more for the same products, becoming unfair competitors to Havana's dwellers. In these terms, agriculture and tourism need to dialogue more.

As a further recommendation, there must be developed a form of food industry to process and conserve the food. The lack of technologies and instruments as refrigerator leads to the loss of a share of the urban production. If Cuba is not able to produce indoor the necessary technologies, these must be imported.

Moreover, land use must be redesigned, accordingly to population's needs. In rural areas, part of the cash crops aimed for exports can be reconverted in sustainable fields to grow food and satisfy national demand.

7. Prices of urban products are set by the state.

According to respondents with a higher educational degree, prices are high and unfair. However, the price system is another demonstration of the strong State role within the national economy. To a certain extent, it is a fair measure to entitle all consumers to get access to food. By contrast, fixed prices, leave no room for competitions. Without an internal competition, producers are not encouraged to increase production quality.

8. Urban farmers are not enabled to define their production systems.

All of them, except the independent subsistence farmers (8%), must fulfill the contract set by the State.

In one hand, these contracts are positive because reflects a unique and top-down plan, unified and designed to enhance national production and address collective's needs. In the other hand, producers have no opportunities to select instruments, seeds, soil, resources and manage autonomously their production modes. Said so, what it is suggested, is to integrate more freedom in the contract established, allowing producers to select and determine their production modes. However, the largest limit is represented by the little choice of seeds, means and technology anyway and the lack of adequate training and educational support. Urban producers are expected to produce a certain quantity of an established product and only the exceed can be retailed at a unfixed price. They are monitored and followed in every step during the harvest season and if not accomplishing they are expropriated of the lands.

Seen under another perspective, these contracts call also for the complete application of agroecology principles. Therefore, present a positive outcome at least under an environmental sustainability aspect.

9. Political participation in theory

In theory, there are popular councils aimed for farmers and consumers' representation and discussion. In practice, they are unused and useless. The regulations encourage public participation and political representation, but then in practice, the themes risen during the assemblies are not considered by the higher political spheres, or the measures undertaken are too slow to solve promptly the issues.

What is recommended here, is to shift from theoretical guidelines to practice.

#### 10. Limited protection of natural resources

As a fundamental point of agroecology, natural resources must be protected. However, there are no protected areas, within cities and outside, and despite the state commitment on these themes, citizens are not aware of environmental sustainability principles. UA uses soils and water from the neighbor areas. The issue risen by many experts is the risk of using polluted soil and water into agricultural projects. Therefore, also in these regards, more educational programs are required. If the agroecology application is involving most of the urban farmers in Havana, these principles must be taught also to dwellers that related to UA indirectly. Farmers deal with the shortage of resources, especially water. In these regards, there is the need to implement further policies to augment the city's capacity of recycling resources.

11. GMOs in urban gardens to augment yields.

Agroecology is widely spread, but state institutions need to involve more national and international experts in the debates around GMOs themes and innovations. During the first UA implementation in Havana, several experts from different countries were called to participate and share their knowledge concerning organic farming and permaculture techniques (Chaplowe,1998). However, now there are limits imposed on foreign organization to enter the country. The risks induced by the adoption of GMOs are several and do not match with agroecology principles. There is the need instead of the intervention of long-term experts in the sector.

12. The presence or absence of institutions can determine the success of a garden

By comparing the neighborhoods, it results that the closeness to certain institution providing services to farmers, better the efficiency of a specific garden, whereas the absence leads to a failure of such. Although the government have increased the presence of offices and services on Havana's territory, according to farmers these are still insufficient to cover their needs.

#### 13. UA must be integrated into urbanistic strategies

It has been recognized the need to consider UA as an autonomous economic activity and not solely as a temporal version of rural agriculture. In this sense, it needs to be integrated in the urban planning, in order to get the deserved importance (Cruz & Medina, 2003). Public authorities must contribute to the conservation of natural resources by finding a coexistence between urban functions and UA. So far, the planning took into account only economic profits, constraining the potential of UA as a urban sustainable activity. UA has a proved potential in improving environmental assets of an area, by reconverting unused spots into gardens.

#### 14. FSV must be integrated into the context

FSV cannot be imposed as it has been written and conceived to every context. There is the need to adopt the parameters to the cultural and educational assets of the context.

While assessing the level of FSV, it is important to conduct a grounded investigation, giving the deserved importance to producers and consumers' perspectives, because they are the noteworthy actors under a development point of view. The concept of freedom basing FSV discourse is expressed and applied by many development scholarships and needs to be reviewed in light of farmers' perception of such, based on real needs. The perception of food sovereignty is unified with the one promoted by the State, which is not necessarily related to La Via Campesina's discourse. It is very important to keep in mind the eventual diversity of terms and lexica to be used with the interviewed. For Cuban farmers and producer being food sovereign means being independent from food imports and staying outside from global food system's dynamics.

## 6. Conclusion and Recommendations

The UA is an economic activity designed to incorporate many principles of the FSV discourse. It therefore must be considered not only as a mean to accomplish Food Security but also as a potential activity to better livelihood conditions of the farmers and the consumers involved. By assessing to what extent this activity is leading to a better FSV in Havana, there have been considered four macro-themes, namely social sustainability, fair economic growth, political empowerment and environmental sustainability, key elements for the achievement of FSV.

UA, contributes directly and indirectly to the achievement of FSV, considering the various aspects that this concept encompasses. By engaging in urban farming activities', households' income increases, local culture is enhanced and sustainable practices are promoted. However, this occurs only if certain preconditions are set by local institutions and favored by norms. From 30 years of Cuban UA there are many lessons that can be retrieved. These positive results can be applied in future development practices and reshape some theoretical concepts too. By contrast, Cuban example shows also negative outcomes, that call for adjustments and measures.

By looking at the positive sides, urban gardens are managed following agroecology principles and help the creation of employments involving vulnerable groups such as elderly people and women. Urban farmers in Havana are in theory favored by laws and norms concerning the use of natural resources, the access to land, services and courses. Havana's farmers complement their dietary needs by purchasing food at their gardens, becoming more aware of nutritional values. Moreover, from the gardens, gain access to medicinal plants too, necessary if considered the lack of medicines and drugs in Cuba. Economic policies are designed to limit imports and encourage local production, in the ultimate scope of becoming food-self-sufficient. The State efforts to reduce hunger and malnutrition are reflected in the food policies concerning management of resources and distribution. Most of the urban farmers, are called to produce to feed students at schools and employees in public offices, in first place. This is clearly a positive measure to augment the collectivity resilience and social links between farmers and institutions.

The government promotes urban agriculture through land reform and *lineamientos*. Although these measures have the potential to create the correct framework to the achievement of food sovereignty, other forms of initiatives must be accompanied, as, among others, a greater political participation and an increased access to resources.

Urban farmers and consumers face also several limits. First, although the efforts dedicated to this activity from 30 years in Havana, cities are not self-sufficient, and in general Cuba is import-dependent concerning staple, processed and conserved food. UA needs to be complemented by a similar commitment to the management of rural areas. Cuban government's goal of becoming self-reliant on food consumption is far from being achieved, especially if no measure is taken concerning products diversification. Diversification of

seeds and plants Is fundamental not solely to increase nutritional supply but also to increase resilience and mitigate the effects of climate change related events. GMOs if applied must be isolated and limited to certain areas. They must be an alternative and not the only solution.

Services are insufficient and farmers complain about lack of access to courses, credit, trainings to augment their productivity, to get access to subsidies in the purchase of the necessary tools, to get better revenues and access to more seeds, plants, fertilizers and pesticides varieties.

More educational programs are required. Most of the consumers have little food culture and tend to consume the cheapest option possible. The advent of large supermarkets, although offering limited range of imported products, is expected to lead to an overconsumption of refined and unhealthy products. The educational system in Cuba needs to be redesigned. In these regards, it is desirable that students and experts get free access to open information, press and media. The strong propaganda in Cuba should not interfere with education and research. In these regards, Cuba must open to foreign NGOs and international groups to import skills, knowledge and technology from well-developed countries. Local and international experts must participate to urban planning strategies and in the design of policies concerning education, development and agrarian reform. There is the need to integrate knowledge and technology coming overseas, because so far, Cuba relied only on the instruments and supports coming from the inside. On one hand, the results are positive because Cuba was forced to move back to a traditional form of agriculture, certainly more sustainable than the one inherited from the Green Revolution. On the other hand, to rely only on traditional methods limits the yields and the productivity reducing the possibility to effectively become food selfsufficient and increase resilience.

Furthermore, considering Cuban economy in the next future, UA needs to be more connected with the tourism industry. Only through adequate communication between the two sectors there will be enhanced urban gardens' production without compromising food availability for La Habana's citizens.

The results show also the limited room for developing a bottom-up form of association and cooperative. There are little opportunities for farmers to build an independent activity or count effectively as a stronger unit by merging resources together and form a cooperative. On one hand cooperatives do not belong to Cuban culture and history, on the other, the State tend to limit spontaneous activities and the creation of alternative social networks retained fundamental nodes in FSV paradigm.

Agroecology is a sustainable practice that must be expanded over Cuban boundaries. Its effects, when applied in urban gardens, are positive. However, without a relevant support of education, norms and parallel projects, outside urban gardens, people have no environmental awareness and dispose of natural resources without consciousness.

Some reflections must be done on development research and practice as well. While aiming to apply a development strategy or project, the context must be put in first place for the necessaries analysis. Geographical factors, historical events, economic patterns are key elements in the construction of a specific development plan that must fit perfectly in the context. Cuban case shows that the term sovereignty used for 52

propaganda purposes mainly, is not directly corresponding to the western idea of the same concept. This reflection must be considered especially while collecting data and sharing information with the interviewed. FSV must become part of public policies only if it integrates grounded opinions and experts' opinions. Only in this way, the right priorities can be put on the top of the agenda, whereas political outcomes are left aside.

At last, some recommendations for further investigations on the topic. Moving toward sustainable food systems means moving toward a circularity of the whole production and consumption cycle. There are aspects that this research has not considered as the packaging, manufacturing and waste disposal of food, that are very important in the larger picture. Furthermore, future studies must consider the economic policies implemented in Cuba in depth, to verify if such measures are protecting farmers from any form of disadvantageous competitions or dumping acted by transnational corporations.



Figure 7 Havana. Source: photo edited by author

## 7. References

ACTAF (2009). Programa desarrollo agrario municipal. Asociacion Cubana de Tecnicos Agricola y Forestales. 2009.

Alkon, A., H., Mares, T., M., (2012). FSV in US food movements: radical visions and neoliberal constraints. Agriculture and Human Values, Vol 29, Issue 3, pp 347–359

Altieri, M. A., Funes-Monzote, F. R., (2012a). The paradox of Cuban agriculture. Monthly Review, 63(8), 23-33

Altieri, M., A., Holt-Gimenez, E., (2012b). Agroecology, Food Sovereignty and the New Green Revolution. Agroecology and Sustainable Food systems, Vol. 37, Issue 1.

Altieri, M. A., Companioni, N., Canizares, K., Murphy., C., Rosset, P., Bourque, M., Nicholls, C., I., (1998). The greening of the "barrios": UA for food security in Cuba. Agriculture and Human Values. Vol. 16, pp 131–140.

Aubry, C., Ramamonjisoa, J., Dabat, M., H., Rakotoarisoa, J., Rakotondraibe, J., Rabeharisoa, L., (2010). UA and land use in cities: an approach with the multi-funcionality and sustainability concepts in the case of Antananarivo (Madagascar). Land Use Policy Vol. 29, pp 429-439.

Bohrt, J., P., (1997). Agricultura Urbana en America Latina. AGUILA, La Paz, 1997.

Camporredondo, A., G., (2006). Desarrollo local en Cuba. Retos y perspectivas. Academia, la Habana, 2006.

Castellon Rodriguez, S., (1999). La Agricultura urbana y la produccion de alimentos: la experiencia de Cuba

Chaplowe, S., G., (1998). Havana's popular gardens: sustainable prospect for urban agriculture. The Environmentalist Vol. 18, pp 47-57 (1998)

Chias, L., Pavon, M., (1996). Transporte y Abasto alimentario en las ciudades latinoamericanas. Universidad Nacional Autonoma de Mexico.

Cisneros, M., G., (2012). Assessing the Potential of Small-scale UA in Havana. University Van Amsterdam, Master Thesis in International Development Studies.

Companioni, N., (1996). El Huerto Intensivo en la Agricultura Urbana de Cuba, in Seminario Taller Regional :La Agricultura Urbana y el Desarrollo Rural Sostenible, pp. 39–48. FIDA-CIARA-MINGAG.

Companioni, N., Rodriguez A. A., Carrion M., (1997). La Agricultura Urbana en Cuba: su participación en la seguridad alimentaria. Proceedings III Encuentro Nacional de Agricultura Organica, pp. 9–13. Villa Clara, Cuba.

Companioni, N., and Hernandez, Y., (2002). The growth of UA. In FUNESMONZOTE, F. et al. (2002) Sustainable agriculture and resistance. Transforming Food Production in Cuba, pp. 220-236. Oakland: Food First books.

Cowley, M., C., (1997). Quienes hacen ciudad? Ambiente urbano y partcipacion popular: Cuba, Puerto Rice, Republica Dominicana. SIAP, Cuenca, Ecuador.

Cruz, M. C., Medina, R. S., (2003). Agriculture in the city: A key to sustainability in Havana, Cuba. Ottawa: IDRC/ Ian Randle

Deelstra, T., Girardet, H., (2000). Urban agriculture and sustainable cities. Bakker N., Dubbeling M., Gündel S., Sabel-Koshella U., de Zeeuw H. Growing cities, growing food. Urban agriculture on the policy agenda. pp. 43-66.

Desmarais, A., (2010). The Vía Campesina: Consolidating an International Peasant and Farm Movement. The Journal of Peasant Studies. Vol 29, Issue 2, pp 91-124

Dubbeling, M., Santandreu, A., (2003). UA and Food sovereignty. IPES-PGU-ALC (international Development Research Centre Canada).

Escobar, A., (2012). Encountering Development: The Making and Unmaking of the Third World. Princeton University Press.

FAO (1998). Alimentar a las ciudades. From El Estado Mundial de la Agricultura y la Alimentacion, FAO

FAO (2003). Trade reforms and food security: conceptualising the linkages, Rome: Commodity Policy and Projections Service, Commodities and Trade Division.

FAO (2006). Food Security, Policy Brief, June 2006, Issue 2.

FAO (2011). The place of urban and peri-UA (UPA) in national food security programmes. Rome: FAO. Retrieved from http://www.fao.org/docrep/014/i2177e/i2177e00.pdf on the 30th of Jannuary 2017

FAO (2014). Growing greener cities in Latin America and the Caribbean. A FAO report on urban and peri UA in the region. Rome: Food and Agriculture Organization of the United Nations.

FAO (2003). Trade reforms and food security: conceptualising the linkages, Rome: Commodity Policy and Projections Service, Commodities and Trade Division.

Febles-Gonzales, J., M., Tolocon-Becerra, A., Lastra-Bravo, Acosta-Valdes, X., (2010) Cuban agricultural policy in the last 25 years. From conventional to organic agriculture. Land Use Policy, Elsevier 2011.

Fondo Comun para Los Productos Basicos, (2004). Fomento del los productos basicos en la region de America Latina y el Caribe. Reunion de mesa redonda. La Habana, Cuba, 17-20 de noviembre de 2003.

Global Justice Now, (2016). The Six Pillars of Food Sovereignty. Retrieved from: http://www.globaljustice.org.uk/six-pillars-food-sovereignty on the 20th of January 2017.

Holt-Gimenez, E., (2009). From Food Crisis to Food Sovereignty: The Challenge of Social Movements. Pp 142-156 Holt-Gimenez, E., (2013). Agroecology and the Transformation of Agri-Food Systems: Transdisciplinary and Participatory Perspectives. Agroecology and Sustainable Food Systems, Vol 37, Issue 1, pp 90-102

Jacobi, P., Amend., J., Kiango, S., (1999) UA in Dar Es Salaam: providing and indispensable part of the diet.

Jansen, K., (2015). The debate on food sovereignty theory: agrarian capitalism, dispossession and agroecology. The Journal of Peasant Studies, Vol 42, Issue 1, pp 213-232

Klein, N., (2007). The shock doctrine: the rise of disaster capitalism. New York: Metropolitan Books/Henry Holt

Koont, S., (2009). The UA of Havana. Monthly Review, vol. 60, Issue 8. Retrieved from http://monthlyreview.org/090119koont.php

Leitgeb, F., Schneider, S., Vogl, C.R., (2016). Increasing food sovereignty with UA in Cuba Agriculture and Human Values. Vol. 33, Issue 2, pp 415-426

Martínez-Torres, M., E., Rosset, P., M., (2014) Diálogo de saberes in La Vía Campesina: food sovereignty and agroecology, The Journal of Peasant Studies, 41:6, 979-997, DOI: 10.1080/03066150.2013.872632

McMichael, P., (2008). Food sovereignty, social reproduction, and the agrarian question. In Peasants and globalization: political economy, rural transformation and the agrarian question, London: Routledge. Pp 288–311.

Mesa-Lago, C., (2006). The end of rationing? Hemisphere. Retrieved from http://www.allbusiness.com/public-administration/national-security-international/3974438-1.html

Ministerio de la Agricultura. Grupo Nacionalde Agricultura Urbana y Suburbana (MINAG), (2014). Lineamientos de la Agricultura Urbana y Suburbana para el ano 2014.

Monsalve, S., (2006). Gender and land. In: M. Courville, R. Patel and P. Rosset, eds. Promised land: competing visions of agrarian reform. Oakland, CA: Food First Books, pp. 192–207.

Mougeout, L., (1999). UA: definition, presence, potentials and risks. In Bakker N., Dubbeling M., Guendel S., and de Zeeuw H. (Eds.). "Growing Cities, growing food: UA on the policy agenda", pp. 1-42. Leusden, Netherlands: Resource Centre on UA and Forestry.

Mougeout, L., J., A., (2006). Cultivando mejores Ciudades: Agricultura urbana para el desarrollo sostenible. Centro Internacional de Investigaciones para el desarrollo, Ottawa, Canada.

Moustier, P., (2007). Urban horticulture in Africa and Asia: an efficient corner food supplier. Acta Horticulturae 762, pp. 239-247

Murphy, C. (2006). Urban gardens increase food security in times of crisis: Havana, Cuba. Estudios del Desarrollo Social: Cuba y América Latina, Vol. 1(2), Retrieved from http://www.flacso.uh.cu/sitio\_revista/num3/principal.htm on the 30th of January 2017

Nova Gonzalez, A., (2012). Reforma en la agricultura: lineamientos y resultados recientes. In Miradas a la economia cubana: El proceso de la actualizacion. pp. 53–73. Havana: Editorial Caminos.

Nugent, R. (1999). "The impact of urban agriculture on the household and local economies". In Bakker N., Dubbeling M., Guendel S., and de Zeeuw H. (Eds.). "Growing Cities, growing food: Urban agriculture on the policy agenda" (pp. 67-97). Leusden, Netherlands: Resource Centre on Urban Agriculture and Forestry.

Oficina Nacional de Estadísticas de Cuba, (2012). Census Data 2012 [Data File]. Available from: Oficina Nacional de Estadísticas de Cuba, Havana.

Oficina nacional de estatistica e informacion, (2013). Anuario Estadistico de Cuba. ONEI

Otsuki, K. (2014). Food Governance Transformation: Aligning Food Security with Sustainable Farming Practices in Developing Communities. Springer, Energy, Food, Agriculture.

Patel, R., (2005). Global fascism, revolutionary humanism and the ethics of food sovereignty. Development, vol. 48, Issue 2, pp.79–83.

Patel, R., (2009). Food Sovereignty. The journal of Peasant Studies. Vol. 36, Issue 3, pp 663-706.

Pérez-Stable, M., (1999). The Cuban revolution: Origins, course, and legacy. Oxford University Press, USA.

Pérez-López, J. F., (2002). The Cuban economy in an unending Special Period. Cuba in transition, 12, 507-521.

Pimbert, M., (2008). Towards food sovereignty: reclaiming autonomous food systems. Carsoncenter.

Premat, A., (2003). Small-Scale Urban Agriculture in Havana and the Reproduction of the 'New Man' in Contemporary Cuba. Revista Europea de Estudios Latinoamericanos y del Caribe, vol. 75. 85-99.

Premat, A., (2012). The making of Havana's UA. Vandeerbilt University Press 2012

Reardon, J., A., S., and Perez, R., A., (2010). Agroecology and the development of Indicators for Food Sovereignty in Cuban Food System. Journal of Sustinable Agriculture, Vol 34, Issue 3, pp 907-922.

Richter, J., Schnitzler, W., H., Gura, S., (1995). Vegetable Production in Periurban Areas in the tropics nd subtropics -food, income and quality of life. Deutsche Stiftung fur Internationale Estwicklung.

Rodriguez-Castellon, S., (2002). La agricultura urbana y pa produccion de alimentos: la experiencia de Cuba. Centro de Estudio de la Economa Cubana. Universidad de la Habana, Cuba.

Rodriguez-Nodals, A., A., Companioni-Concepcion, N., Gonzales-Bayon., R., (2006). La agricultura urbana y periurbana en Cuba: Un ejemplo de agricultura sostenible. VI Encuentro de Agricultura Organica, Ciudad de La Habana.

Rojas, N., P., Mastrapa, E., G., Garcia Aguiar, M.,(1999). Participacion y desarrollo agricola en Cuba. Universidad de La Habana, Equipo Estudio Rurales Rosset, P., M., Moore, M., (1997). Food security and local production of biopesticides in Cuba. ILEIANewsletter Vol 13, Issue 4, pp 18–19.

Rosset, P., (2003). Food sovereignty: global rallying cry of farmer movements. Oakland, CA: Institute for Food and Development Policy. Available from: http://www.foodfirst.org/pubs/backgrdrs/2003/f03v9n4.pdf

Rosset, P. and Martinez-Torres M.,E., (2010). La Via Campesina: the birth and evolution of a transnational social movement. The Journal of Peasant Studies, vol. 37(1), 149–175.

Santana, S., A., Albelo V., F., (2005). El modelo cooperative campesino en Cuba. Editoria Politica, La Havana

Sarmiento, T., R., (2013). Produccion y Consumos sostenibles. Editorial científico-tecnica, Istituto Cuba del Libro, La Habana.

Sims, H., & Vogelmann, K., (2002). Popular mobilization and disaster management in Cuba. Public Administration and Development, Vol. 22, Issue 5, pp 389-400.

Storey, A.O., (2016). Seed, Land and Democracy: the Quest for Food Sovereignty in Rural North West India. Faculty of Social and Behavioural Sciences Theses, Utrecht University, Master Thesis.

United Nations for Sustainable Development, (2014). Informe sobre Desarrollo Humano 2014. Sostener el Progreso HUmano: reducerpppo9

United Nations Habitat, (2016). World Cities Report 2016. Urbanization and Development, Emerging Futures. United Nations Human Settlements Programme (UN-Habitat)

Via Campesina, (1996). The right to produce and access to land Voice of the Turtle. Available from:http://www.voiceoftheturtle.org/library/1996%20Declaration%20of%20Food%20Sovereignty.pdf

Windfuhr, M. and Jonsén, J., (2005). Food sovereignty: towards democracy in localized food systems, Rugby, Warwickshire.

World Bank, (2007). Global economic prospects. Managing the next wave of globalization. Washington : World Bank Publisher.

Wright, J., (2009). Sustainable agriculture and food security in an era of oil scarcity: Lessons from Cuba. London, UK: Earthscan.

Yap, C., (2013). Urban food sovereignty: Food, land and democracy in Kampala. The Bartlett Development Planning Unit. DPU WORKING PAPER NO. 157

# 8. Appendix

## I. List of interviews

	Name	Data	Themes	Occupation	Organization
1	M.Salcines	21/12/16	Cooperative, Food access, FSV	President	Cooperative Vivero Alamar
2	I. Salcines	19/12/16	Cooperative, history, relation with the community	Administration Manager	Cooperative Vivero Alamar
3	G. Gonzales	23/12/16	Production and sell, access to resources, policies, FSV	Production Manager	Cooperative Vivero Alamar
4	J. Peña	6/1/17	Urban food system, FSV, benefits and limits of UA	Professor, Researcher in Urban Planning	University of Technology of Havana
5	M. C. Cruz	10/1/17	Urban food system, UA and FSV, challenges and benefits	Coordinator of research projects	A. Nuñez Jimenez Foundation
6	R. Roman	20/1/17	Urban food system, state role, benefits for farmers	International relations	ANAP
7	C. Maduro	15/1/17	Production in urban gardens,	Chief engineer	UEB
			pro/cons of organoponicos		cooperative
8	M. Martinez	28/1/17	Ministry's responsabilities, urban food system	International relations	MINAGRI
9	M. Chavez	2/2/17	Urban planning, risks and	Master student at	CUJAE
			advantages of UA in Havana	CUJAE, faculty of Architecture	

## II. Sample of Survey

## ESP version- original

#### Generalidad

- 1. Nombre (No necesito Appellido):
- 2. Edad:
- 3. Origen: Indique el barrio/municipio donde vive
- 4. Nivel de educacion logrado: indique el titulo
- 5. Usted dedica su tiempo ad Otro trabajo? *S/N* Si si, Indique

#### Relacion entre l agricultura

- 6. Hace quanto tiempo usted trabaja en l agricultura (aqui o en otro espacio)? Indique en anos:
- 7. Partenece ad una cooperativa? indique
- 8. Tiene su campo o trabaja solo por jardinos collectivos? Tengo mi campo/ trabajo solo en la coop
- 9. Seria enteresado en tener un campo de propriedad? *S*/*N*
- 10. Qual es el problema mas grande de resolver para comprar una tierra y sembrar? Indique
- 11. De que se ocupa en este organoponico, cual es su rol? *indique*
- 12. Con quales organos se relacciona( ahora o nel pasado) usted para
- Obtenir credito, financiamentos: indique
- Obtenir cursos, taller, capacitaciones: indique
- 13. Quales producto creze majormente?: Indique tres
- 14. Si usted trabaja tambien por su cuenta:

Usted vende su producto o produce solo por su familia? Vende/ no vende

Si vende,

- Donde? Indique
- A qual precio por kilo? *Indique*
- Quanto ganas por hectar? Indique
- Quanto en percentaje su total de producto? Indique
- 15. Sabe donde termina la venta de los producto que creze? *S/N si si, indique donde:*
- 16. Puede elegir su mismo los metodos de produccion o sigue regulas ? Puedo elegir/siguo directivas
- 17. De quien son las directivas? Indique
- Esta libre de determinar quales productos plantear o sigue algunas directivas? *Puedo elegir / siguo directivas*
- 19. Quales son las majores ventajas en la produccion en organoponico? *Indique (1,2)*

- 20. Usted que piensa de la agricultura urbana? *Explique*
- 21. Cree que hay ventajas sobre la agricultura rural? *S/N*
- 22. Si usted tenria acceso a fertilizantes quemicos y otros productos como OMG mas productivo, los compreria? S/N

#### Como consumidor:

- 23. Donde compra sus productos? Indique una opcion entre a-e
  - a. Mercado
  - b. cooperativa
  - c. supermercado
  - d. centro commercial
  - e. *otro*
- 24. Tienes productores/mercado de confiancia? *S/N, Si si, indique*
- 25. Desde quando se ha sido parte de la cooperativa, compra mas productos en esta? (vegetales, hongos, medicinales, ornamentales...?) *S/N*
- 26. Quales son los tres productos que usted compra majormente en esta temporada? Indique
- 27. Como judica los precios de estos? Indique una opcion entre a-e
  - a. muy Buenos
  - b. Buenos
  - c. medio
  - d. injustos
  - e. muy injustos
- 28. Usted se informe sobre la proveniencia de los productos? *S/ N*
- 29. Me indique quales productos usted y su familia consuma mas en una semana (*indique uno por cada pareja de opciones*)
- Crudo/cocinado
- Vegetal/animal
- Agua/refrescos
- Pasta/arroz
- Pollo/cerdo
- **30**. Le gusteria mas: *Indique una opcion entre a-c*
- a. encotrar mas variedad

(si este, indique que le gusteria)

b. encontrar precios mas bajos

c. tener mas lugares como mercados por la compra (mejor accesso)

31. En que medida usted compra de produccion local- urbana- y quanto en rural (rural= afuera de la provicia de l Habana)? *Percentaje urbana: percentaje rural:* 

- 32. Se siente satisfecho con la calidad de los productos que consuma? *S/ N*
- 33. Que le gusteria mas que le falta ahora? *Indique*
- 34. Si uested no encuentra un producto al mercado: *Indique una opcion entre a-c* 
  - a. Se va por otro mercado
  - b. Busca en tiendas
  - c. Renuncia
- 35. Quales son los productos que le faltan mas frequente? Indique
- 36. Si tenria opciones mas baratas pero quimicamente cultivada, usted la compreria al frente de frutas y vegetales mas caros pero ecologico? *S/N*
- 37. Qual podria ser un diferente canal de venta? *Indique*

#### ENG version - translated

#### Generalities

- 1. Name
- 2. Age
- 3. Origin
- 4. Educational Level
- 5. Job: do you have another emplyoment apart from this? *Y/N if Yes, please indicate*

#### Agricolture

- 6. How long have you been working in agriculture?
- 7. Are you a member of a cooperative? Y/N
- 8. Do you have your own property? Y/N
- 9. Would you like to have your own field? Y/N
- 10. What would be the major challenge to face in order to buy land and farm? Indicate
- 11. What is your role within this organoponico? Indicate
- 12. To whom do you refer in order to
- Obtain credit indicate
- Obtain courses *indicate*
- 13. What are the three main products do you personally grow?

14. Only if you have your personal land, otherwise skip to 15

14.a Do you sell products or your farming is to sustain your family? Indicate

14.b Where? Indicate

14.c At what price? *Indicate* 

- 14. d How much do you ear for hectare? Indicate
- *14.e* How much do you sell against the quantity produced? *Indicate*
- 15. Do you know where do the products you grow go to? Y/N, if Yes, Indicate
- 16. Are you enabled to decide the way to produce? Y/N
- 17. If not, who does direct your job? Indicate
- 18. Are you enabled to decide what product to grow? Y/N
- 19. What are the major advantages in the organic production? Indicate (1,2)
- 20. What do you think of the UA? Explain
- 21. Do you retain it advantageous against the rural one?  $\,Y/N$
- 22. If you would have access to chemicals fertilizers and products, would you use them? Y/N

#### As a consumer

- 23. Where do you do your food purchases? Select an option
  - a. local market
  - b. cooperative
  - c. supermarket
  - d. Mall
  - e. *other*
- 24. Do you have a producer or a shop of trust? *Y/N* if Yes, Indicate
- 25. Since when you became member of the cooperative, do you buy more from that? Y/N
- 26. What are the main three products do you buy most in this season? Indicate
- 27. How would you assess the prices of these? Indicate an option
  - a. Very good
  - b. good
  - c. acceptable
  - d. unfair
  - e. unacceptable
- 28. Are you informed about the origin of the products you buy? *Y/N*
- 29. Can you indicate hereafter what are the most consumed products in your household? *Select one answer for each couple*
- Raw/cooked
- Vegetal/animal
- Water/drinks
- Pasta/rice
- Chicken/pork
- 30. Do you retain more important: Select one option
- b. Meet more variety
- b. Meet lower prices

c. get better access having more spots available for purchases

- 31. How much share of product do you buy from an urban origin and how much from a rural one? *Indicate percentage urban: rural:*
- 32. Are you satisfied with the products you buy? Y/N
- 33. What would you like to find more? Indicate
- 34. If you are not encountering a food item at market, what would you do? Indicate one option
  - d. I look into other markets
  - e. I go into supermarkets or stores
  - f. I give up to such purchase
- 35. What are the most common missing products? Indicate
- 36. If you would have access to cheaper products, imported and chemically grown, would you buy them? Y/N
- 37. What would it be a different channel for purchasing? Indicate

## III. Survey addressed

Period	Area	Dimension
December 16	Cojimar and Alamar, Habana del Este	31 Qs
January 17	Plaza de la Revolucion	19 Qs
February 17	Guanabacoa	19 Qs
	TOT	AL 69