

SECURING SOVEREIGNTIES: IMPLICATIONS OF INSTITUTIONAL FOOD GOVERNANCE FRAMEWORKS FOR AGROBIODIVERSITY PROTECTION IN URBAN AND PERI-URBAN LANDSCAPES IN MEXICO AND ECUADOR*¹

Asegurando soberanías: Implicaciones de los marcos institucionales de gobernanza alimentaria en la protección de la agrobiodiversidad en paisajes urbanos y periurbanos de México y Ecuador

By: **PAULA FERNÁNDEZ-WULFF**

Msc. In Environmental Governance, with Specialization in Biodiversity

Institute for the Advanced Study of Sustainability

United Nations University

<http://jp.linkedin.com/in/paulafwulff>

ABSTRACT: Among existing intermediaries between the State and people, cities constitute today one of the core implementing bodies of national declarations, frameworks, and programs, according to the national distribution of competencies. Institutional food governance frameworks, oftentimes designed by national or state-level administrations, can play a major role in agrobiodiversity protection at the local level. Because this role may be beneficial or deleterious depending on a number of factors, analyzing the links and finding the balance between the two may help local governments design the necessary policies to preserve the environment without the expense of increasing food insecurity. While studies on institutional agrobiodiversity governance tend to focus on the international and national levels, there is little attention to the potential of local administrations in the protection of agrobiodiversity. Mexico and Ecuador represent two different approaches to food governance, namely food security and food sovereignty. Drawing on the experiences of Mexico Federal District and Quito Metropolitan District in the protection of agrobiodiversity in urban and peri-urban landscapes, this study explores the role and potential of local governance in agrobiodiversity protection in the said two cities. It further analyzes the relationship between institutionalized food sovereignty *or* food security frameworks, and agrobiodiversity protection. This analysis is used to comparatively discuss the implications of each approach for agrobiodiversity protection. Indeed, institutional food

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governance frameworks can be designed to support diversified smallholder agroecosystems, pushing sub-national governments to ensure food security *and* agrobiodiversity protection through the promotion of sustainable agriculture.

KEY WORDS: food systems, agrobiodiversity, food sovereignty, local government, Ecuador, Mexico

RESUMEN: Entre los intermediarios existentes entre el Estado y la ciudadanía, los gobiernos locales constituyen hoy en día uno de los principales organismos implementadores de declaraciones, marcos y programas nacionales, de acuerdo con la distribución legal de competencias. Los marcos institucionales de gobernanza alimentaria, generalmente diseñados por las administraciones nacionales o de ámbito estatal, pueden desempeñar un papel importante en la protección de la biodiversidad agrícola a nivel local. Debido a que dicho papel puede ser beneficioso o perjudicial dependiendo de una serie de factores, el análisis de los vínculos entre ambos en pos de encontrar un equilibrio puede ayudar a los gobiernos locales a diseñar las políticas públicas necesarias para preservar el medio ambiente, sin que ello conlleve un crecimiento correlativo de la inseguridad alimentaria. Mientras que los estudios sobre la gobernanza institucional de la agrobiodiversidad tienden a centrarse en los niveles nacional e internacional, se presta poca atención al potencial de las administraciones locales en la protección de la agrobiodiversidad. México y Ecuador representan dos enfoques diferentes en la gobernanza institucional de la alimentación: seguridad alimentaria y soberanía alimentaria. Basándose en las experiencias de México Distrito Federal y del Distrito Metropolitano de Quito (DMQ) en la protección de la agrobiodiversidad en sus paisajes urbanos y periurbanos, este estudio explora el papel y el potencial de la gobernanza local en la protección de la agrobiodiversidad en dichas ciudades. Se analiza además la relación entre una soberanía alimentaria institucionalizada en contraste con un marco legal de seguridad alimentaria, y la protección de la agrobiodiversidad. Dicho análisis se emplea para tratar comparativamente las implicaciones de cada enfoque en la protección de la biodiversidad agrícola. Los marcos institucionales de gobernanza alimentaria pueden ser diseñados de modo que apoyen a los agroecosistemas pequeños diversificados, urgiendo a gobiernos sub-nacionales a garantizar la seguridad alimentaria así como la protección de la biodiversidad agrícola a través de la promoción de una agricultura sostenible.

PALABRAS CLAVE: sistemas alimentarios, agrobiodiversidad, soberanía alimentaria, gobierno local, Ecuador, México

SUMMARY: I. INTRODUCTION. II. RESEARCH OBJECTIVES AND METHODOLOGY. III. FOOD AND AGROBIODIVERSITY IN URBAN CONTEXTS: EXPLORING THE LINKAGES. -1. Food governance and agrobiodiversity protection. -2. Agrobiodiversity and urban agroecosystems. IV. FOOD GOVERNANCE FOR AGROBIODIVERSITY PROTECTION: THE CASES OF MEXICO DF AND QUITO METROPOLITAN DISTRICT. -1. Food governance at the regional level. -2. Food governance and local agrobiodiversity protection in urban and peri-urban agroecosystems. -A) *The case of Mexico Federal District. -a) Institutional food governance framework. -b) Local governance schemes for agrobiodiversity protection. -B) The case of Quito Metropolitan District. -a) Institutional food governance framework. -b) Local governance schemes for agrobiodiversity protection.* V. IMPLICATIONS OF INSTITUTIONAL FOOD GOVERNANCE FRAMEWORKS FOR AGROBIODIVERSITY PROTECTION: A COMPARISON. VI. CONCLUSIONS. -1. The role of local governance in agrobiodiversity protection. -2. The relationship between institutionalized food sovereignty or food security and agrobiodiversity protection. -3. The implications of food security and food sovereignty approaches for agrobiodiversity protection. VI. BIBLIOGRAPHY.

I. INTRODUCTION

Many sustainability challenges such as environmental degradation, biodiversity loss, and food insecurity are usually addressed by regulations and programs coming from national administrations and related agencies. Less well-recognized in environmental governance, but of great importance in an ever-urbanized world, is the role of local governments.

The three-folded increase of urban population by 2050 ([United Nations, 2012](#)) will pose greater pressure on natural resources cities depend upon; but also on local governments, which will have to rapidly adapt in order to deal with issues formerly relegated to rural departments. Indeed, cities can manage land and habitats, promote sustainable agricultural practices, host rich biological diversity, and contribute to food supply. Local governments are in direct contact with the population, and, if provided with the necessary tools, can transform cities into fundamental actors in the success of national food strategies.

On the other hand, with few exceptions, management and planning for biodiversity in Latin American cities are still uncommon ([Secretariat of the CBD, 2012](#)). Biodiversity protection strategies are often overlooked in agroecosystems, and more so in urban and peri-urban ones. This policy gap, coupled with the loss of control over domestic food systems, has led to the uniformization of both on-farm crop varieties and diets.

However, when designing sustainable food systems, conventional analyses often overlook key issues like explicitly linking food to environmental outcomes ([Wood et al., 2010](#)). Although policies designed to coordinate biodiversity management with agriculture and its diversification have been identified as examples of sustainable initiatives ([IAASTD, 2009](#)), agrobiodiversity protection is usually neither considered part of biodiversity nor of food-related policies. This institutional limbo is especially apparent in urban agroecosystems, where agricultural land is rezoned and absorbed into the urban fabric, and more relevance is given to supra-local food markets.

The loss of agricultural biodiversity and associated knowledge is known to threaten livelihood security and the food sovereignty of farming communities ([Koochafkan&Altieri, 2011](#)). Agricultural biodiversity, also known as agrobiodiversity, is a wide concept that includes many ecological, environmental, and cultural features.²

² See Box 1 and Section 2.3. for a detailed description of the concept.

Box 1: Defining Agrobiodiversity

Agrobiodiversity is a fundamental feature of farming systems that encompasses many types of biological resources tied to agriculture, including genetic resources, edible plants and crops, livestock, soil organisms, naturally occurring insects, bacteria and fungi controlling pests and diseases, agroecosystem components indispensable for nutrient cycling and wild resources of natural landscapes providing ecosystem services ([Thrupp, 1998](#)). There are two forms of agrobiodiversity conservation: *ex situ* conservation (in gene banks or botanical gardens) and on-farm (or *in situ*) conservation. However, the removal of species from their natural ecological and evolutionary niche results in a non-dynamic conservation in which the species cannot thrive through adaptation and evolution. Only a third of the species conserved in gene banks are landraces or primitive cultivars, and minor, underutilized species, and wild relatives are under-represented ([Hammer et al., 2004](#)). On the contrary, a major portion of agrobiodiversity evolves and adapts in complex agro-ecosystems, which are most often managed by small farmers worldwide: on-farm conservation is a “dynamic” solution that ensures the continuous adaptation of species and landraces within their changing environment, and relies upon both human and biological components of the ecosystem ([Galluzzi et al., 2010](#)). Traditional knowledge and practical skills of farmers are considered as a key feature of *in situ* conservation ([Long et al., 2000](#)).

In order to ensure food for their populations and establish a food governance regime, countries in Latin America have adopted different institutional frameworks.

Institutional food governance frameworks,³ as understood in this study, involve policy, legislative, and organizational frameworks.⁴ Policy frameworks include policies, strategies, and plans, and their implementation tools (i.e. programmes and instruments); legislative frameworks comprise support policies and institutions related to food governance; and organizational frameworks encompass the institutional architecture for food governance.

In this regard, Mexico and Ecuador represent two possible approaches to institutional food governance. While Mexico opted for a food security approach, Ecuador’s Constitution institutionalized food sovereignty. These two approaches, although not necessarily confronted, reflect a different understanding of food systems and human-nature interactions.

Clark ([2013](#)), Peña ([2013](#)) and Giunta ([2013](#)) separately employ the expression “institutionalized food sovereignty” to refer to the integration of food sovereignty

³ For previous applications of the term “food governance” see *v.gr.* an analysis of the role of national and international actors involved in food governance ([Paarlberg, 2002](#)). On food security global governance see [De Haen & MacMillan, 2010](#). And on food security global governance in the view of food crises, [McKeon, 2011](#).

⁴ Similarly, IEH ([2012](#)) explored three dimensions of institutional food security and nutrition frameworks in a comparative study: policy and programming frameworks; organizational and coordination frameworks; and legal and regulatory frameworks.

approaches in State policies.^{5,6} Although the institutionalization of food sovereignty entails a number of dangers ([Claeys, 2012, 2013](#); [McKay & Nehring, 2013](#)), policy can also be designed so as to support and strengthen social mobilization ([LVC, 2012](#)), crucial to engage people's participation in decision-making processes. Indeed, legal and policy frameworks, especially the ones related to food governance and agrobiodiversity protection, result from spaces of dispute where processes of contestation, social mobilization, and political power dynamics play a crucial role. Institutional frameworks may in turn provide opportunities for social mobilization and change relevant for agrobiodiversity protection at the local level. This study thus aims to contribute to the food sovereignty debate – ‘what does food sovereignty look like?’ as put by [Patel \(2009\)](#) – by deciphering its implications for one of its manifestations: agrobiodiversity protection.

On the one hand, Ecuador included in 2008 articles 3§1 and 13§1 in its Constitution recognizing the right to food, and 13§2 and Chapter III constitutionalizing food sovereignty. On the other, Mexico, after 20 years of social demands, modified in 2011 its constitutional articles 8 and fraction XX of article 27 recognizing the right to food.

Both countries have followed different paths in the development of these precepts. After its constitutional amendments, Ecuador substituted the Food and Nutrition Security Act (2006) for a Food and Nutrition Sovereignty and Security Act in 2009. In Mexico however, the constitutional mandate has not yet been fulfilled: laws on food security and right to food are still under discussion in the Congress. Interestingly though, Mexico DF approved a Food Security and Nutrition Act in 2009, surpassing the State's obligations to fulfill the right to food.

On the other hand, both countries are experiencing very rapid urbanization rates, exemplified by their capital cities,⁷ the Federal District of Mexico and the Metropolitan District of Quito.

Quito Metropolitan District and Mexico DF hold statutory powers to a certain extent, given the degree of decentralization of both countries. However, levels of decentralization are higher in Mexico due to its federative organization. Therefore, applicable regulations in Quito Metropolitan District come more often from the national framework than in Mexico DF.

“Urban” and “city” are understood here as equivalent to federal (in the case of Mexico DF) and metropolitan (in Quito Metropolitan District) districts. While “federal”

⁵ By employing this term, this study does not support the imperialistic assumption that lacking a law is a negative characteristic of a system (for a critique of J. Austin's “command theory of law” in this respect, see [Maine, 1875](#)). Nor does it posit it is a positive one. In fact, the debate on the moral aspects of law is not within the scope of this work. It rather merely uses legal approaches to understand how national frameworks may influence local governance.

⁶ Although [Windfuhr & Jonsén \(2005\)](#) conceptualized food sovereignty as a “policy framework”, laying down some of its most important foundations, many events have taken place almost ten years after their research. Ecuador, Bolivia or Brazil are notable examples of how food sovereignty has evolved into a broader structure with a higher status in legal terms than mere policy.

⁷ Obviously, differences in the magnitudes of these two cities obstruct and at the same time enrich the comparative analysis.

and “metropolitan district” do not reflect ecosystem, watershed, or habitat limits, they do represent an approximation to the geographical area and the natural resources that affect and are in turn affected by urbanization processes in both cases. Moreover, they represent a political and legislative jurisdiction, gathering the majority of the population impinged by public efforts regarding local natural resources. They therefore constitute a logical framework where current actions are taking place and where to recommend future improvements.

II. RESEARCH OBJECTIVES AND METHODOLOGY

The aim of this study is to understand how a food sovereignty approach found in institutional food governance frameworks, in contrast with a food security approach, influences agrobiodiversity protection at the city level.

More specifically, this research has the following goals:

1. To explore the role and potential contributions of local governance in agrobiodiversity protection in two cities, Mexico DF and Quito Metropolitan District.
2. To analyze the relationship between an institutionalized food sovereignty *or* a food security framework, and agrobiodiversity protection in urban and peri-urban agroecosystems.
3. To comparatively discuss the implications of each approach for agrobiodiversity institutional protection.

The present study uses a comparative case study methodology. In this sense, it undertakes a two-country comparison, qualitative-oriented, multi-level approach. Regional, national, and municipal levels are considered, according to the level of government relevant for the analysis; the primary focus is however the municipal level. The analysis refers to the period 2005 onwards, unless otherwise specified for context purposes.

Secondary data was obtained through extensive literature review and quantitative and qualitative information from public official administrations. A first screening of institutional food governance frameworks, including legislation and policy, was conducted, at the national level in Ecuador, and at both national and state-levels in Mexico. This involved the study of the current state of legislation on food security (in Mexico) and food sovereignty (in Ecuador) found in official gazettes, as well as reports from international organizations regarding the state of the right to food at the national and regional levels. It was enriched with informal conversations held with experts – from both as well as third countries – during the collaboration of the author with the Food and Agriculture Organization of the United Nations from September 2013 to February 2014, as well as the author's participation in meetings on different country and municipal-level food security strategies in the said organization.

Secondly, at the municipal level in Mexico DF and Quito Metropolitan District, the current state of institutional agrobiodiversity protection was assessed. Metropolitan official gazettes, including conservation, urban and rural development, sustainable agriculture, and ecological restoration plans were consulted. This was further enlightened by electronic information exchanges with a number of local initiatives on urban agriculture.

A comparative analysis was undertaken by discursively evaluating the extent to which each institutional food governance framework made explicit or implicit reference to diversity in agroecosystems; and, conversely, the extent to which local agendas regarding agrobiodiversity protection related it with each institutional food governance

framework. This analysis was crucial in understanding the influence of one over the other and *vice versa*.

The following sections will develop the ideas introduced, first theoretically, and then in practice. Chapter 2 aims at threading the complex theoretical interconnections among the city, food governance approaches, and agrobiodiversity protection. Chapter 3 presents regional and national and state-level institutional food governance frameworks, and the ways Mexico DF and Quito Metropolitan District address agrobiodiversity protection. Chapter 4 discusses results by comparatively exploring the implications of the said two food governance strategies on local programs for agrobiodiversity protection. Chapter 5 concludes by systematizing possible local strategies for agrobiodiversity protection and proposes potential ways forward.

III. FOOD AND AGROBIODIVERSITY IN URBAN CONTEXTS: EXPLORING THE LINKAGES

As Harvey (1970) pointed out, one set of conceptual problems arises from academic and professional specialization on certain aspects of city processes: sociologists, city planners, economists, geographers, etc., appear to live in their own conceptual worlds. The framework presented here will modestly aim at building one of the possible bridges over the gap between sociology, ecology, and law.

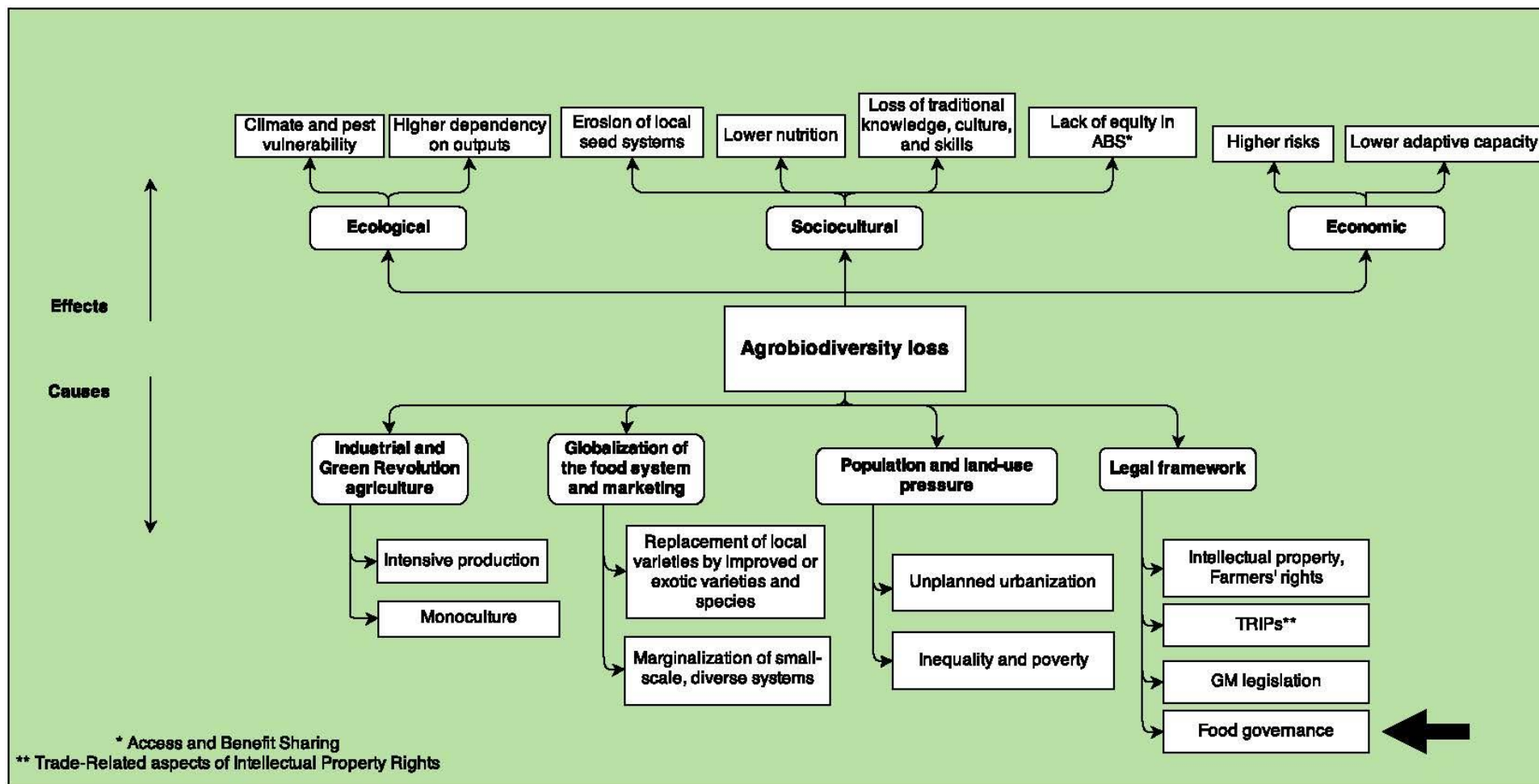
1. FOOD GOVERNANCE AND AGROBIODIVERSITY PROTECTION

Urban policy-making is just beginning to consider biodiversity protection as a target (Puppim *et al.*, 2011; Secretariat of the CBD, 2012; Elmqvist *et al.*, 2013), and more recently agrobiodiversity (Moreno-Peñaranda, 2013). On the other hand, urban food governance has been growing as a comprehensive way for planning food systems (Pothukuchi & Kaufman, 1999, 2000).

Institutional food governance frameworks can play a major role in the protection of agrobiodiversity at the city level. However, the interconnections between food governance and agrobiodiversity protection are insufficiently well understood.

The way food governance may fit into the analysis of agrobiodiversity loss is reflected in Figure 1. The diagram reflects how far theoretical analyses of agrobiodiversity are from food governance. In a converse scrutiny, the distance between food governance theories in relation with agrobiodiversity is subsequently explained.

Figure 1: Agrobiodiversity loss: where does Food Governance fit?



Own elaboration. Sources for content: [Thrupp, 1997](#); [Upreti & Upreti, 2002](#); [FAO, 2004](#); [Wolff, 2004](#); [2006](#).

Food security and food sovereignty constitute two distinct governance approaches with different practical implications. This subsection dissects both concepts and their (in)suitability for agrobiodiversity protection, especially in urban contexts.

Concepts of food security have evolved in the last thirty years to reflect changes in official policy thinking ([Clay, 2002](#); [Heidhues et al., 2004](#)). FAO ([1983](#)) and the World Bank's ([1986](#)) definitions have reflected these changes, complemented by the work of academics like Amartya Sen's theory of famine ([1981](#)), Chambers and Conway ([1992](#)) or Devereux ([2000](#)).

The commonly-used definition, however, stems from the World Food Summit ([FAO, 1996](#)) and states that food security is met when "all people, at all times, have physical and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life." Four dimensions are thus considered: availability, access, adequacy and stability (See Box 2).

Box 2: The Four Dimensions of Food Security

- The first dimension of food security is the *availability of food*, where raising farm productivity is the core issue, whether by improving farm management practices for an increased agrobiodiversity – in the case of adopting agroecological principles for instance – or increasing inputs and improving seed varieties in the case of conventional agriculture and biotechnology.
- The second dimension is the *access to food*. Food must be physically accessible, *i.e.* within the physical reach of vulnerable households, whether through their own production or through the marketplace. Food must also be economically accessible: the ability of the household to purchase the food it requires.
- The third dimension is *food utilization or adequacy*. Typically reflected in the nutritional status of an individual, it is the way the body makes the most of various nutrients in the food.
- The fourth dimension is *food stability*: or the long-term resilience of our food systems to external shocks (such as climatic, economic, agricultural, etc.).

The definition of food security, through its four dimensions, can be problematic for a number of reasons.

First, the concept may indirectly lead to food policies that emphasize maximizing food production. Narrowly focusing on this aspect without considering other aspects has been criticized by major international reports ([IAASTD, 2009](#); [De Schutter, 2010](#)). In fact, Sen (*op.cit.*) demonstrated that famines are the result of a lack of access to food, rather than inadequate food production; the World Declaration on Nutrition ([FAO, 1992](#)) further recognized that "globally there is enough food for all and that inequitable access is the main problem" (§1).

Moreover, this view does not consider aspects like how, where, and by whom food is produced, and it is uncritical of current patterns of food consumption and

distribution ([Wittman et al., 2010](#)). The definition has been further criticized for not taking into account power structures at the core of food systems, or the extent to which people have a say in political decisions affecting a basic need key for survival. In this sense, Patel ([2009](#)) has rightly inferred that it is entirely possible for people to be food secure in prison or under a dictatorship. It is therefore legitimate to wonder whether people are food secure if they cannot opine on the way food is produced or on its nutrition requirements.

Furthermore, although it is commonly understood that diverse agroecosystems are key in reducing hunger ([Alloway, 2008](#); [Remans et al., 2011](#)), the importance of agrobiodiversity is not reflected in the said dimensions. Expanding the third dimension could perhaps lead to the inclusion of agrobiodiversity, but it cannot be fully captured by ‘adequacy’ alone. Food adequacy is traditionally measured by nutritional standards ([Hatløy et al., 1998](#); [Migotto et al., 2005](#); [Arimond et al., 2010](#)) but agrobiodiversity goes well beyond nutritional data.⁸

Food sovereignty, on the other hand, is an inherently rural agrarian movement that claims the right to have the right ([Patel, 2009](#)) to define food systems. The concept emerged from sociopolitical movements led by La Vía Campesina as a response to international neoliberal policies ([Rosset, 2006](#)), establishing itself beyond both food security and the right to food to include the right to produce and the right to land ([Rosset, 2013](#)).

The intended legal subject in the embryonic definitions of food sovereignty progressed from nations ([LVC, 1996](#)) to peoples ([Nyéléni, 2007](#)), to nations and peoples ([Wittman et al., 2010](#)). It was further recognized that for rights to mean anything, a guarantor is needed ([Patel, 2007](#)). This idea could imply that in order to be operationalized, the concept required to be adapted to the jurisdictional structure of the State. It was quickly understood, however, that food sovereignty runs on different jurisdictions over which rights can be exercised: “it has its own geographies” ([Patel, 2009](#)). These geographies lead to competing sovereignties, where shifting understandings of the territory are especially relevant for the food sovereignty of urban populations ([Schiavoni, 2014](#)).

Indeed, as a political concept ([Windfuhr & Jonsén, 2005](#)), food sovereignty brings back the power to the local sphere, in opposition to the global, conveying a call for smaller political units within a world society ([Claeys, 2012](#)).

Moreover, food sovereignty focuses on the locality of markets, cycles and networks ([Altieri & Nicholls, 2008](#)); in this sense of proximity, increasingly bigger population centers are key actors. This, together with pressing demographic and social factors like globally increasing urbanization rates and urban social movements, logically bring those “own geographies” to urban contexts. The concretisation of food sovereignty in urban contexts, however, remains relatively unexplored.⁹

⁸ Its cross-sectional importance is outlined in the following subsection of this Chapter.

⁹ Additionally, most urban studies focus on developed, industrialized countries, see for instance [Schiavoni, 2009](#); or on urban food movements: [Clendenning & Dressler, 2013](#).

2. AGROBIODIVERSITY AND URBAN AGROECOSYSTEMS

Biodiversity is not only important *per se* ([Ghilarov, 2000](#)). In the way it interacts with humans in agroecosystems, it also plays a key role in current agricultural practices, and thus in the livelihoods of millions of people. Agrobiodiversity provides a variety of wild and domesticated plants and animals critical to food and nutrition, especially in times of famine or environmental stresses, acting as a safety net during times of food insecurity.¹⁰

Agriculture is often seen as one of the drivers of biodiversity loss ([MA, 2005](#); [Tscharrntke et al., 2005](#); [Benton, 2007](#); [Brussard et al., 2010](#)). If managed properly, however, it is in fact a human-managed ecosystem that can be a basis for richly diverse biological resources ([Miller & Rossman, 1995](#); [Collins & Qualset, 1998](#); [Altieri & Nicholls, 2004](#)). Actually, in agroecosystems, biodiversity benefits go well beyond production of food, fiber, fuel, and income: it also provides recycling of nutrients, control of local microclimate, regulation of local hydrological processes, regulation of the abundance of undesirable organisms, and detoxification of noxious chemicals ([Altieri, 1999](#)).

Human management of ecosystems, species (interspecific), and genetic (intraspecific) diversity found in agroecosystems, has been practiced throughout history as part of local agroecological knowledge. In the past fifteen years, modern science and academia have conceptualized this three-folded diversity based on farmers' accumulated dynamic knowledge as 'agrobiodiversity', although its content is in constant evolution. Indeed, the state of the art has greatly changed: from Brookfield & Padoch ([1994](#)), Thrupp ([1997](#)), and Cromwell ([1999](#)), to Jackson *et al.* ([2013](#)), the definition of the term has not ceased to evolve. This evolving characterization reflects both the dynamic nature of agroecosystems and our advancements in understanding human-nature complex interactions.

There are a number of authors who have described the strong links between crop diversity and social, economic, and cultural factors resulting in a dynamic system ([Bellón, 1996](#); [Catalán & Pérez, 2000](#); [Prain et al., 2000](#)). Historically, however, the preservation of agricultural heritage of local communities, as ancient techniques leading to nutritious, locally developed, and adapted foods, has been traditionally eroded and neglected in favor of modern ones ([Hecht, 1995](#)).

Indeed, changes in agricultural production systems, from diversified cropping systems towards ecologically more simple cereal-based systems, have contributed to poor diet diversity, micronutrient deficiencies, and resulting malnutrition in the developed as well as developing world ([Welch & Graham, 1999](#)). Despite the historical conventional primary evaluation of agricultural systems by their crop yields, economic

¹⁰ Agrobiodiversity acts as a safety net particularly in times of low agricultural production in connection with forestry ecosystems ([Angelsen & Wunder, 2003](#); [Karjalainen et al., 2010](#); [Sunderland, 2011](#)), during other seasonal or cyclical food gaps ([Arnold, 2008](#)) or in periods of climate-induced vulnerability ([Cotter & Tirado, 2008](#)); it also indirectly leads to an enhanced resilience after community or socio-ecological disasters, which has been called 'biophilia' ([Tidball, 2012](#)).

output, and cost-benefit ratios ([IAASTD, 2009](#)), these metrics do not reflect the diversity of nutrients critical for human health ([Remans *et al.*, 2011](#)).

Mosaic stability depends mainly on the integrity and environmental preservation of unfragmented habitats ([Tilman *et al.*, 1994](#)). In heavily populated areas, habitat fragmentation is considered one of the most important causes of local extinction of plant species (*ibid.*; [Brook *et al.*, 2003](#); [Stehlik *et al.*, 2007](#)). In these areas, the decrease in species' abundance can be fatal for both humans and the ecosystem ([Chamberlain & Fuller, 2000](#)), thus accelerating the collapse of adjacent agroecosystems.

Urban cover, however, can also be host to a rich and diverse range of species ([Ricketts & Imhoff, 2003](#); [Angold *et al.*, 2005](#); [Grimm *et al.*, 2008](#)), and the preservation of nearby agricultural land may in fact help conserve biodiversity ([Moore & Palmer, 2005](#)).

Apart from the potential of growing food, agroecosystems in urban settings may include other benefits like soil conservation, microclimate improvement, nutrient and waste cycling, better water management, and environmental awareness ([Deelstra & Girardet, 2000](#)).

IV. FOOD GOVERNANCE FOR AGROBIODIVERSITY PROTECTION: THE CASES OF MEXICO CITY AND QUITO METROPOLITAN DISTRICT

This Chapter presents an analysis of food governance structures at the regional¹¹ and national levels, and the ways in which local administrations have addressed agrobiodiversity protection.¹² Section one presents key processes at the regional level, critical to understand national and sub-national realities. Section two describes the cases of Quito Metropolitan District and Mexico DF by presenting their respective local governance schemes for agrobiodiversity protection.

1. FOOD GOVERNANCE AT THE REGIONAL LEVEL

Understanding key processes in the Latin-American region is crucial prior to analyzing local instances. The creation of new financial and political regional windows of opportunity for national food governance has been both an influence and a reflection of financial and political changes at the national and sub-national levels.

Financially, in June 2008, the Articles of Agreement of *BancoSur*¹³ established food sovereignty as the first criterion¹⁴ for project evaluation. Politically, UNASUR¹⁵ and ALBA¹⁶ established regional integration¹⁷ as a means for addressing food crises, and the Charter of the OAS¹⁸ recognized proper nutrition as a national goal, through the increase of food production and availability.¹⁹ As a result of both windows of opportunity, the Parliamentary Front Against Hunger was constituted in 2009. Moreover, the Presidential Summit on Sovereignty and Food Security “Food for Life” issued in 2008 the Managua Declaration,²⁰ including aspects like the respect for traditional means of production and consumption, preservation of resources, plants and seeds, and the need for environmental conservation. While constituting an important step in the realization of the right to food within the framework of the Hunger-Free

¹¹ In this section, regional is understood as the supra-national level.

¹² The author is aware of the series of applicable international treaties and regulations to biodiversity for food and agriculture. Due to word limitations, however, the international level could not be included in the present analysis.

¹³ The Bank of the South is a monetary fund, development bank and lending organization established by Argentina, Brazil, Paraguay, Uruguay, Ecuador, Bolivia, and Venezuela. Any nation in Latin America, however, can be part of its lending programs.

¹⁴ Art. 3.1.1 “Acta Fundacional del Banco del Sur”, Montevideo, 9th December 2007.

¹⁵ “Unión de Naciones Suramericanas”

¹⁶ “Alianza Bolivariana para los Pueblos de Nuestra América”

¹⁷ Regional integration is also reflected in national strategies and regulations. In Ecuador for instance, constitutional art. 423.2 establishes that “...in all instances and integration processes, the Ecuadorian State shall [...] promote [...] the implementation of coordinated strategies of food sovereignty” (*in fine*) [Own translation].

¹⁸ Organization of the American States

¹⁹ Charter of the Organization of the American States recognizes this in art. 34 j), which is part of Chapter VII, “Integral Development”, implying food governance is a core element for human development.

²⁰ Signatory countries include both Ecuador and Mexico among other countries. “Declaración de Managua”, 7th May 2008. This aspect is reflected in paragraph 4.

LAC Initiative, however, Parlatino²¹ approved a text where the concept of food sovereignty was left void.

Specifically in terms of food sovereignty, the First Continental Assembly of the Alliance for Food Sovereignty of the People of LAC organized in August 2013 exemplifies the importance of social mobilizations in the region. At this same regional level, the Food Security and Sovereignty Framework Law²² defines food sovereignty as the right of the State.²³ Understood in combination with article 1§2,²⁴ this precept reflects the diversity of views in LAC regarding institutional food governance frameworks.

In this context, the next subsection presents the current situation of institutional food governance frameworks in Mexico and Ecuador, and local schemes for agrobiodiversity protection in Mexico DF and Quito Metropolitan District.

2. FOOD GOVERNANCE AND LOCAL AGROBIODIVERSITY PROTECTION IN URBAN AND PERI-URBAN AGROECOSYSTEMS

In order to implement national frameworks, States may accord statutory and/or executing powers to local governments. Understanding the legal implications of this will shed light on the different ways food security and food sovereignty approaches frame local agendas regarding agrobiodiversity protection.

A) The case of Mexico Federal District

a) Institutional food governance framework

After 20 years of social demands, Mexico modified its Political Constitution in 2011, recognizing the State's obligation to guarantee the right to food (article 8) and to adequately provide basic food through comprehensive sustainable rural development

²¹ Also known as “Parlamento Latinoamericano”, it is composed of 23 member States, including Mexico and Ecuador. Among its purposes, the institutionalizing Treaty states that the Parlatino seeks “To oppose acts of Imperial[i]sm in Latin America suggesting the right normative legislation which allows the Latin American countries to fully exercise permanent sovereignty over natural resources and the best use and conservation of them [...]” (Art. 3.5 “Tratado de institucionalización del Parlamento Latinoamericano”, 16th November 1987). In 2009, the Parlatino issued the Latin American Declaration on Human Rights, which includes the right to food in its article 11.

²² “Ley Marco de Seguridad y Soberanía Alimentaria”, 30th November 2012.

²³ Art. 9.II. sets forth the definition of food sovereignty: “Food Sovereignty is understood as the right of a country to define its own sustainable policies and strategies for food production, distribution, and consumption, that guarantee the right to healthy and nutritive food for everyone, respecting people's cultures and the diversity of productive, commercial, and management systems of rural areas.” [Own translation].

²⁴ This article enables countries to adapt the purpose of the text if they have adopted the concept of food sovereignty.

(fraction XX of article 27). The constitutional mandate, however, has not yet been fulfilled.²⁵

At the local level, the Legislative Assembly of Mexico DF approved in 2009 the Law on Food Security and Nutrition.²⁶ Beside other components, it establishes the Food Security and Nutrition System of the Federal District and reaffirms the role of the Social Development Council, which foresees the participation of society in different stages of policy-making. It also creates a Comprehensive Food Security Program to define priorities, budget allocations, monitoring proceedings, and mechanisms to promote the right to food.

There is no mention to agrobiodiversity protection in this framework. There is, however, an indirect reference to environmental conservation in general:²⁷ article 24 establishes that food provided through the Program must come preferably from local production (at least 70%) and from small and medium-holders. The effects of this precept are difficult to assess: Mexico DF already counts with a number of social programs in application of this Law, but a coordinating Food and Nutritional Security System was only created in October 2013.²⁸ This could, however, lead to an increased demand for local products, said to have environmental benefits ([Norberg-Hodge et al., 2002](#); [Morgan et al., 2006](#))

²⁵ In November 2013, the Senate Commission on Food Self-sufficiency approved for discussion in the Plenary a Law on Food Security and Nutrition (Senate Press Bulletin no.716, “Avanzan Leyes de Derecho a la Alimentación y Seguridad Alimentaria”, 14th November 2013, p. 19-21). Concurrently, the Congress Special Commission on Food Issues – soon to be turned into an Ordinary Commission (reforming art.39 of the Organic Law of the General Congress of the Mexican United States, Parliamentary Gazette Number 3905-V, 12th November 2013) – is preparing a General Law on the Right to Food (Work Report March-August 2013, Congress Special Commission on Food Issues) together with the Parliamentary Front Against Hunger, Mexico Chapter. This is despite the proposal of a Planning Law for Food and Agriculture and Nutrition Security and Sovereignty (“Ley de Planeación para la Seguridad y la Soberanía Agroalimentaria y Nutricional”) in November 2005. This bill was drafted with the participation of producers, peasants, businesses, the National Government, the states, specialists, research centers, universities, and experts in the field, who formed a Counseling Committee ([CEDRSSA, 2007](#)). The draft was approved by 96% of the Congress, but the Senate never passed it after the negative observations and conclusions of CEDRSSA, amongst other reasons. To compensate for this gap, the federal government launched the social program “National Crusade Against Hunger”, aimed at reducing hunger and malnutrition, and increasing food production (see “Increase Agrofood Productivity” in the Mexican Republic Presidency Blog, 23th January 2013).

²⁶ “Ley de Seguridad y Nutricional para el Distrito Federal”, GODF 17th September 2009 no. 677, pp. 49-57.

²⁷ Towards the end of 2013, a number of proposals were issued to reform the Law on Food Security and Nutrition in order to include obesity concerns, which affects 50% of the country. Proposals also include mentions to organic products and prioritization of local produce. However, to the best of the author’s knowledge, there has been no mention to environmental concerns to date.

²⁸ “Acuerdo por el que se ordena la creación del ‘Sistema para la Seguridad Alimentaria y Nutricional de la Ciudad de México’ que Coordine la Aplicación de Programas y Acciones para Garantizar la Seguridad Alimentaria de la Población”, GODF no. 1714, 17th October 2013, pp. 3-5.

b) Local governance schemes for agrobiodiversity protection

A number of departments at the city level are involved – often without naming it – in agrobiodiversity conservation. SEDEMA (*Secretaría de Medio Ambiente*) is the department responsible for environmental issues. SEDEREC (*Secretaría de Desarrollo Rural y Equidad para las Comunidades*) is in charge of public policy and programs regarding rural development and equity of ethnic groups and indigenous rights.²⁹ These two, and SEDUVI (*Secretaría de Desarrollo Urbano y Vivienda*) to a lesser extent,³⁰ are the departments issuing policies that relate to agrobiodiversity protection in different ways.³¹ Among these, this section explores policies in areas with an impact on agrobiodiversity protection: land conservation (i), aquatic habitats (ii), rural development (iii), and urban agriculture (iv).

i) Agrobiodiversity and land conservation

The designation of land for urban or conservation purposes within the city limits has a great impact on how agrobiodiversity is protected. Although rural areas were recognized in 1928, urban legislation only started to incorporate conservation components in its land classification in 1975. It was not until the 90s, however, that the conceptualization went from “spaces”, to “areas”, to finally “land”,³² showcasing the environmentalization³³ of the city. Today, the Law on Protection to Earth³⁴ points towards the classification established in article 30 fraction II of the Urban Development Act.³⁵ Urban growth and these different categorizations resulted in changes in land use (in light orange, light green, and light grey of Figure 2).

²⁹ As per article 23 *Quintus*, “Ley Orgánica de la Administración Pública del Distrito Federal”, GODF 6th February 2007.

³⁰ Connected with conservation agriculture, SEDUVI mainly deals with “irregular settlements” in conservation land. Due to the social component of this department, it is beyond the scope of this analysis.

³¹ Individual Delegations also count with their own directorates, which may issue Programs supportive of agriculture. These programs are usually productivity-aimed grants for the purchase of seed, organic manure, and machinery (see for instance for Milpa Alta, “Programa Integral de Apoyo a los Productores de Nopal 2013” GODF 27th February 2013, pp.13-21). Due to space limitation, however, programs issued at the delegation level will not be explored in depth here.

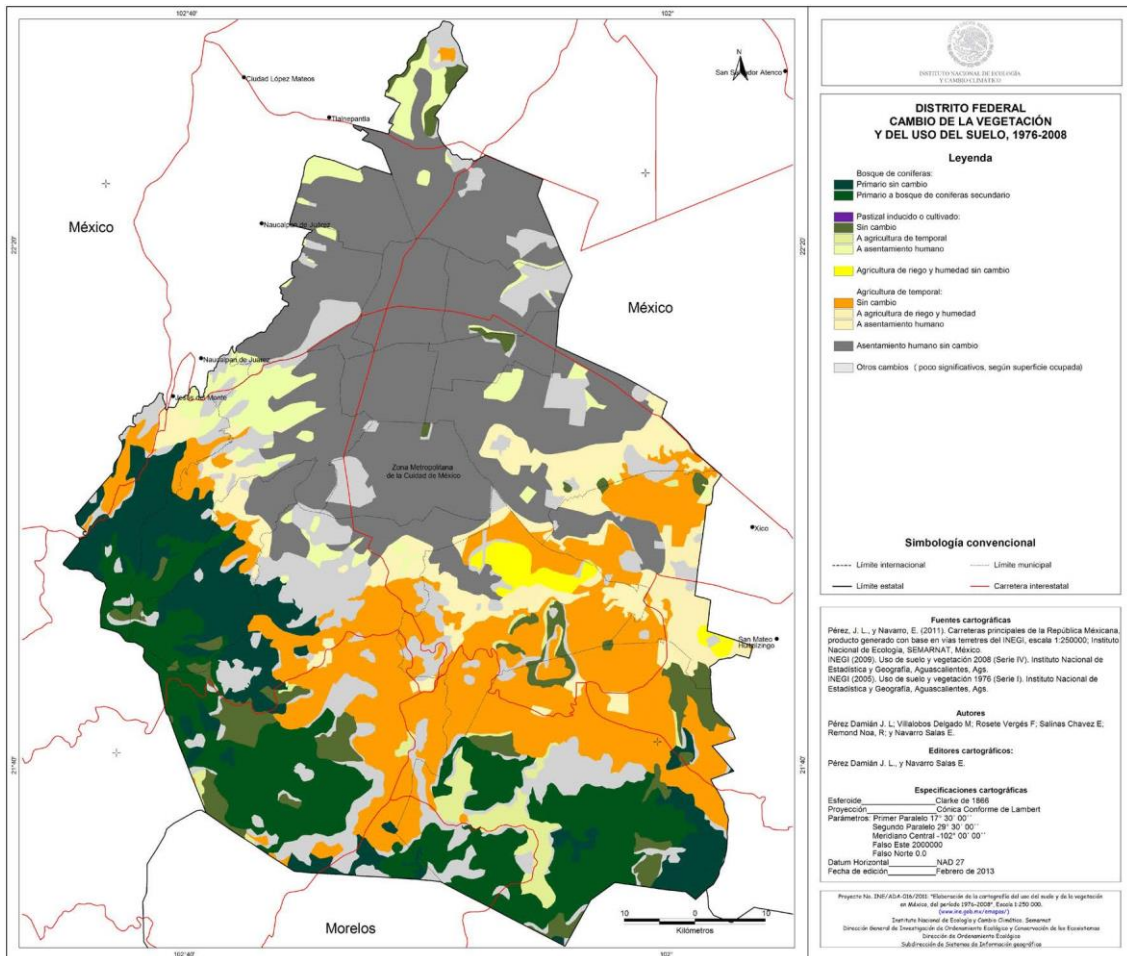
³² “Programa de Equidad para los Pueblos Indígenas, Originarios y Comunidades de Distinto Origen Nacional de la Ciudad de México”, GODF 31st January 2012.

³³ For an international analysis of the evolution of urban environmental agendas and urban environmentalism, see Brand&Thomas (2013), especially Chapter 2 (pp. 24-57).

³⁴ Decree no. 1692 of GODF 17th September 2013, changed the name of the Environmental Act of DF into Law on Protection to Earth in DF (“Ley de Protección a la Tierra en el Distrito Federal”) and several dispositions are amended and added; other dispositions are also amended in the Organic Act of the Environmental Attorney’s General Office (Procuraduría) and Land Use of the Federal District (“Ley Orgánica de la Procuraduría Ambiental y del Ordenamiento Territorial del Distrito Federal”, GODF no. 49, 24th April 2001).

³⁵ “Ley de Desarrollo Urbano”, GODF no. 883, 15th July 2010, pp. 3-31.

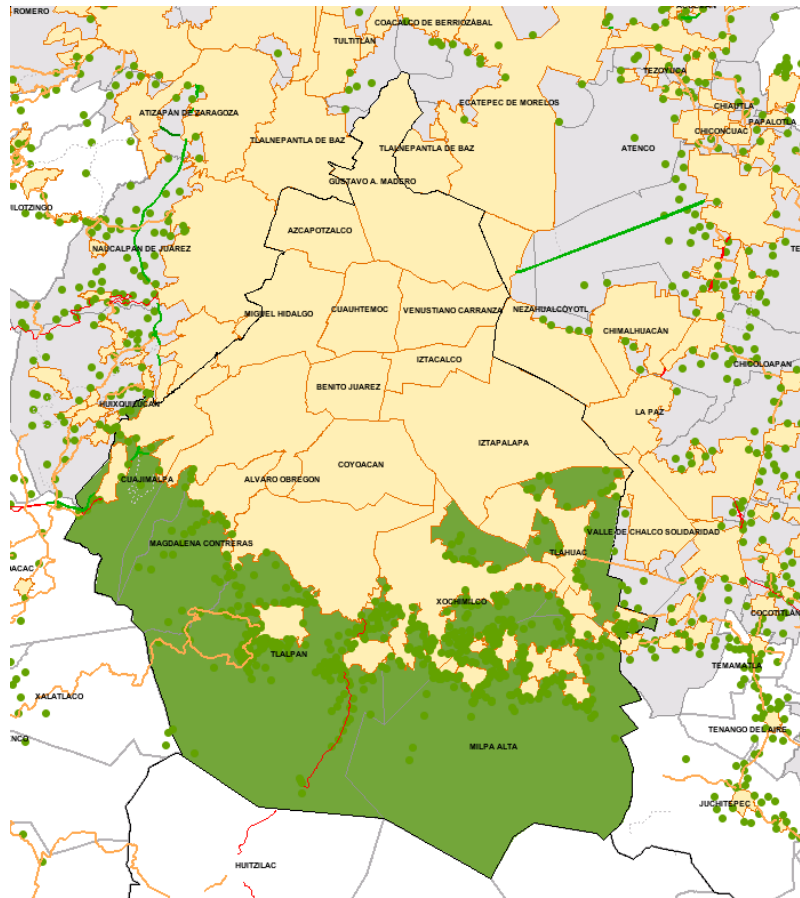
Figure 2: Land use change 1976-2008



Source: Instituto de Ecología y Cambio Climático

The territory of Mexico DF is thus administratively divided in urban and conservation land (*suelo de conservación*, SC), occupying 59 and 41% respectively (SEDEMA, 2013). Figure 3 shows SC in green, and urban land in yellow; green dots represent rural villages. The different percentages of surface registered as SC in each delegation are shown in Table 1.

Figure 3: Conservation land (*Suelo de Conservación*)



Own elaboration. Source: Seduvi, 2009

Table 1: Percentages of *Suelo de Conservación* (SC) by delegation

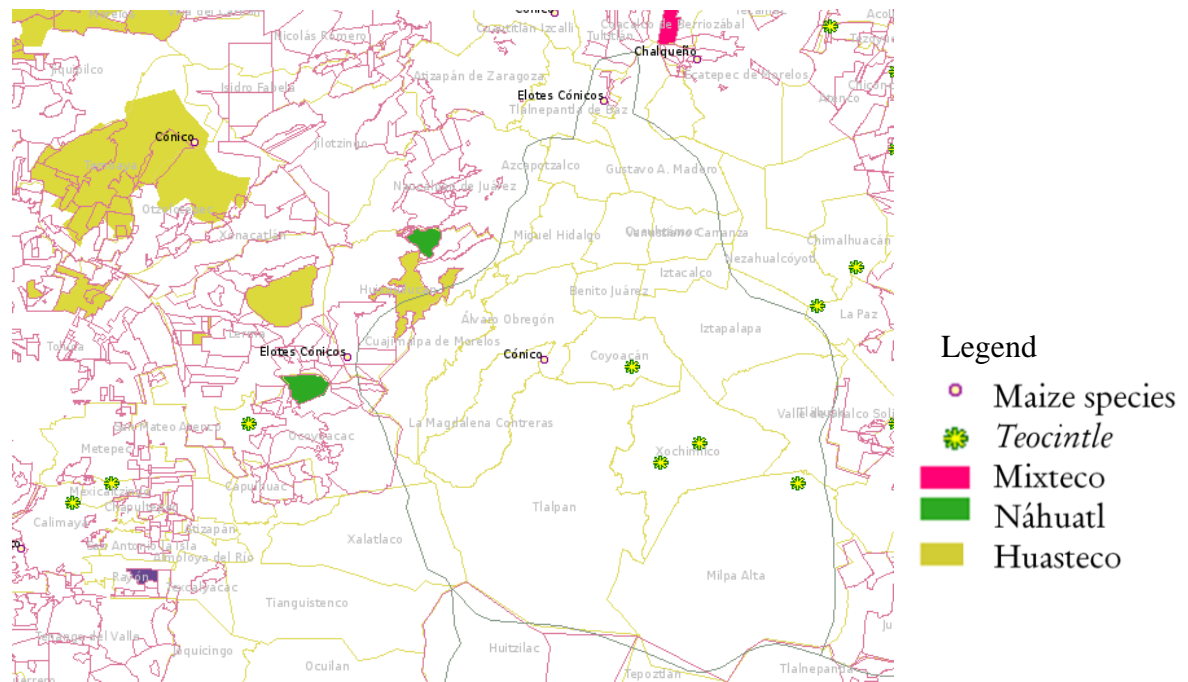
Delegation	SC Percentage
Cuajimalpa de Morelos	7.5
Álvaro Obregón	3.1
Magdalena Contreras	5.9
Tlalpan	29.4
Xochimilco	11.9
Tláhuac	7.2
Milpa Alta	32.2
Gustavo A. Madero	1.4
Iztapalapa	1.4

Adapted from [SEDEMA, 2012](#).

Mexico is considered one of the centers of origin, domestication, and diversity of maize ([Serratos-Hernández, 2009](#)). SC of Mexico DF, as part of the central region of the Mexican High Plateau, is one of the four centers of origin and genetic diversity in the country; six maize species of the High Plateau have been identified through various

monitoring processes, including approximately 40 varieties, amongst which species and varieties of *teocintle*, the landrace of maize.³⁶ Some of them are represented in Figure 4.

Figure 4: Maize and *teocintle* in Mexico DF

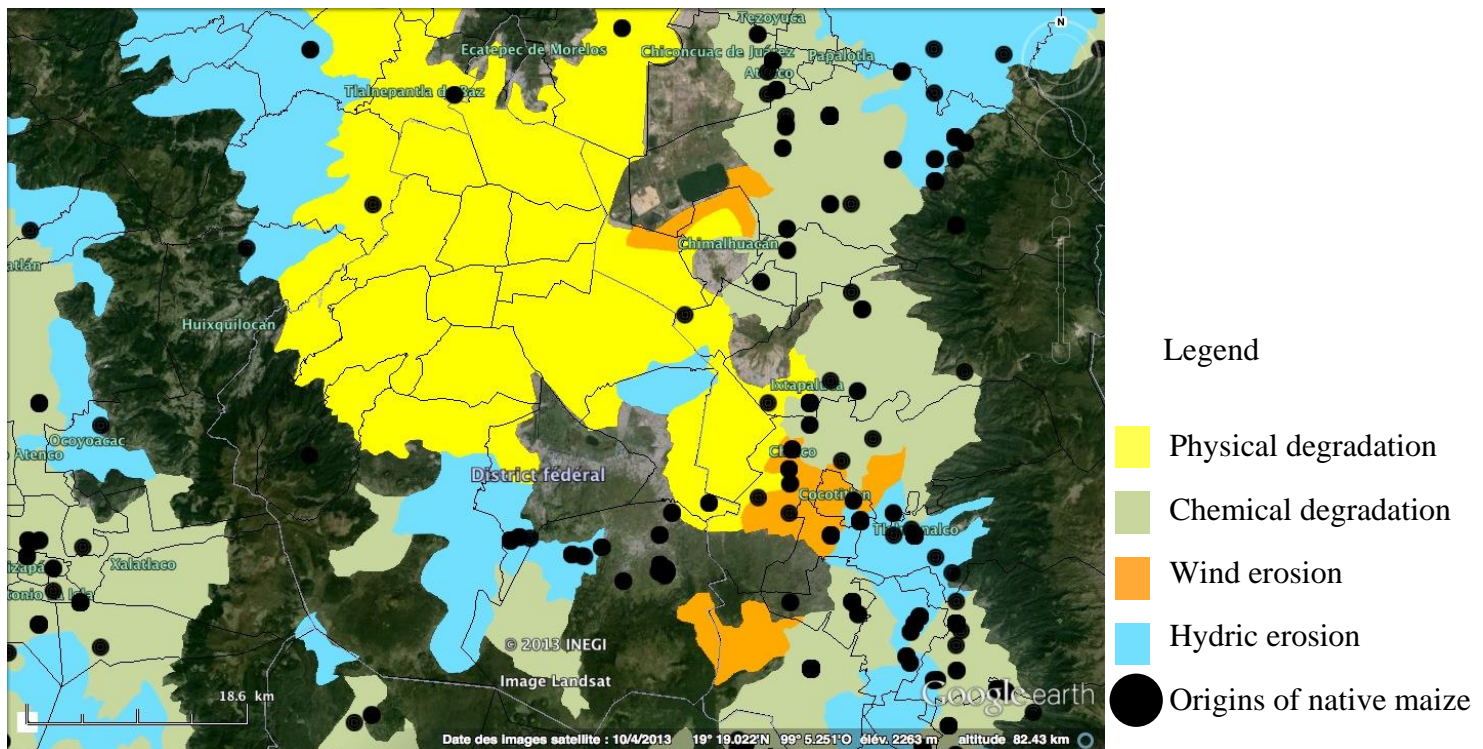


Source: Own elaboration with software by CECCAM (Centro de Estudios para el Cambio en el Campo Mexicano), 2014. Software data from: Eckart Boege Schmidt, Efraín Hernández Xolocotzi, CYMMYT, CDI-PNUD, INEGI and CONABIO.

Figure 5 shows land degradation processes and the centers where native maize originated in Mexico DF. Comparing the area physically degraded, which coincides with urban fabric, with the area chemically degraded, already out of the borders of Mexico DF, the impact of the urban sprawl in agrobiodiversity loss becomes apparent.

³⁶ “Teocintle is the wild grass, landrace of domesticated maize, which comprises perennial species: *Zea diploperennis*, *Zea perennis*, *Zea luxurians*, and annual species: *Zea mays*, *Mexican* and *parviglumis* subspecies” (Glossary in “Programa de Protección de las Razas de Maíz del Altiplano Mexicano para el Distrito Federal”, GODF no.707, 29th October 2009, p. 26: “Teocintle” [Own translation]).

Figure 5: Land degradation and the origins of maize diversity



Own elaboration. Data: CONABIO & SEMARNAT, 2004; INEGI, 2013. Software: QGIS; Google Earth.

Maize cultivation is not determined by economic benefits, but by associated cultural traditions ([Cabrera Rodríguez, ND.](#)). Although it is not mentioned as such, the Law on Protection to the Earth recognizes the importance of biocultural diversity.³⁷ *V.gr.* article 86 Bis.2 recognizes the complexity and dynamism of plants, animals, microorganisms, and other beings and their environment. This article further recognizes the influence of climatic, physiographic, and geological factors, as well as productive practices, cultural diversity, and the cosmovisions of indigenous peoples.

Article 86 Bis.5II goes beyond by pointing out that the inhabitants of Mexico DF have the “right to the maintenance of life diversity, the preservation of the variety and richness of beings that make the Earth, without genetic alterations or artificial modifications in their structure that may threaten their existence, functioning and future potential.” In this regard, article 111.IV promotes agricultural systems that do not degrade or pollute.

After genetically modified (GM) maize was found in other areas of Mexico ([Quist & Chapela, 2001](#)), the genetic continuity of native varieties to the Valley of Mexico was also said to be in peril ([Serratos-Hernández et al., 2007](#); [Piñeyro-Nelson, 2009](#)). Indeed, the use of GM traits can threaten agrobiodiversity by limiting farmers’ options to a few select varieties ([IAASTD, 2009](#)). In this respect, the Government of the city (GDF) issued a declaration in 2009 for the Protection of Maize Species of Mexico

³⁷ Biocultural diversity refers to long-term interactions between human societies and the ecosystems they inhabit, encompassing local ecological knowledge and practices ([Moreno-Peñaranda, 2013](#)).

High Plateau Cultivated and Produced in SC of Mexico DF.³⁸ As a result, SEDEMA launched a Mexican High Plateau Maize Landrace Protection Program³⁹ shortly afterwards. The Program focuses mainly on the recovery of traditional multicropping systems like *milpa*⁴⁰ and monitoring fields for maize and *teocintle* conservation and GMO detection through laboratory diagnoses.⁴¹ Mexico DF is actually the only federal entity with its own monitoring program for this purpose (SEDEMA, 2013).

SEDEMA develops projects for the protection of native maize in SC in partnership with universities, such as “Conservation, Use, and Biosecurity of native maize in SC of Mexico DF.”⁴² It is further supporting ecosystem restoration and conservation through its DGCORENA (*Comisión de Recursos Naturales*), focusing on SC and Natural Protected Areas. Specifically for SC, its program PROFACE,⁴³ and its subprograms FOCORE and APASO,⁴⁴ aim at conserving, preserving, and restoring SC ecosystems. In fact, one of PROFACE’s specific objectives is to promote productive agroecological practices and monitoring mechanisms for genetic resources and native seeds in SC, including the Mexican High Plateau maize landraces.

In such agricultural programs directly addressed to farmers, however, it is still difficult to find agrobiodiversity monitoring systems. For evaluating effectiveness of agrobiodiversity-related programs, indicators may include productivity, SC preservation,

³⁸ “Protección de las Razas de Maíz del Altiplano de México Cultivadas y Producidas en Suelo de Conservación del Distrito Federal”, GODF 25th February 2009, no. 534, pp. 4-7.

³⁹ “Programa de Protección de las Razas de Maíz del Altiplano Mexicano para el Distrito Federal”, GODF 29th October 2009, no.707, pp. 3-26. This program was born within the *Green Plan* of the city, which includes strategies for recovering SC as a key area for the city’s ecological balance, especially strategies number 2 (Ecosystem Restoration and Conservation in SC) and number 4 (Promoting Agroecosystems and Sustainable Natural Resource Management). Under strategy number 4, there is an objective that specifically relates to agrobiodiversity protection: “to conserve native maize germplasm in SC of DF” (“Plan Verde de la Ciudad de México”, 2011. p. 1).

³⁹ “Conservación, uso y bioseguridad del maíz nativo en suelo de conservación del Distrito Federal”. The official resolution of the partnership has not been made publicly available, as evidenced by the appeal for review by the Attorney General’s office to the DF Institute of Access to Public Information and Personal Data Protection, due to SEDEMA’s incomplete provision of documents upon request (see Record document no. RR.SIP.1685/2012, 5th December 2012 of the said Institute).

⁴⁰ Milpa is the farming pre-Hispanic system composed of maize, bean, and pumpkin (Source: Glossary in *ibid.* p.25 “Sistema Milpa” [Own translation]).

⁴¹ For monitoring purposes, the delegation of Milpa Alta, for instance, requires three ears of corn to be provided in order to apply to grants for the program PRODERSUMA (“Programa para el Desarrollo Rural Sustentable de Milpa Alta – PRODERSUMA, 2014”, GODF 31st January 2014, No. 1789 Bis, p. 263).

⁴² “Conservación, uso y bioseguridad del maíz nativo en suelo de conservación del Distrito Federal”. The official resolution of the partnership has not been made publicly available, as evidenced by the appeal for review by the Attorney General’s office to the DF Institute of Access to Public Information and Personal Data Protection, due to SEDEMA’s incomplete provision of documents upon request (see. Record document no. RR.SIP.1685/2012, 5th December 2012 of the said Institute).

⁴³ “Programa de Fondos de Apoyo para la Conservación y Restauración de los Ecosistemas a través de la Participación Social”, GODF no. 1279 Vol.I, 31st January 2012, pp. 50-67.

⁴⁴ “Fondos para la Conservación y Restauración de los Ecosistemas” and “Apoyo para la Participación Social en acciones para la Conservación y Restauración de los Ecosistemas”

and support provided,⁴⁵ but no *ad hoc* monitoring system is offered for agrobiodiversity protection.

ii) Agrobiodiversity and aquatic habitats

Despite negative effects of urban growth on streams ([Kowarik, 2008](#); [Paul & Meyer, 2008](#)), aquatic urban habitats are a key source of urban biodiversity ([Puppim de Oliveira et al., 2011](#)). Preservation of these habitats and their biodiversity can be a realistic goal when agricultural activities are limited ([Lafont et al., 2007](#)). Agrochemical based agriculture is a threat to these habitats, and complex legal and institutional structures impede their maintenance and protection ([Larson et al., 2007](#)). Sustainability of agroecosystems can be achieved by applying water-conserving technologies in promoting agrobiodiversity ([IAASTD, 2009](#)), but indicators of sustainable development with potential direct effects on aquatic habitats consider agriculture and biodiversity as separate themes (see, *v.gr.* [UNSD, 2006](#)). Indeed, although water-intensive land uses such as conventional agriculture – especially in peri-urban areas – can lead to aquatic habitat degradation, the abandonment of sustainable agroecological practices can in fact lead to the alteration of such ecosystems. This has been the case of the *chinampas*⁴⁶ (Figure 6) in Xochimilco.

The neglect of traditional practices in this area led to the sedimentation of reservoirs and alterations of the hydrological flows. Both social and economic processes were behind the progressive abandonment of agroecological production. This had great consequences, such as biological and chemical pollution in the water due to the introduction of alien species, and the conversion to intensives modes of production ([Zambrano González et al., 2012](#)). In the late 1500s, *chinampas* covered most of the lakes of Xochimilco and Chalco, and it supported most of Tenochtitlán's residents. When the Spanish arrived, the lakebed began to be drained. Freshwater that fed the lake was successively diverted to provide water supply for Mexico DF, until the area became a delegation of the city itself. The once agricultural hub became a depository for the city's wastewaters in the 1970s and 1980s. What used to be a rural area became a highly urbanized, touristic site.

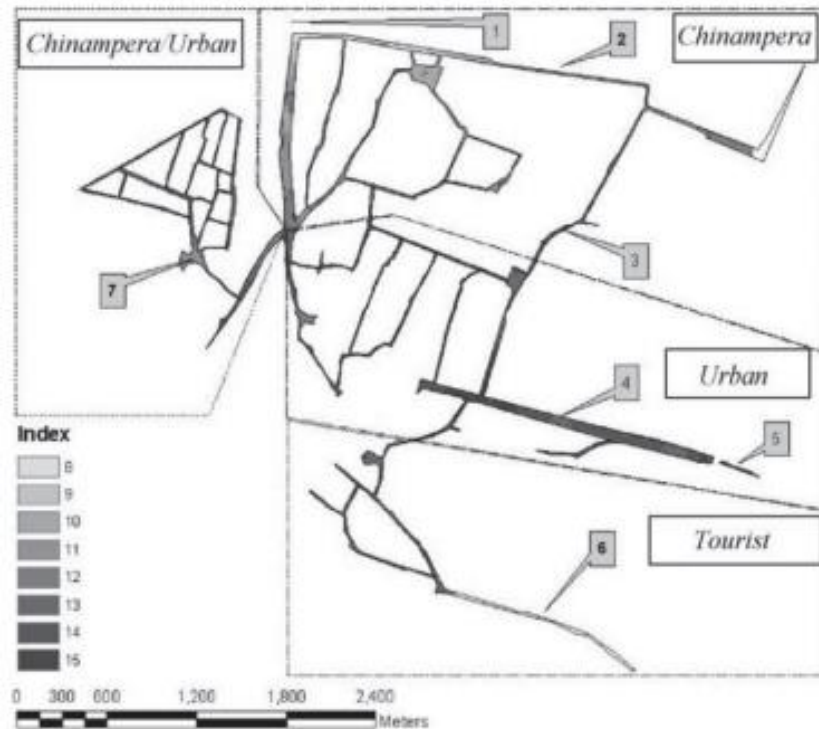
Watering crops with sewage water caused biological pollution and soil salinization: while in 1930 Xochimilco was outside Mexico DF and only included 73ha. of urban space, by 2000 it had increased to more than 2,500ha.; the lake, with an

⁴⁵ See for instance “Programa Integral de Apoyo a los Productores de Nopal 2013”, *op.cit.* Note 31. And “Programa de Apoyo para la Adquisición de Semillas y Pago de Servicios de Tractor y/o Mejoradores de Suelo 2011”, GODF 31st January 2011, pp. 27-30.

⁴⁶ These are pre-Columbian harvesting systems established in lake areas. They are built by setting a trunk structure, over which grass and mud found at the bottom of canals are placed. In its shores, *ahuejote* (an endemic tree to Xochimilco) must be planted in order to fix or divide the *chinampa*: its branches allow sunrays to penetrate into the ploughland. For a comprehensive study on the environmental evolution of DF, see [Ezcurra, 1990](#); for the historical processes surrounding the changes in the *chinampas* system, see [Rojas-Rabiela, 1983](#) and [1990](#); for scientific details on the traditional agricultural system of *chinampas*, see [Coe, 1964](#), and [Jiménez et al., 1995](#).

extension of 350 km² in the beginning of the 20th Century, had reduced its surface to just 170 km² by 2007 (Ávila, 2010), and fully belongs now to the urban fabric.

Figure 6: Zonation of the channels of Xochimilco



Source: [Zambrano González et al., 2012](#).

In fact, the preservation of the agroecological system in Xochimilco was, and still is, entirely sustained by its *chinampas*. In this area, cultivated crops include a number of maize native (v.gr. *Chalqueño*, *Palomero Toluqueno*, *Cónico*, *Cacahuacintle*, and *Ancho*), as well as non-native varieties (*Jazmín* and *Tlahuaquí*).

Among these, crop association, integrated pest management techniques, the use of natural enemies, were the most effective in terms of results obtained. Actually *Elote Cónico* represented 53% of an *in situ* sample studied, and 27% were *Cónico*, *Cachuacintle* and *Ancho* ([Hernández Casillas, 2009](#)).

Box 3: Agrobiodiversity and culture in Xochimilco

The cultural importance of agricultural diversity has been recognized in Mexico since pre-Hispanic times. Although turned into a touristic site, Xochimilco still has a number of agrobiodiversity-themed festivities. V.gr. the town Santiago Tulyeahualco yearly hosts the Alegría and Olive Fair, where products from different varieties of olive are exhibited and sold, as well as the processing of amaranth seed into the traditional sweet known as 'alegría'. Other examples include the Maize and tortilla Fair in Santiago Tepalcatlalpan, or the 2013 chinampa-themed Day of the Dead.

iii) Agrobiodiversity and rural development

The concept of rural development in urban areas might seem contradictory. Although urban planners think of this use as awkward (Forman, 2008), the term ‘rural’ is actually employed by the city government.

The evolution of rural-urban interactions is rather problematic. Mexico DF’s growth took place mainly on *ejidos*⁴⁷ and agricultural land, generally in the form of expropriations, even when land use changes were carried out by agricultural authorities (Ávila, 2010). In fact, urban expansion during the second half of the 20th century took place through illegal sales of social property and the spread of deprived urban areas onto communal and *ejidal* lands (*ibid.*).

In 1992, constitutional article 27 was reformed to remove the characteristics of inalienable, non-lapsable, and not subject to seizure, from *ejidos*, amongst other novelties (Gallardo Zúñiga, 2003; Warman, 2003; Olivera Lozano, 2005; Ávila, 2010; Chacón Hernández, 2011). In the past, the Agrarian Law forbade the conversion of *ejidal* land into urban land, even in case of imminent urbanization. The new Agrarian Law⁴⁸ opened the possibility for individual beneficiaries of privatized *ejidal* or communal land to incorporate it into the urban land market, generally for housing. This way, previously considered as social property, *ejidos* and communal land became susceptible for urbanization. Although this was already the case through illegal selling of land, the reform further urbanized rural Mexico DF. Despite these contradictions, GDF still recognizes the importance of rural areas within the city limits.

In fact, SEDEREC defines ‘sustainable rural development’ by employing the national definition of article 3.XIV of the Sustainable Rural Development Act^{49,50} as a starting point. It defines the concept in a way that includes many other aspects,⁵¹ but most importantly, establishes rural development as a right.⁵² Although not specified, its social and environmental implications are endless, especially for the 145 Native

⁴⁷ Area of communal land used for agriculture, on which community members individually possess and farm a specific parcel.

⁴⁸ Art. 87 of Seventh Section (“De las Tierras Ejidales en Zonas Urbanas”), “Ley Agraria”, DOF 26th February 1992 (last reform DOF 9th April 2012)

⁴⁹ “Ley de Desarrollo Rural Sustentable”, DOF 7th December 2001.

⁵⁰ “The comprehensive improvement of social wellbeing of the population and of the economic activities in the territory out of the nuclei considered urban according to applicable regulations, ensuring the permanent conservation of natural resources, biodiversity, and ecosystem services in said territory” [Own translation].

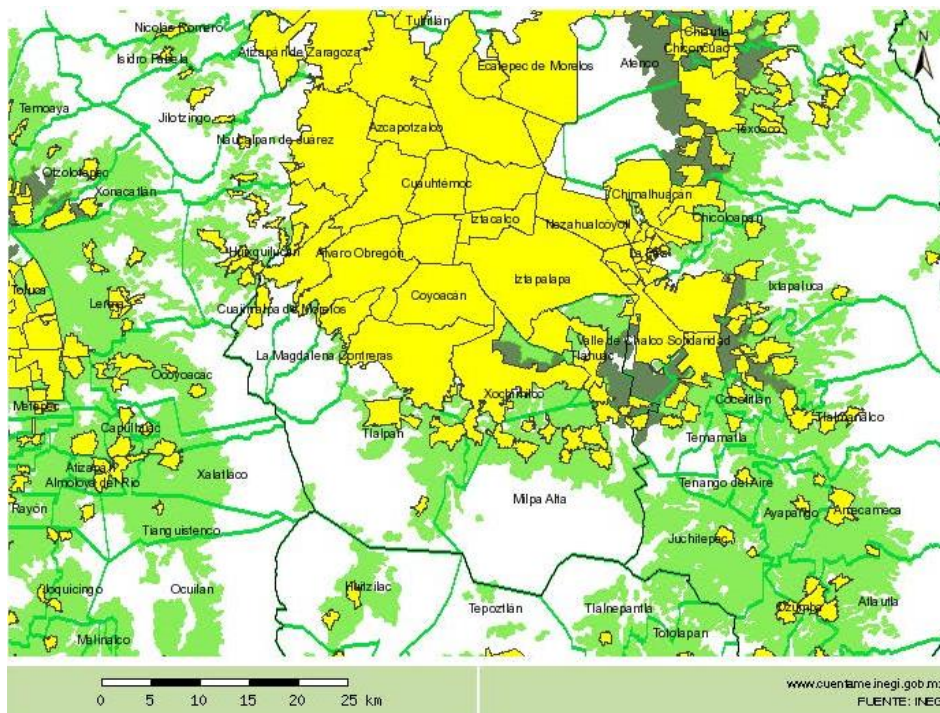
⁵¹ “The right to do farming, aqua-cultural, artisanal, touristic, and other rural activities, based on productive, commercial, distribution and self-supply processes, individually and collectively, leading to the comprehensive improvement of social wellbeing, education, health, housing, and diet; and that promotes equity with social justice, justly distributes income, contributes to the full participation of society in decision-making, involving changes in the economic paradigm; and ensuring the conservation of resources upon which the rural society depends” [Own translation].

⁵² “Programa de Desarrollo Agropecuario y Rural en la Ciudad De México” GODF 31th January 2012, pp.164-186.

Peoples⁵³ that currently inhabit Mexico DF. The lack of enforcement mechanisms, however, can leave merely declared rights void of significance, leading to potential instrumentalization.⁵⁴

Rural areas include rural villages and agrarian structures (*ejidos* and communities) in Álvaro Obregón, Cuajimalpa de Morelos, la Magdalena Contreras, Tlalpan, Xochimilco, Tláhuac, and Milpa Alta, as well as those in urban land where rural activities are carried out⁵⁵ (Figure 7).

Figure 7: Urban areas (yellow) and agricultural land (green) in Mexico DF



Own elaboration. INEGI Digital Mapping System

Rural production comes mainly from small-scale rain-fed farming. It is recognized that the key to its sustainability lies, among others, in conserving and improving the soil for agricultural use, optimizing rainwater for irrigation, and diversifying its crops.⁵⁶ In this respect, one of the specific aims of SEDEREC's Farming

⁵³ "Pueblos Originarios del Distrito Federal de México" is a special denomination for "certain collectivities who have continued the economic, social, political, and cultural structures that existed before the Spanish conquest, the colonization, or the creation of the current borders of DF; they have special forms of organization and economic, social, political and cultural institutions. They are part of the legally recognized indigenous peoples" ("Programa de Equidad para los Pueblos Indígenas, Originarios y Comunidades de Distinto Origen Nacional de la Ciudad de México", GODF 31st January 2012 p.155).

⁵⁴ In the city, other peasant rights include: the right to a due standard of living land resources; seed and agriculture; capital and means of agricultural production; access to agricultural information and technology; freedom to determine the price and market for agricultural production; protection of agricultural values; freedom of association; housing, education, health and nutrition in communities and villages; environmental conservation, rural practices and resources (*op. cit.* note 52).

⁵⁵ *Ibid.*

⁵⁶ "Programa de Agricultura Sustentable a Pequeña Escala en el Distrito Federal", GODF 31st January 2012, pp. 116-127.

and Rural Development Program⁵⁷ is to “[...] foster [...] the conservation of native varieties of the Federal District (*nopal*, amaranth and maize)”, providing grants on a project basis. Its operational rules⁵⁸ do not explicitly mention how the number of varieties conserved would positively affect the award of the grant, but the cultural, social, and economic importance of these three crops is recognized. SEDEREC identifies them as part of the rural development, but fundamentally in terms of food sovereignty. Moreover, GDF as a whole committed itself to turning rural areas into spaces of phylogenetic diversity where certificates of origin can be issued. As a result, the *Green Seal* was established.⁵⁹ Branding schemes for local agrobiodiversity can potentially benefit local economies ([Moreno-Peñaranda, 2013](#)). However, its mechanisms must be carefully designed so as to not to increase local prices above production costs.

Regarding maize, three subprograms focus on the protection of agrobiodiversity: ‘Recovery of Native Corn varieties’, ‘Technology Transfer’, and ‘Productive Diversification’. These have led to three research projects on *in situ* conservation and recovery of native maize varieties, technology transfer and validation of improved varieties for highland areas, and a project of demonstrative plots for maize and fruit trees.

At the delegation level, Milpa Alta⁶⁰ has a Program on Rural Sustainable Development,⁶¹ which, through its Urban Development Program,⁶² includes strategies for agroecology, protection of native maize, and agroforestry promotion.

For the protection of *nopal* and *nopal-verdura*, grown mainly in Milpa Alta and Tláhuac, SEDEREC is working specially on climate resilience, financing and good farming practices. In fact, 99.76% of production of *nopal* of Mexico DF is grown in Milpa Alta (4,327ha.), representing 36.49% of the national production.⁶³

The production of amaranth was traditionally set aside for other more demanded products; today, it is only grown in certain towns in Xochimilco and Milpa Alta.

⁵⁷ *Op.cit.* note 52, pp. 164-186.

⁵⁸ “Reglas de Operación del Programa de Desarrollo Agropecuario y Rural de la Ciudad de México”, GODF 31st January 2014, No. 1789 Bis, pp. 3-155.

⁵⁹ “Convocatoria abierta para productores agrícolas interesados en obtener la autorización del uso del Sello Verde en productos en fresco y/o procesados, bajo el Certificado de cumplimiento de la Norma Ambiental para la Agricultura Ecológica del Suelo de Conservación del Distrito Federal NADF-002-RNAT-2002”, GODF 27th December 2004, pp. 2-3.

⁶⁰ The General Program of Ecological Planning of the Federal District (“Programa General de Ordenamiento Ecológico del Distrito Federal”, GODF 1st August 2000) establishes the extension and land use of each delegation. The full extension of Milpa Alta constitutes SC, where 95.5% is rural, 3.5% residential, 0.5% for urban and rural infrastructure, and 0.5% for mixed uses.

⁶¹ “Programa para el Desarrollo Rural Sustentable de Milpa Alta – PRODERSUMA, 2014”, GODF 31st January 2014, No. 1789 Bis, pp. 253-270. See specifically Specific Objective II.3., Line of Action “Agroecología” (which includes “Conservación y Protección de los Maíces Nativos” and “Procesamiento de Producción Primaria de Derivados del Maíz Nativo y Productos Agrícolas con buenas prácticas y/o de Producción Orgánica”), and “Agroforestería”, p. 260.

⁶² “Programa Delegacional de Desarrollo Urbano de Milpa Alta”, GODF 9th February 2011.

⁶³ Source: Sistema de Información Agroalimentaria y Pesquera (SIAP), Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación (SAGARPA). Anuario Estadístico de la Producción Agrícola para el Distrito Federal, Milpa Alta, 2012.

SEDEREC has therefore provided grants for “productive projects for the conservation of the native crop through the increase of productive capacity, good farming practices, and the production, industrialization, and transformation of amaranth and its derivatives.”⁶⁴ Given the novelty of these programs, potential benefits of productivity-focused grants on agrobiodiversity protection is yet to be seen.

Box 4: Agrobiodiversity and culture in Milpa Alta

As it was the case in Xochimilco, a number of fairs have biocultural themes in Milpa Alta, e.g. *Feria del Elote* in Santa Ana Tlacotenco, *Feria del Nopal* in Villa Milpa Alta, or *Feria del Mole* in San Pedro Atocpan.

iv) Agrobiodiversity in urban agriculture

Another specific strategy for protecting *in situ* agrobiodiversity is certain forms of urban agriculture (UA). UA generally refers to food production systems in cities or the surrounding areas that effectively contribute to food access and supply, creating job and income opportunities for the poorer segments of the population (FAO, 2011; 2012). However, the most important distinguishing character of UA is not so much its location but the fact that it is an integral part of the urban economic, social and ecological system: urban agriculture uses urban resources (land, labor, urban organic wastes, water), produces for urban citizens, is strongly influenced by urban conditions (policies, competition for land, urban markets, prices), and impacts the urban system (urban food security and poverty, ecology and health) (van Veenhuizen, 2006).

Protecting biodiversity is not usually considered one of the functions of agriculture, and this is less so in the case of urban agriculture, where other functions like the provision of quality food or economic protection come first. Relevant potential is beginning to be explored in the areas of biodiversity and agrobiodiversity conservation (Havaligi, 2011; Cultera *et al.*, 2012), but it is yet incipient.

Moreover, general typologies of UA (Cabannes, 2006) do not apply to Mexico DF, where cultural aspects also come into play (Ramírez, 2003). According to this author, three types of agriculture coexist in Mexico DF:

- 1) Intra-urban, city-dweller, or “new” agriculture, usually practiced in patios or roofs by locals or migrants, often constituted as NGOs, to complement their diets;
- 2) Peri-urban agriculture, which surrounds the city and has an adaptive nature;

⁶⁴ “Convocatoria 2013 del Programa de Desarrollo Agropecuario y Rural de la Ciudad de México en su Componente de Cultivos Nativos-Amaranto”.

3) Food-intensive agriculture, which coexists with urban development through *chinampas* and other systems in non-conurbated⁶⁵ areas.

Mexican sociologists and planners have addressed the problematic of the extension of the urban sprawl into rural areas through conceptualizations like “rururban spaces” (Ávila, 2001; Sobrino, 2003), “rural-urban juxtaposition” (León & Guzmán, 2000; Torres, 2000; Ramírez, 2003), or “rural-urban interface” (Galindo & Delgado, 2006).

Despite these particularities, Mexico DF is no exception to the changes in rural landscapes that affect all mega-cities. In many areas like Tláhuac, Xochimilco, and Milpa Alta, peasant farmers were absorbed into the metropolitan area as the city grew.

GDF has set in place a number of programs to try to support (food-intensive) agriculture in the city (Table 2). Most interesting is the spirit of one of them, the Program for Sustainable Small-scale Agriculture, launched “within a framework of food security and food sovereignty.”⁶⁶ In fact, SEDEREC affirms that food sovereignty constitutes one of its aims, and defines it as “the capacity of the population to have culturally appropriate food, from a health and economic perspective, and not what is imposed, but rather deciding what we want as food.”⁶⁷

Table 2: Urban agriculture program 2007-2009

Year	Projects	Number of Beneficiaries	Delegations	Investment (millions)
2007	20	296	4	4.2
2008	31	2,707	10	3.0
2009	29	176	11	2.7
Total	80	3,179	25	9.9

Adapted from Programa de Agricultura Sustentable a Pequeña escala de la Ciudad de México, *op. cit.* Note 56.

A previous Law on “ecological” agriculture⁶⁸ is cited as one of the legal bases for this Program. This law provides the conditions for practicing “ecological agriculture”, which determine eligibility for grants. It is defined as “ways of farming production developed according with biological systems and perform their function in their vital space; they are based on conservation and improvement of soil fertility, biodiversity protection, and the minimization of environmental impacts; and they are social responsible. They do not use as outputs such as synthetic agrochemicals, insecticides, or genetically modified organisms.”⁶⁹

⁶⁵ The term “conurbation” was coined in 1915 by P. Geddes, in *Cities in Evolution*. A conurbation is a region comprising a number of urban areas that, through population growth and physical expansion, have merged into one continuous urban, industrially developed area.

⁶⁶ *Ibid.*

⁶⁷ “Programa Integral de Desarrollo Rural y Equidad para las Comunidades, 2008-2012”, p. 23. This definition is also reproduced in “Programa de Agricultura Sustentable a Pequeña Escala en el Distrito Federal”, *op. cit.* Note 56.

⁶⁸ “Norma Ambiental para el Distrito Federal NADF-002-RNAT-2002, que establece las condiciones para la agricultura ecológica en suelo de conservación del Distrito Federal”, GODF 18th Dec. 2003, pp.5-13.

⁶⁹ Section 3.2. p. 6 of *ibid.* [Own translation]

Despite this legal definition and the detailed description of what are indeed agroecological techniques (Altieri, 1999a), the aforementioned Program only refers to “organic production”, without providing a definition beyond pesticide-free production. Moreover, although biodiversity protection is included in its introduction, there are no specific actions for achieving this except to “promote the benefits of participatory certification schemes.”⁷⁰

B) The case of Quito Metropolitan District

a) Institutional food governance framework

The constitutional reform⁷¹ of 2008, amongst other novelties,⁷² enshrined food sovereignty in articles 13; 281, 282; 284; 304; 334; 410; and 413 in the Constitution of Ecuador (CRE). Article 13 defines it as “the right of all people and collectivities to safe and permanent access to healthy, sufficient, and nutritious food; preferably locally produced and according with diverse identities and cultural traditions, for which food sovereignty will be promoted.” Certainly, this precept does not specify how or by whom food is produced (Giunta, 2013). However, the responsibilities of the State in fulfilling food sovereignty are specified in articles 281-282,⁷³ and they can be regrouped in three categories (Figure 8). Moreover, food sovereignty framework touches upon agrobiodiversity on other constitutional precepts (Table 3).

⁷⁰ Section 5.1. p.126 of “Programa de Agricultura Sustentable a Pequeña Escala en el Distrito Federal”, *op. cit.* Note 56 [Own translation].

⁷¹ The new constitutional framework gave birth to the *Buen Vivir* (Good Living or *Sumak Kawsay* in Kichwa) National Plan 2009-2013, or National Development Plan (art. 280 CRE), which established 12 structural objectives to which all subsequent plans, policies, and programs must adhere. These objectives have now been updated into the Good Living National Plan 2013-2017. Especially relevant are the First and Seventh Objectives: “To consolidate the democratic State and the construction of the grassroots power”; and “To guarantee the rights of nature and promote environmental sustainability globally”, particularly its Policy 7.2 “To know about, value, conserve, and sustainably manage natural heritage, and its terrestrial, mainland aquatic, marine, and coastal biodiversity, with fair, equitable access to their benefits” (SENPLADES, 2013). It is in fact under both roadmaps that are embedded the decentralization and deconcentration processes affecting agrobiodiversity protection, which are described in this Section.

⁷² For an understanding of the model of development for rethinking institutions, see Walsh, 2010; for a perspective on the rights of nature included in the new Constitution, see Gudynas, 2009; for an analysis of the origins and applications of the *Sumak Kawsay* development model, see Radcliffe, 2012. Villalba (2013) critiques the constitutionalization of the concept against the practical reality that still continues despite legislation. Andino, V (2013) argues that *Sumak Kawsay* cannot be institutionalized only through a change in management schemes, but that it is rather at the design stage that social participation must take place.

⁷³ These articles are in Title Fourth, Third Chapter, which establishes food sovereignty as both “a strategic objective and an obligation of the State to ensure that people, communities, and nationalities achieve self-sufficiency with respect to healthy and culturally appropriate food on a permanent basis” (Constitución del Ecuador, 2008) [own translation].

Figure 8: Visual description of articles 281 and 282

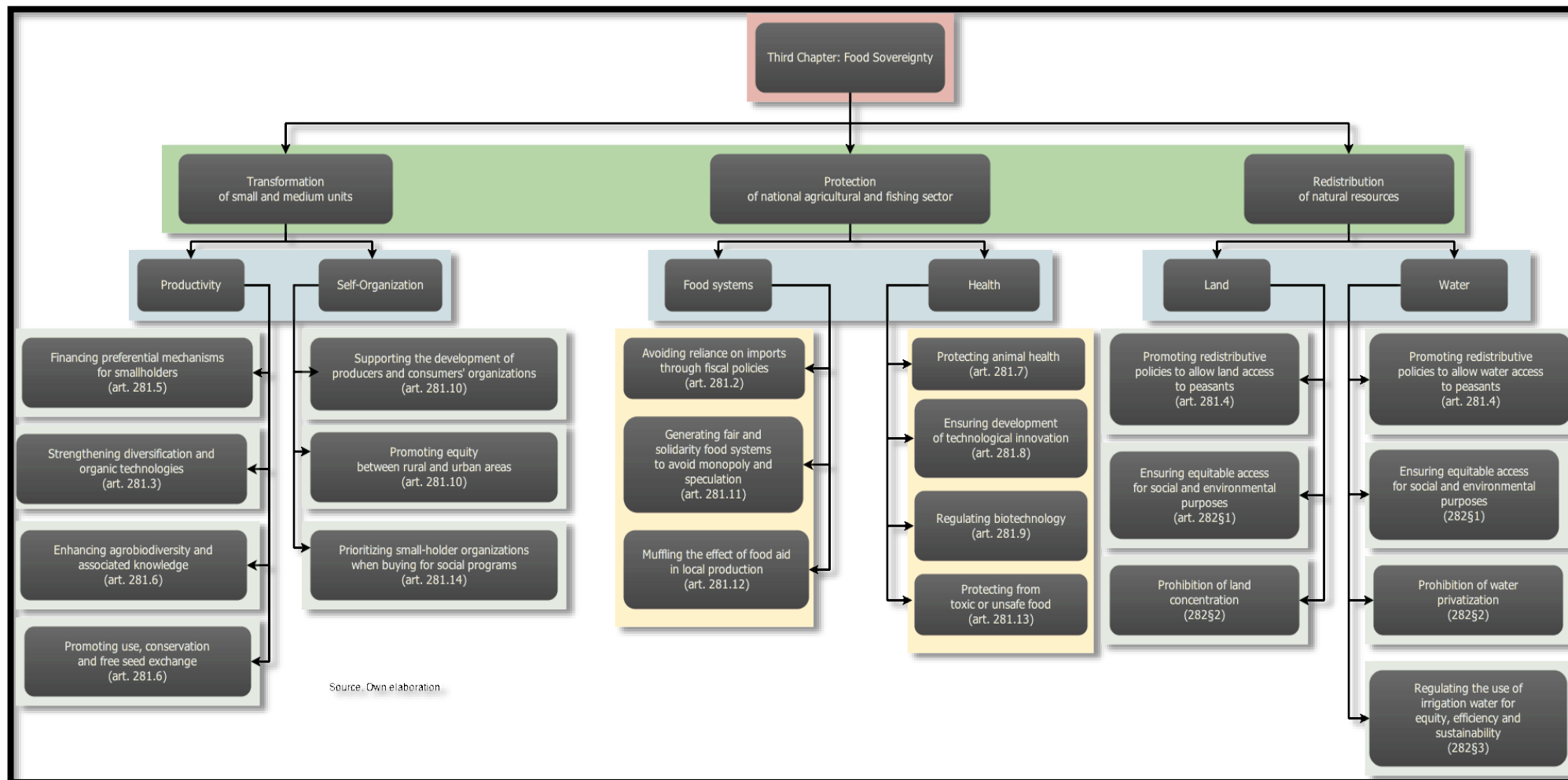


Table 3: Food sovereignty and agrobiodiversity in CRE	
Articles	Content
Art. 13	Establishes the right to safe and permanent access to healthy, sufficient and nutritious food, preferable locally produced, and in keeping their diverse identities and cultural traditions. The State shall promote food sovereignty
Art. 14	Also known as Buen Vivir or Sumak Kawsay in Kichwa, it establishes the right to a healthy and ecologically balanced environment. It declares of public interest the conservation of the environment, ecosystems, biodiversity, and genetic patrimony
Art. 15§2	Prohibition of chemicals toxic for human health or which threaten food sovereignty or ecosystems
Art. 25	Right to scientific progress and traditional knowledge
Art. 57.8 and .12	Guarantee of protection for indigenous peoples of sustainable biodiversity management and of the genetic resources containing biological diversity and agrobiodiversity
Arts. 71-74	Establishes the rights of nature
Art. 73	Measures of precaution and restriction of activities leading to the extinction of species, destruction of ecosystems, or permanent modification of natural cycles. Prohibition of genetically modified organisms that may permanently alter the national genetic patrimony (unless there is founded national interest [art. 401])
Art. 322	Prohibition of appropriation of collective knowledge as well as of genetic resources containing biological diversity and agrobiodiversity
Art. 334.4	Democratization of the means of production, for which the State will foster national production to guarantee food sovereignty, energy sovereignty, job creation, and aggregated value
Art. 400	Declaration of national sovereignty over biodiversity, to be managed with intergenerational responsibility
Art. 401	Declaration of Ecuador as a GMO-free country unless there is national interest justified by the President and approved by the National Assembly.
Art. 402	Prohibition of granting of rights over products obtained with knowledge associated with national biodiversity
Art. 403	The State will not be signatory of treaties compromising biodiversity conservation and sustainable management, human health, collective, and nature rights
Art. 409 §2	In areas of land degradation and desertification, projects must avoid monocropping and will use preferably native and adapted species.

In 2009, these constitutional precepts were developed into a Food Sovereignty Law (LORSA), for whose development the Plurinational and Intercultural Conference on food sovereignty (COPISA)⁷⁴ was created a year later. COPISA’s mission is to generate debate, deliberation, and proposals for laws, public policies, and programs regarding food sovereignty, with the active participation of civil society organizations and State institutions (article 34§2 LORSA).

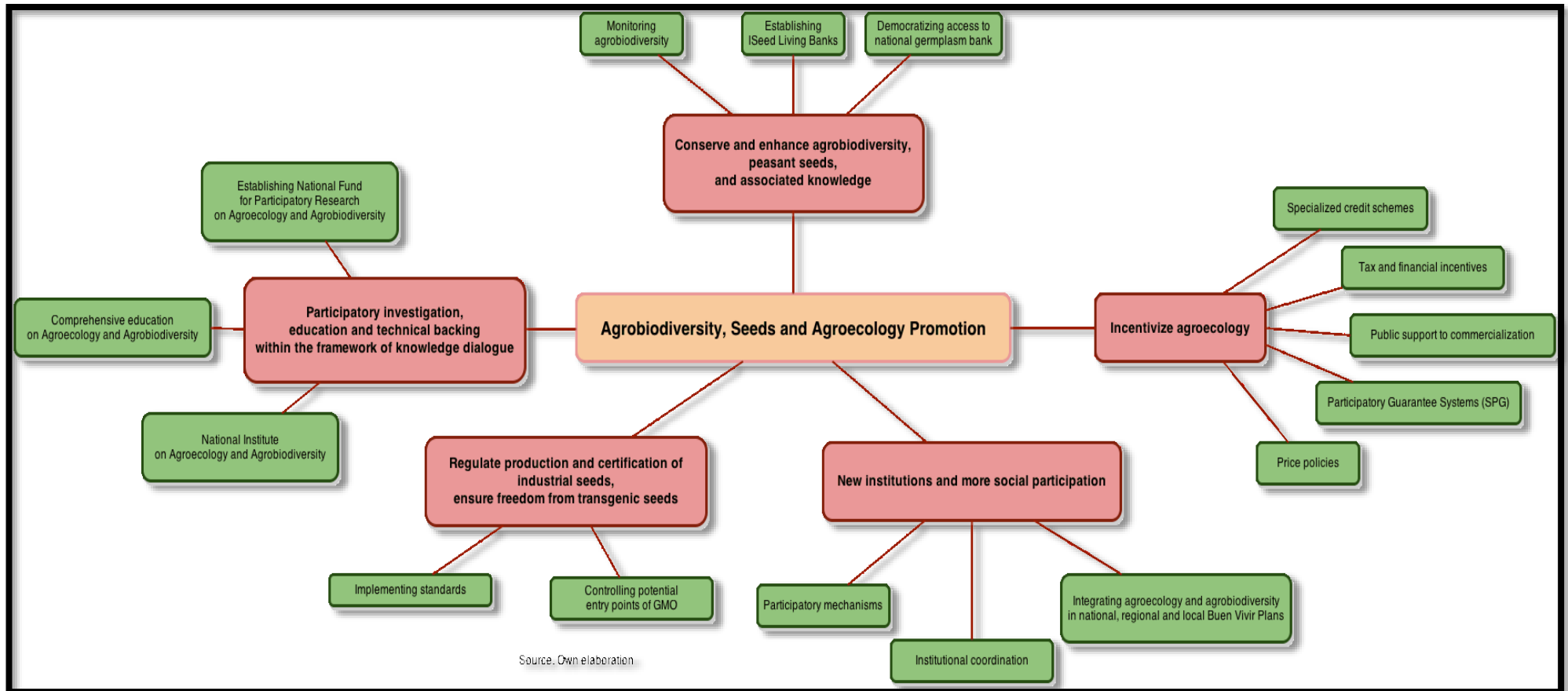
Eight *Conferencistas* administer COPISA. They represent different social groups and sectors⁷⁵ and preside one Commission each. As a participatory organization, COPISA organizes workshops where each *Conferencista* is responsible for promoting the workshop that will draft one of the food sovereignty supplementary laws. One of the nine proposed is the Agrobiodiversity, Seeds and Agroecology Promotion Act⁷⁶ (LOASFA). This proposal includes five objectives (COPISA, 2012), summarized in Figure 9. The unfolding of local governments’ potential in preserving agrobiodiversity is explored in the following subsections.

⁷⁴ *Conferencia Plurinacional e Intercultural de Soberanía Alimentaria*, whose regulatory framework is set forth in R.O. no. 349, 27th December 2010.

⁷⁵ Universities and research institutions; consumers; small and medium-sized producers; small and medium-sized farmers; small and medium-sized cattle ranchers artisanal fishing and gatherers of mangrove fisheries; aquacultures; *campesinos* and irrigators; and indigenous communities, Afro-Ecuadorians and *montubios* (an ethnic identity).

⁷⁶ “Ley Orgánica de Agrobiodiversidad, Semillas y Fomento Agroecológico”. This law is still under debate in the Congress, which is expected to vote the final version this year.

Figure 9: Five keys to understanding LOASFA



b) Local governance schemes for agrobiodiversity protection

Culturally meaningful national frameworks like *Sumak Kawsay* constitute a call for individual cities to (re)think the paradigm of their rural-urban and human-nature relationships. As a new national development model, local implications are yet to become apparent, but some effects are beginning to be studied ([Sarrade Cobos, 2009](#); [Clark, 2013](#)). This subsection first presents the emergent role of local governments in agrobiodiversity protection (a), and then explores the latter via specific land designations in Quito Metropolitan District (b).

i) The new role of local governments in agrobiodiversity protection

The aforementioned National Development Plan⁷⁷ materialized into a number of laws, amongst which the Organic Code on Territorial Planning, Autonomy, and Decentralization⁷⁸ (COOTAD), and LORSA, which led to the proposal of LOASFA. Especially relevant is the new role autonomous decentralized governments (GADs) will play in agrobiodiversity protection.

COOTAD designates as GADs all sub-national governments (article 238§2). There are a number of dispositions establishing their role in food sovereignty and agrobiodiversity protection. *V.gr.*, their aims include recovery and conservation of nature, and the maintenance of a sustainable⁷⁹ environment (article 4d), or the protection and promotion of cultural diversity and respect for its spaces of creation and exchange (article 4e).

COOTAD also grants new powers to the most local level of government, *juntas parroquiales* (JPs). Specifically rural JPs have acquired new responsibilities and political importance in terms of representation (article 45 and 46 COOTAD) and competencies over areas that include development, land use, agriculture, and culture (articles 66-71).

In promoting food sovereignty (article 134), regional GADs must work complementarily with rural JPs towards agrobiodiversity protection. This includes respecting and protecting agrobiodiversity, as well as traditional and ancestral production means and knowledge (c); and promoting access to agroecological food (d).

⁷⁷ This Plan was actually the first step to build the National Decentralized System for Participatory Planning, which aims to decentralize and deconcentrate political power and decision-making. Particularly through its Strategy 6.11, “Territorial Development and Organization, Deconcentration, and Decentralization” ([SENPLADES, 2009](#)).

⁷⁸ “Código Orgánico de Ordenamiento Territorial, Autonomía y Descentralización”, R. O. Supplement no. 303, 19th October 2010.

⁷⁹ It is important to highlight that the original text says “[...]y el mantenimiento de un ambiente sostenible y sustentable;[...]”. Indeed, “sustentable” and “sostenible” can only be translated as “sustainable” but, despite general confusion, in Spanish they are different concepts. While “sostenible” refers to the Brundtland’s Report definition, “sustentable” is a more comprehensive term that includes the full development process. For instance, carbon markets might be “sostenibles” but would never be “sustentables”.

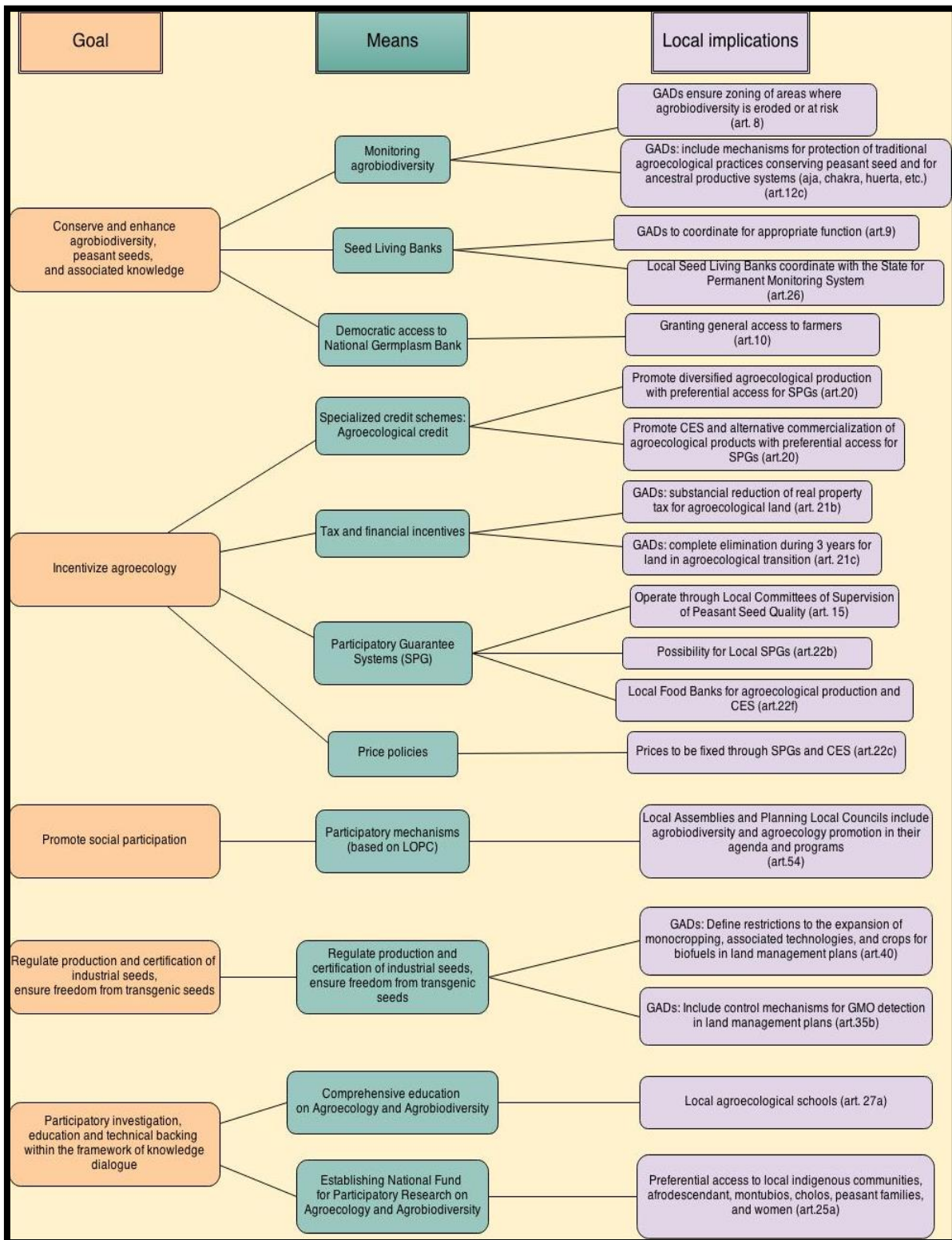
In fact, understood in combination with article 240 CRE, which establishes legislative competencies for metropolitan districts, this precept implies that Quito Metropolitan District must legislate in coordination with rural JPs towards the said aims. Moreover, article 240§1 (*in fine*) states that rural JPs retain statutory powers, entailing the faculty to develop legislation issued by higher levels of government. In fact, in coordination with the other levels of government, rural *parroquias* promote biodiversity and ecosystem conservation activities (article 136§7).

Regional GADs are also responsible for the promotion of food security, via implementation of constitutional and legal dispositions for food sovereignty (articles 31g) and 134); in coordination with provincial, municipal, and rural *parroquial* GADs, they plan and build adequate infrastructure protecting agrobiodiversity (article 31c), and promote access to nutritious, agroecological, and local food (article 31d).

For the draft of LOASFA, COPISA counted with the participation of 2,066 representatives of 553 organizations in 22 participatory workshops in 11 provinces of the country.⁸⁰ This participatory process had a clear impact on its local implications (Figure 10).

⁸⁰ Report for the first debate of the Project for an Agrobiodiversity, Seeds and Agroecology Promotion Act, Permanent Specialized Commission on Food Sovereignty and Farming Sector Development, Quito, 27th July 2012.

Figure 10: Local implications of LOASFA



Source: own elaboration

Innovative⁸¹ instruments of LOASFA include Local Seed Living Banks, the promotion of Solidarity Economic Circuits⁸² · ⁸³ (CES) for the advancement of agroecology, and the formal establishment of Participatory Guarantee Systems (SPGs).

Seed Living Banks (article 9) are established for the conservation of peasant seeds.⁸⁴ Although it is an obligation of the State to provide the resources and infrastructure for their functioning, conservation is to be done in coordination with GADs and local communities. For the preservation of these seeds, peasant *chakras* are particularly relevant. *Chakras* are defined⁸⁵ by LOASFA as “an agroecosystem of Andean cultures located in a defined area where diversified crops and animal breeds are available.” In fact, under the Andean conception of animal and plant species, *chakra* reflects an eco-centric cosmovision incarnated in *Pachamama*, from whom all things in nature were born as alive organic beings: flora, fauna, water, rivers, Sun, Moon, quinoa, alpaca, etc. (Enríquez, 2008). GADs must include in their plans, programs, and projects, financial mechanisms for promoting ancestral agroecological systems like *chakras*, as well as *ajas*, *huertas*, *fincas*, and *eras*.⁸⁶

There used to be many small *chakras* run by independent peasants in the Quito Metropolitan District area; however, the process of high concentration of property in the 19th century led to the creation of vast latifundia (Kingman Garcés, 2006). Indeed, *chakras* used to exist within the city, but the development of means of transport made it more profitable to bring fruit from coastal areas than from other areas of Pichincha (*ibid.*). As shown, although LOASFA conceptualizes *chakras* as agroecosystems, they incarnate significantly more.

Peasant seed guardians in these systems are also some of the socioeconomic agents that conform CES. CES are “articulated groups living by the principles of Solidarity Economy, where collaboration is present and active throughout the economic process; “exchanges in a circular process of responsible and reciprocal relationships”, and “an instrument that helps in network and processes of Solidarity Economy, linking economic and sociocultural aspects at every stage.”(Silva 2012)

Forms of CES are peasant exchange fairs. In this sense, LOASFA specifically assigns a number of responsibilities to GADs (article 14): respect, value, recognize, and

⁸¹ Various forms of these instruments already exist in countries like Guatemala, Bolivia, Colombia, or Peru, but these mechanisms have never been reflected in national laws before.

⁸² “Circuito”, in its economic sense, would translate into English as “market”. However, using the latter would annihilate the real meaning of CES, as they are constructed for articulating exchanges out of the logic of the self-regulated market (Andino, 2013).

⁸³ In accordance with constitutional precepts 85§1, 281.1, and 283§2.

⁸⁴ Peasant seeds are defined in LOASFA art.5 a.- as “all reproductive, sexual and asexual, plant, animal, and other organisms that maintain their reproductive capacity, and have been and are domesticated, maintained, bred, handled, and cared for by individuals, families, municipalities, communities, villages, indigenous peoples and nationalities, African descendants, *montubios*, peasants, *cholos* and mestizos, according to their diverse knowledge and cultures. This includes native seed varieties, ancient, local, traditional, and those created by conventional breeding techniques that have been taken or ‘localized’ by them. It is made their heritage and released for free circulation for the benefit of humanity and to achieve Food Sovereignty.” [Own translation]

⁸⁵ Glossary, letter u) [Own translation].

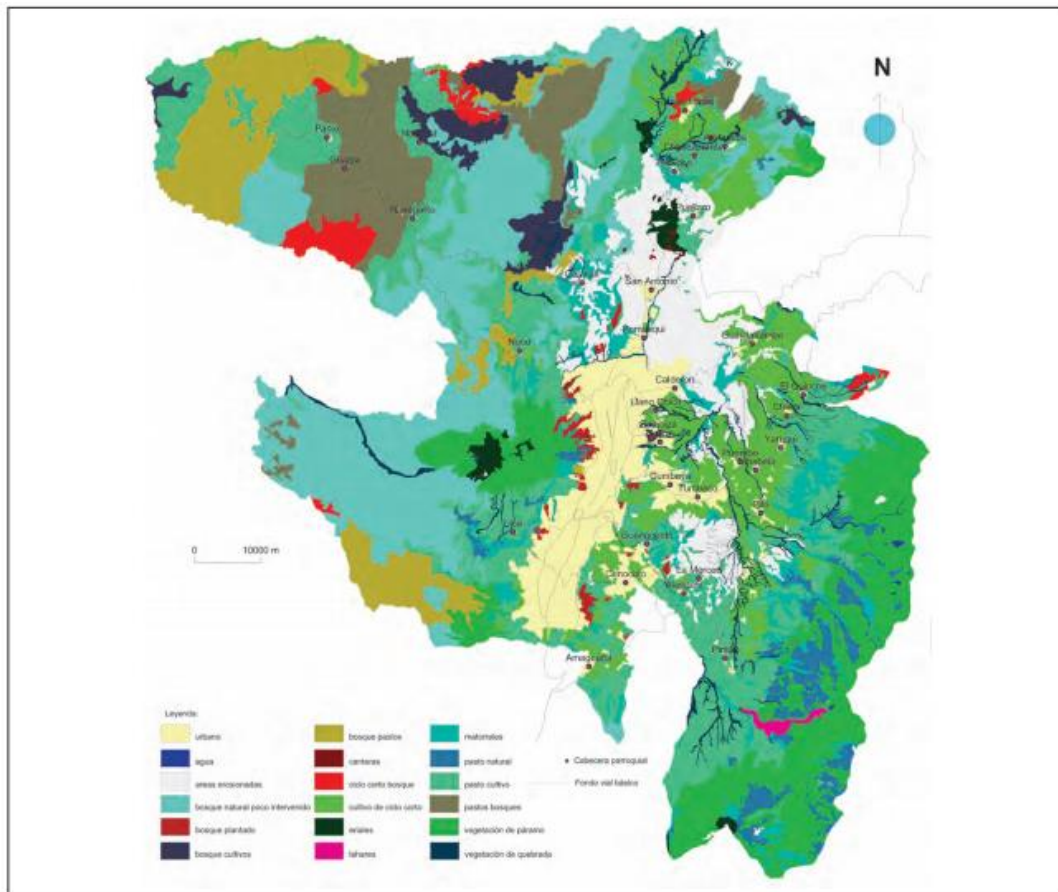
⁸⁶ In fact, these systems provide a high genetic and species diversity, including ranks of integrated species/hectare of 10-50 in *chakras*, 40-100 in *ajas*, or 10-50 in *fincas* and *huertas* (COPISA, 2012).

promote them through financial and technical resources, and respect the independence of social organizations as well as traditional means of exchange (barter, *randi randi*, *ñunti*, exchange networks, etc.)(a); assign them appropriate public spaces differentiated from common markets(b); provide infrastructure and equipment(c); establish logistic support mechanisms(d); recognize and support SPGs(e).

ii) Agrobiodiversity protection in protected land

Agricultural land covers about 17.4% of Quito Metropolitan District ([MDMQ, 2006](#)). Other current land uses besides urban include natural and recovered forests, agroforestry, mines, uncultivated areas, lahars, shrub, and *páramo* and stream covers (Figure 11).

Figure 11: Current land use



Source: [MDMQ, 2006](#)

Highlands, particularly *páramos*, have provided the foundations for adaptation, natural selection, and evolutionary processes, leading to a high plant genetic variety, expressed in many cultivated local varieties. Among these, potato (*Solanum tuberosum*), mecollo or ulluco (*Ullucus tuberosus*), oca (*Oxalis tuberosa*), and mashua (*Tropaeolum tuberosum*). Other crops include maize (*Zea mays*), quinoa (*Chenopodium quinoa*), and bean (*Lupinus mutabilis*). Among non-native species that have nonetheless adapted well

are onions (*Allium cepa*), cabbage (*Brassica oleracea*), turnip (*Brassica napus*), and several cereals such as barley or wheat (*Hordeum vulgare* and *Triticum tritice*) (Nieto y Estrella, 2000; COPISA, 2012).

Natural patrimony of Quito Metropolitan District takes up 69% of its territory, whereas consolidated urban land only represents 7.6% (MDMQ, 2012). The area of Quito Metropolitan District, however, is not exempt of threats to its diversity. Identified challenges for natural areas include urban growth, agriculture, deforestation and fragmentation, water pollution, industrial and home pollution, mining in high biodiversity ecosystems, hunting and poaching, and climate variability (*ibid.*).

In accordance with article 409 CRE, principles of public interest and national priority govern land conservation. To this effect, local governments like Quito Metropolitan District⁸⁷ can regulate in the areas of land management and pollution of the environment. As a consequence, Quito Metropolitan District’s protected land is governed by a number of Metropolitan Ordinances (OM) and Plans.

Quito Metropolitan District must also comply with relevant national legislation such as article 466 COOTAD, on territorial planning and land use. For this purpose, partial studies for environmental and agrarian protection must be undertaken in urban areas. In order to guarantee food sovereignty, land for clear farming purposes cannot be urbanized, unless an authorization from the national land institution is issued. Moreover, article 8e§3 LOASFA establishes urban growth cannot take place at the expense of agrobiodiversity and local capacity for food production.

The General Plan on Land Development (PDGT)⁸⁸ was substituted by the Land Management General Plan (PMOT)⁸⁹ in 2011. While the former established three kinds of land,⁹⁰ the latter opted for classifying it into urban and rural (Table 4 and Figure 12).

Table 4: Land classification PMOT

Rural land	Urban land
Predominantly oriented towards primary productive (farming, livestock, forestry, mining) activities, environmental protection and social and cultural patrimony (<i>comunas</i>)	Predominantly intended for residential, secondary productive, commercial, services or administration activities, and has access to basic services, roads, and a consolidation degree of at least 30%

⁸⁷ This power is specifically reflected in articles 2.1, 2.3, 8.2, 25, and 26 of “Ley de Régimen del DMQ”, R. O. no. 345, 27th December 1993.

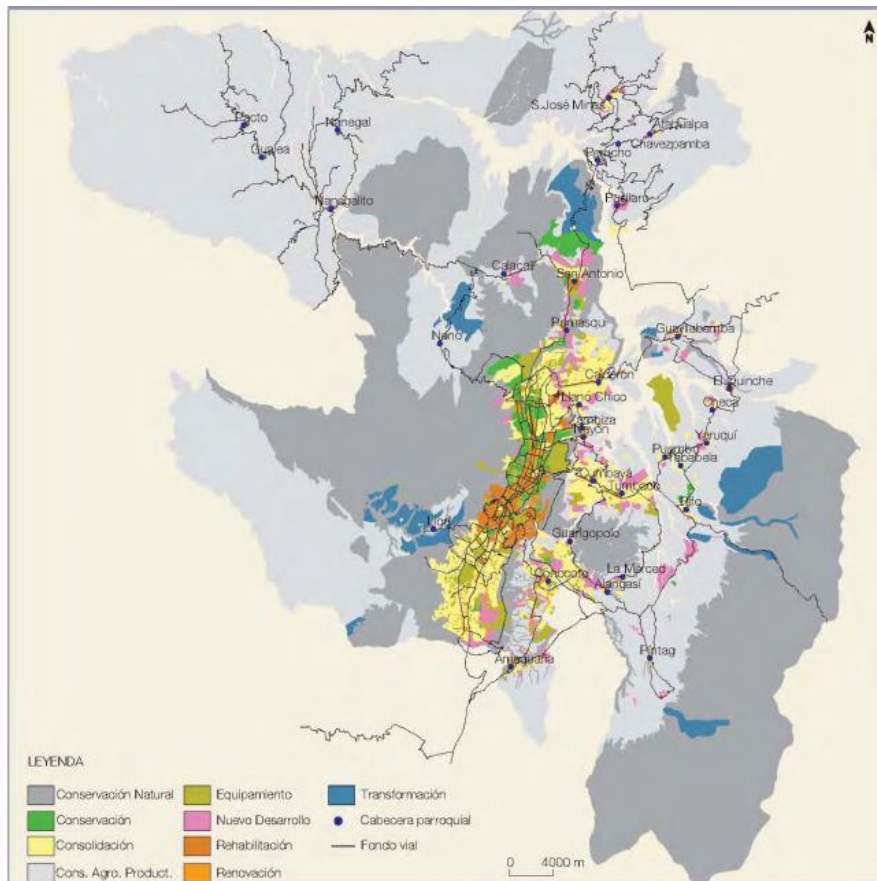
⁸⁸ “Ordenanza Metropolitana que Aprueba el Plan General de Desarrollo Territorial del Distrito Metropolitano de Quito”, no. 332, 10th August 2006, pp. 1-100.

⁸⁹ “Ordenanza Metropolitana que Aprueba el Plan Metropolitano de Ordenamiento Territorial del Distrito Metropolitano de Quito”, no. 0171, 30th December 2011, pp. 1-109.

⁹⁰ The three categories were: urban land (*suelo urbano*), building land (*suelo urbanizable*), and land designated as not for building (*suelo no urbanizable*), in art.7 of “Ordenanza Metropolitana de Régimen de suelo para el Distrito Metropolitano de Quito”, no. 0255, 10th June 2008, pp. 1-57.

The Land Use and Occupation Plan (PUOS)⁹¹ provides special protection when specifying the rural category, including agricultural interest as one of the factors triggering it.

Figure 12: Urban land uses



Source: [MDMQ, 2009](#)

In fact, PMOT recognizes that *Buen Vivir* and food sovereignty in rural areas involve policies of redistribution and sustainability: public investment, basic services, infrastructure, and equipment must be equitably distributed in order to generate “new centralities”. This model fosters development and integration through the recovery of local food production, and an agroproduction model based on associative practices, additionally generating adequate financing and commercialization. For this, PMOT establishes four kinds of treatment for rural areas, as well as urban spaces with ecosystem value, amongst which the category of “Natural Resources’ Sustainable Areas”, where strategies for food sovereignty are considered.

In fact, one of the three strategic development objectives for *Green Quito* axis of Quito Metropolitan District Metropolitan Development Plan⁹² is to consolidate the Metropolitan Subsystem of Natural Protected Areas (SMANP) ([MDMQ, 2012](#)).

⁹¹ “Plan de Uso y Ocupación del Suelo”, in “Ordenanza que contiene el Plan de Uso y Ocupación del Suelo (PUOS)”, Zoning Ordinance no. 0031, 10th June 2008, pp.1-58.

⁹² “Ordenanza Metropolitana que Aprueba el Plan Metropolitano de Desarrollo del Distrito Metropolitano de Quito”, no. 0170, 30th December 2011, pp. 1-191.

Ecological protection via SMANP is granted to land intended for the conservation of natural patrimony with an ecosystems approach, ensuring environmental quality, ecological balance, and sustainable development ([MDMQ, 2009](#)).

In establishing this specific kind of Natural Protected Area (ANP), “Environment Control and Prevention”⁹³ establishes that Quito Metropolitan District guarantees the collective right of the population to live in a healthy and ecologically balanced environment (article 384.1c). In this sense, it identifies a category of ANP for sustainable farming or agroforestry practices (article 384.14f): areas for low-impact, sustainable agriculture, which support agrobiodiversity, and local ecosystem conservation through appropriate and safe technologies.

Actually, the first ANP under the said category was established in Quito Metropolitan District (Mashpi-Guaycuyacu and Saguangal, in JP Pacto). There were a number of unsustainable initiatives including monoculture of peach-palm (*Bactris gasipaes*) and sugar cane (*Saccharum officinarum*), and the use of herbicides like glyphosate, inorganic composting like urea, and pesticides like pyrethroids; however, among the initiatives that triggered the designation were agroecological alternatives like agroforestry systems, including cacao, tropical fruits, and integrated management of small animals ([Arcos et al., 2011](#))

⁹³ “Ordenanza Sustitutiva del Título V, “Del Medio Ambiente”, Libro Segundo, del Código Municipal para el Distrito Metropolitano de Quito”, OM no. 0213, 18th April 2007, pp. 1-165.

V. IMPLICATIONS OF INSTITUTIONAL FOOD GOVERNANCE FRAMEWORKS FOR AGROBIODIVERSITY PROTECTION: A COMPARISON

Threading the interconnections between institutional food governance frameworks and local agrobiodiversity protection poses challenges and opportunities, especially given the increasingly vital roles local governments play as intermediaries between citizens and the State. Mexico DF and Quito Metropolitan District have proven to represent two different approaches to food governance by addressing agrobiodiversity protection from different development models altogether.

On the one hand, Mexico DF, governed by a state-level food security framework, regulates agrobiodiversity protection as a set of compartmentalized categories dealt with by separate departments. Agrobiodiversity is treated as a means for achieving other goals, which is the result of its connections with different issues. These issues include the annexation of former rural populations into the urban fabric, the transformation of land use for increasingly urban purposes, the loss of aquatic habitats through water pollution and soil depletion, and challenges in including truly sustainable agriculture into local agendas. Consequently, distinct departments, programs, and projects, try to stop agrobiodiversity loss separately.

On the other hand, Quito Metropolitan District, from a State-level food sovereignty perspective, conveys a holistic perspective on the matter, fruit of a major switch in the understanding of food governance and development as a whole. In this sense, the unleashing of local governments' potential via implementation of new legislation will lead to mainstreaming agrobiodiversity protection and promotion in local agendas. This includes mechanisms for protection of traditional agroecological practices for peasant seed conservation, direct management of Local Seed Banks, agroecology promotion through local SPGs and CES, and powers to restrict monocropping and other agrobiodiversity unfriendly techniques, including control mechanisms for GMO detection.

However, when taking a closer look at *how* and *why* both governments address agrobiodiversity protection, the differences are not so apparent.

In the case of Mexico DF, SEDEREC and SEDEMA may take turns for issuing different programs and regulations within their respective areas of work. SEDEREC is concerned with rural development in Mexico DF, including mostly SC. SEDEMA, on the other hand, focuses on the environment as a whole, including air pollution, transportation, or urban forests, but also SC. Despite their different approaches, a number of things are worth noting.

Regarding agrobiodiversity protection, while SEDEREC works on productivity of specific varieties, SEDEMA focuses on SC through particular programs for ecosystems' protection. The problem with strategies only aimed at increasing yield is that they can lead to a clear decrease in crop nutrient content due to the dilution effect. This is caused by yields increasing more than the synthesis of nutrients, thus diluting nutrient concentrations ([Davis, 2009](#)). Cultivation of high yielding cultivars under

continuous monoculture or via intensive cropping systems also leads to the depletion of nutrients in soils, negatively affecting plant species' richness ([Klaus, 2011](#)).

At the national level, there is still confusion with the definitions of agroecology, organic, and other ecological terms. Indeed, organic farming systems do not challenge the monoculture nature of plantations and rely on external inputs as well as on foreign and expensive certification seals, or fair trade systems destined only for agro-export ([Cockburn, 2013](#)).

Although projects launched by SEDEREC tend to focus on productivity rather than protection, the developmental model they lean on is stated as "food sovereignty". Indeed, native varieties are identified as a necessary contribution to rural development, but fundamentally as part of food sovereignty. SEDEREC does so despite the Law on Food security and Nutrition in Mexico DF, which does not mention food sovereignty. This may imply that names in laws do not reflect their content. This way, although food governance is framed in terms of food security, the local government seems to go a step further.

These programs also seem to contradict policies at the national level, which, amongst others, are based on the Law on Biosecurity of Genetically Modified Organisms. Popularly known as Monsanto Law and ferociously opposed by civil society, it was presented by dominant groups for coping with the apparent shortage in staple foods in 2007; however, it is said to imperil native maize cultivation ([Rodríguez-Gómez, 2013](#)).

Nevertheless, mentioning food sovereignty as a mere statement of principles does not directly imply environmental concerns will be subsequently included. For the supply of the Food Security Program, at least 70% of the food must come from local production and from small and medium-holders; despite this, ecological and social sustainability assessment measures are not reflected in any of the food security-related projects.

Furthermore, sustainable rural development and the maintenance of life diversity are constituted as "rights" in local plans. The creation of rights without justiciability mechanisms, however, turns them into what J.Bentham summed up as nothing more than 'bawling upon paper'.⁹⁴ Indeed, social rights were constitutionalized in 1917, thirty years before the creation of the welfare State, when there were no enforcing mechanisms ([Gutiérrez Rivas et al., 2007](#)). These unenforceable rights were turned into demobilization and social control tools: hegemonic political parties blatantly appropriated social rights' discourses for their clientelism-based strategies. Simply mentioning a right can thus be more problematic than not mentioning it at all.

Concurrently, using the term 'rural' in urban settings may be controversial because the outer boundary of the urban is unspecified, and the term refers to the country, usually farmland, whereas in urban regions predominant land covers vary from cropland to forest or desert ([Forman, 2008](#)).

⁹⁴ Bentham, J., 1843. *The Works of Jeremy Bentham*, published under the Superintendence of his Executor, John Bowring (Edinburgh: William Tait, 1838-1843). Vol. 2.

On the other hand, SEDEMA focuses on SC through the Program for Protection of the High Plateau Maize Landraces, and indirectly PROFACE and the restoration of the Lake system in Xochimilco. The rest of SEDEMA’s work concentrates on other spheres of the environmental agenda.

SEDEMA’s Program for the protection of maize focuses mainly on the recovery of traditional multicropping systems like *milpa*, and monitoring fields for maize and *teocintle* conservation and GMO detection. PROFACE includes a support line for the promotion of agroecology and agrobiodiversity protection. The study undertaken by Zambrano González *et al.* (2012) for the restoration of the lake system in Xochimilco has enabled the identification of numerous opportunities for future work in biodiversity and agrobiodiversity protection in aquatic habitats.

Apart from these programs, the department still sees agriculture as a driver of pollution, land degradation, and biodiversity loss, except if it is practiced as “urban agriculture” in pots and green roofs. Interestingly, farming and agricultural production account for 2,102 tons of particles PM10 in the Metropolitan Area of the Valley of Mexico (SEDEMA, 2013). Taking into account land use change from forest into agriculture, emissions from agricultural activities account for 31% of the total emissions of the city; if it is not, however, they constitute only 1% (COPLADEM, 2011). This may imply that unplanned unsustainable agriculture has been a driver for deforestation in the past; reversing this trend could be a means for changing this understanding.

One hypothesis for the lack of food sovereignty discourses at the national level, despite social claims and local governments’ views, might be constraints due to bilateral or multilateral trade and investment agreements such as the North American Free Trade Agreement. Food sovereignty is often seen as an excuse for protectionism and trade exclusion, and international pressures to prevent this model from expanding are growing.

In Ecuador, as analyzed by Peña (2013), the points dealt with in the supplementary laws showcase a change in the legal approach to food politics, as *v.gr.* providing farmers with credit access, subsidies, and technical assistance to help them transition to agroecological practices. At the national level, agrobiodiversity protection is framed under the food sovereignty regime through the promotion of agroecological practices, and the protection of peasant seeds and traditional knowledge. In fact, the transformation of the framework into a food sovereignty one has led to the conception that implementation of rights also depends on other lower levels of government as well as local communities.

The creation of solidarity networks such as CES has been a primary focus of the government of President Correa. Despite criticisms (Clark, 2013; Andino, 2013; Giunta, 2013), the increase of social participation in the design of public policies is apparent. Moreover, as Clark (2013) noted, although communitarian structures – necessary to the realization of food sovereignty – are difficult to scale up, collaborations with local governments may bring about policies more in line with food sovereignty principles: local governments’ support could be behind the significant expansion of agroecological farmer’s markets in Ecuador. In this sense, he suggests, spaces of state-society synergy for the implementation of food sovereignty are primarily at the local level.

Indeed, the new food sovereignty framework has provided the local level with new powers. COOTAD and LORSA include many of those new powers, concretized, in

the case of agrobiodiversity protection, in LOASFA. In this sense, agrobiodiversity protection and enhancement must now be mainstreamed in GADs' agendas.

In Quito Metropolitan District, unlike Mexico DF, the local government is the one to issue plans including those dealing with agrobiodiversity protection: indirectly PMOT and PUOS, and direct protection via SMANP.

PUOS, when specifying the category of rural land, provides special protection for certain classifications of land. Most importantly, it includes agricultural interest as one of the factors triggering this designation. PMOT, on the other hand, recognizes *Buen Vivir* and food sovereignty in rural areas involve policies of redistribution and sustainability. It establishes four kinds of treatment for rural areas, as well as spaces with ecosystem value in urban areas. Among these, the category of "Natural Resources' Sustainable Areas" hosts strategies for food sovereignty. In this sense, agrobiodiversity is indirectly reflected in the local agenda.

Unlike Mexico DF, these plans do not aim at protecting specific varieties or characteristics of the agroecosystems. Instead, protection is provided to *practices* and/or *land*, which implies protecting farmers and their land.

SMANP incorporates the classification of areas for sustainable farming or agroforestry areas. These include areas for low-impact, sustainable agriculture, which supports agrobiodiversity, and local ecosystem conservation through appropriate and safe technologies. By providing protection to these ecosystems, it also protects agrobiodiversity.

However, Quito Metropolitan District can also be held responsible for creating "empty rights", such as the "right of the population to live in a healthy and ecologically balanced environment". Unlike Mexico, however, the rights of Nature are embodied in the Constitution (articles 71-74), which entails a special protection by national instances, triggering justiciability.

VI. CONCLUSIONS

This study has shown that designing institutional food governance frameworks that address environmental concerns can play a major role in protecting agrobiodiversity at the local level. The necessary policies that may help preserve the environment without the expense of increasing food insecurity can be achieved with the right interplay between food governance and environmental regulations, especially those targeting agrobiodiversity. As such, understanding the need for a diverse environment, including agrobiodiversity protection, in producing adequate food for all is crucial in an evermore-urbanized world. As democratically elected representatives, local governments must take the lead in the protection of local varieties in order to adapt land, population, and ecosystem changes.

1. THE ROLE OF LOCAL GOVERNANCE IN AGROBIODIVERSITY PROTECTION

In the construction of new ruralities and new urbanities, local governments can, to a certain extent, decide the way institutional food governance frameworks affect their environmental agendas. As representatives in direct contact with their representees, more so than national governments, their understanding of local realities might differ from that of higher levels. This is so both in terms of social and environmental realities.

A possible means for institutional local protection of agrobiodiversity is to provide public economic support in order to preserve specific (endangered) local varieties. This may involve awarding grants to local farmers for the conservation of certain species and/or varieties, as shown in the case of Mexico DF. The inclusion of scientific accurate terminology is crucial for correctly measuring the effects of the grant in agrobiodiversity protection. This is so both in terms of richness' terms (which agrobiodiversity will be protected?) as well as chronological terms (i.e. providing timeframes for agrobiodiversity monitoring). This implies the provision of monitoring and evaluation frameworks to monitor progress and evaluate results, integrating agrobiodiversity measurements and specific timescales.

Another option is to include agrobiodiversity protection in different land use programs, such as special designations for land (land conservation, protected natural areas), aquatic habitats, or special programs for urban agriculture. This option would also require a sensible monitoring and evaluation plan. This assessment, however, becomes more cumbersome because the goal of those programs is rarely agrobiodiversity *per se*. Agrobiodiversity is rather included for functional purposes for soil conservation, reforestation, water restoration, dietary supplement, or income generation. For this reason, agrobiodiversity protection becomes a means for achieving those other goals, rather than a goal itself.

A third option would be understanding agriculture in its traditional sense, i.e. as a human traditional practice aimed at producing food and fiber within a sustainable agroecosystem. In areas where urban limits become unclear, local governments tend to be afraid of agriculture: it can be a source of environmental problems, outcome of rounds of modern agro-technological fixes ([Altieri & Nicholls, 2004](#)). As a result, local governments tend to protect it for exclusively production purposes, thus undermining the potential of agroecosystems to become unique remnants of urban biodiversity, among other capabilities. However, institutional food governance frameworks can be designed to support an understanding of agroecosystems seeking diversification and revitalization of medium and small farms. In this sense, food sovereignty or food security approaches have an effect on the way agrobiodiversity is framed by local governments, but as explained in the Chapter 3 they are indeed not sufficient.

2. THE RELATIONSHIP BETWEEN INSTITUTIONALIZED FOOD SOVEREIGNTY OR FOOD SECURITY AND AGROBIODIVERSITY PROTECTION

Food sovereignty or food security frameworks bring about a number of consequences in the way local governments design their agendas. Proof of this are the changes in the treatment of food and agricultural systems in Quito Metropolitan District municipal agenda prior to and after the constitutional reform in Ecuador. Proof of it are also the numerous debates and social movements for food sovereignty in Mexico DF and the rest of Mexico.⁹⁵

Indeed, framing legislation under a food sovereignty approach pushes sub-national governments to ensure food security *and* agrobiodiversity protection through the promotion of sustainable agriculture. It also addresses other aspects such as the promotion of agroecological practices and the protection of native seed and traditional knowledge. This conception highlights the intrinsic connection between humans and agricultural practices and traditions.

Actually, protecting agrobiodiversity constitutes a manifestation of food sovereignty ([Isakson, 2009](#); [De Frece & Poole, 2008](#); [Wittman, 2009](#); [Altieri et al., 2012](#); [Cockburn, 2013](#)). As Gibson-Graham ([2006](#)) notes, in some cases the term is not employed as such, but agricultural practices may reveal it is in fact a manifestation of food sovereignty. Traditional agricultural practices, for instance, often include multiple species management ([Berkes et al., 2000](#)), resulting in soil fertility improvement and crop protection ([Altieri & Nicholls, 2004](#)).

⁹⁵ Not studied here although of great importance is the social movement *Sin Maíz no Hay País*, which campaigns for food sovereignty.

Food sovereignty introduces a systems approach to the interfaces between food and the environment, considering both ecological and cultural aspects. Opposite to narrowing down the linkages under the umbrella of one of the four food security dimensions, food sovereignty stresses the need for introducing other aspects in addition to production or nutrition (often narrowed again as micronutrition).⁹⁶ While these dimensions are fundamental, holistic approaches such as food sovereignty consider the full spectrum of interfaces, including agrobiodiversity protection as a major component.

In fact, food sovereignty understands rights as collective and decentralized “with implementation depending not just on [S]tates, but also on communities, peoples, and international bodies” ([Desmarais and Wittman, 2013](#)). This view goes beyond purely top-down approaches, where participatory processes have no room. By allowing people to conserve their resources and preserve their traditions, legal frameworks can involve communities and peoples in the implementation of decentralization of rights. In fact, enhancing *in situ* conservation of agrobiodiversity through participatory efforts can help realize environmental sustainability ([IAASTD, 2009](#)). Participatory processes are also crucial for people to opine and decide on the way food is produced. In this sense, democratic participation and food sovereignty are immediately linked.

On the other hand, food security frameworks tend to lead to policies restricted to food production and dietary conditions, usually translated into social compensation programs instead of aiming at a structural change of agrarian and food systems. In fact, food security does not relate food with agrarian systems at all, and this undermines the potential of local governments to protect both in a comprehensive way. Instead, they are forced to address them separately, mostly via handout-type programs.

Food security frameworks might establish that civil society will have a say on food policies, as does Mexico DF legislation on food security, but they provide no specific mechanisms for this. Declarations of rights by local governments must come with enforcement mechanisms as well, in order to guarantee their effective implementation. The challenge therefore lays in monitoring and ensuring long-term verifiable results, but also in avoiding useless mentions to “rights” that can be instrumentalized in the long term, as explained in the case of Mexico DF.

In reality, supra-local frameworks matter for the way local discourses are structured, but they are not crucial in the construction of equitable and sustainable food systems. This is so because rights have never been granted from above, but rather fought for and built from below. Sub-national institutions play a major role in

⁹⁶ Vid. for instance Steyn *et al.*, (2006) for a use of food variety and dietary diversity scores in children as indicators of dietary adequacy, measured as the mean adequacy ratio (MAR) used as a composite indicator for micronutrient adequacy. For a measurement of dietary diversity as the mean micronutrient density adequacy (MMDA) of the diet, and its use as a predictor of the micronutrient density of children’s diet, see [Moursi et al., 2008](#).

promoting policies and innovative institutions that can enable right-holders feed themselves. Failing this, they are also crucial in implementing ways for right-holders to claim their right to food in national instances. But above all, or rather, their role must be not to hobble consistent popular demands.

3. IMPLICATIONS OF FOOD SECURITY AND FOOD SOVEREIGNTY APPROACHES FOR AGROBIODIVERSITY PROTECTION

In the city, a renascent agriculture is taking a three-folded sociopolitical character, as a result of complex changes involved in the interactions between food governance and agrobiodiversity.

Agriculture in the city is first of all a claim for independence from external inferences. In this sense, it is no coincidence that social movements demand food sovereignty, while higher instances still impose paternalistic frameworks. Agrobiodiversity is thus configured as a part of that claim, especially for restoring nationhood in a globalized context ([Rodríguez-Gómez, 2013](#)). Within a food sovereignty context, it helps configuring a sense of community, non-existent in the productivity-aimed framework of food security. It is part of the struggle for independence from external actors, and of solidarity movements with rural areas at the same time. In this context, the dichotomy between urban and rural does exist, as population living in each area is entitled to different series of rights: limits between rural and urban *areas* are blurred, but limits between rural and urban *people* still exist.

The apparent neutrality of the expansive development cities undergo masks in reality the conflict inherent to capitalism and its reproductive processes. Although in practice the expansion of cities blurs rural-urban – and even megaurban-microunban – borders, neutral analyses of the historical rural-urban dichotomy have not helped solve inequalities. In fact, these analyses have helped conceal the realities of millions of people now categorized as “urban poor”, be that due to rural exodus or to urban absorption. Understanding geographical processes must not disguise the practical implications of human categories made by a few for the survival of many. Configured this way, protecting agrobiodiversity within agroecosystems included in urban areas can help cease with the conception of the city as parasitical, and transform it into a supportive and collaborative space for rural emancipating processes.

Agriculture in the city is also gaining popularity due to the progressive loss of community spaces, which used to be institutionally organized: from squares, neighborhood Churches, and local markets, to distant shopping malls, to nothing. Equitably distributing sociocultural uses of public space for producing and reproducing individual and collective memory guarantees the protection of traditions. In the way agrobiodiversity is part of local traditions – at the intersection between food and the environment – protecting it brings back a sense of locality that few other elements can.

Establishing food sovereignty appears as the only means for achieving this, as food security is not concerned with community-building.

In cities, agriculture may also involve the recovery of traditional knowledge, as a sort of rural reminiscence. Skills provided by rationalistic teaching structures have led to individual employability, as opposed to the construction of sustainable development models in a collective way. In this sense, agriculture can provide an answer to the individualization of industrial societies through the recomunitarization of urban spaces. As such, agrobiodiversity protection may provide with a strong linguistic tool, by enabling the reconceptualization of top-down food security approaches within the capitalistic development model, into a food sovereignty system constructed from below. In fact, this reconceptualization also transforms a number of relations: economic relations, as CES have shown; State-citizens relations, as empowering vs. handout programs prove, and human-nature relations, as sustainability vs. productivity-aimed goals evidence.

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