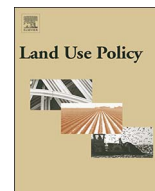




Contents lists available at ScienceDirect

## Land Use Policy

journal homepage: [www.elsevier.com/locate/landusepol](http://www.elsevier.com/locate/landusepol)

# Social perception of urban agriculture in Latin-America. A case study in Mexican social housing

Ana Nadal<sup>a,\*</sup>, Ileana Cerón-Palma<sup>b</sup>, Carmen García-Gómez<sup>c</sup>, María Pérez-Sánchez<sup>d</sup>,  
Beatriz Rodríguez-Labajos<sup>e</sup>, Eva Cuerva<sup>f</sup>, Alejandro Josa<sup>g,h</sup>, Joan Rieradevall<sup>a,i</sup>

<sup>a</sup> Sostenipra Research Group (ICTA-IRTA-Inèdit; 2014 SGR 1412), Institute of Environmental Sciences and Technology (ICTA; Unidad de excelencia «María de Maeztu» (MDM-2015-0552)), Z Building, Universitat Autònoma de Barcelona (UAB), Campus UAB, 08193 Bellaterra, Barcelona, Spain

<sup>b</sup> Inèdit ecoinnovación e investigación ambiental S de RL de CV, Department of Ecoinnovation, Innovation and Digital Fabrication Hub (The HubLab), Merida, Yucatan, Mexico

<sup>c</sup> Department of Anthropology Sciences, Autonomous University of Yucatan (UADY), km 1, Mérida-Tizimín Highway, Cholul, 97305 Mérida, Yucatán, Mexico

<sup>d</sup> Department of Engineering, Autonomous University of Yucatan (UADY), Avenue Industrias no contaminantes s/n x Periférico norte, 150, Mérida, Yucatán, Mexico

<sup>e</sup> Institute of Environmental Sciences and Technology (ICTA; Unidad de excelencia «María de Maeztu» (MDM-2015-0552)), Z Building, Universitat Autònoma de Barcelona (UAB), Campus UAB, 08193 Bellaterra, Barcelona, Spain

<sup>f</sup> Department of Projects and Construction Engineering (DEPC), Universitat Politècnica de Catalunya, BarcelonaTech, Diagonal 647, Ed. H, 08028, Barcelona, Spain

<sup>g</sup> Department of Civil and Environmental Engineering (DECA), Universitat Politècnica de Catalunya (UPC-BarcelonaTech), Campus Nord, C/Jordi Girona 1–3, 08034 Barcelona, Spain

<sup>h</sup> Institute for Sustainability Science and Technology (IS.UPC), Universitat Politècnica de Catalunya (UPC-BarcelonaTech), Campus Nord, C/Jordi Girona 31, 08034 Barcelona, Spain

<sup>i</sup> Department of Chemical, Biological and Environmental Engineering, Universitat Autònoma de Barcelona (UAB), Campus UAB, 08193 Bellaterra, Barcelona, Spain

## ARTICLE INFO

## Keywords:

Food security  
Green rooftop  
Stakeholders survey  
Urban planning  
Mérida  
Yucatán

## ABSTRACT

Food security is at the heart of governmental agendas of developing countries. In Latin America, urban agriculture (UA) offers an interesting alternative to ensuring a sufficient, safe and nutritious food supply for urban populations. However, Latin American cities have been subject to radical transformations in the last decades, most apparently through the expansion of social housing. The main objective of this research is to analyze the social perceptions and feasibility of UA in Mexican social housing neighborhoods.

The Mérida city was used as a representative case study. Structured interviews were given to 65 key stakeholders across different categories (residents, urban government officials and technical experts). The results indicate a nonexistent perception of UA in Mérida, despite the secular agricultural tradition of the Yucatan region. Nevertheless, respondents agreed in their interest in potentially developing UA activities to improve diets, increase green areas, support local economies, and reduce CO<sub>2</sub> emissions. The main perceived barriers for UA are the prevalent model of housing, with a very limited floor area, and the current approach to urban planning, which lacks non-built-up areas. Significantly, large artificialized zones create suitable areas to implement UA on extended rooftops.

Finally, stakeholders demand the intervention of authorities at different levels (Federal [national], State [regional] and local) as a requirement to develop UA properly. The main pathways for this support should be to prepare new urban and housing policies and introduce economic incentives.

## 1. Introduction

More than 50% of the world population lives in urban settings (United Nations, 2014). Urban food security in growing cities,

especially in developing economies coping with rising food prices, is dependent on food supplies from rural areas (Wadel et al., 2010). In fact, many urban residents face difficulties accessing the food they need (FAO, 2014) due to both physical and economic limitations. Long-

**Abbreviations:** DIF, System for Integral Family Development of Mexico; ECLAC, Economic Commission for Latin America and the Caribbean; FAO, Food and Agricultural Organization; LAC, Latin America and the Caribbean; RTG, rooftop greenhouse; SAGARPA, Secretary of Agriculture, Livestock, Rural Development, Fisheries and Food of Mexico; SEDESOL, Social Development Secretary of Mexico; SEMARNAT, Secretary of Environment and Natural Resources of Mexico; UA, urban agriculture; UN, United Nations

\* Corresponding author at: Edifici ICTA-ICP, Carrer de les Columnes, 08193 Bellaterra, Barcelona, Spain.

E-mail addresses: [ana.nadal@uab.cat](mailto:ana.nadal@uab.cat) (A. Nadal), [ileana@hublab.com.mx](mailto:ileana@hublab.com.mx) (I. Cerón-Palma), [ggomez@correo.uady.mx](mailto:ggomez@correo.uady.mx) (C. García-Gómez), [sperez@correo.uady.mx](mailto:sperez@correo.uady.mx) (M. Pérez-Sánchez), [beatriz.rodriguez@uab.cat](mailto:beatriz.rodriguez@uab.cat) (B. Rodríguez-Labajos), [eva.cuerva@upc.edu](mailto:eva.cuerva@upc.edu) (E. Cuerva), [alejandro.josa@upc.edu](mailto:alejandro.josa@upc.edu) (A. Josa), [Joan.Rieradevall@uab.cat](mailto:Joan.Rieradevall@uab.cat) (J. Rieradevall).

<https://doi.org/10.1016/j.landusepol.2018.02.055>

Received 31 January 2017; Received in revised form 5 September 2017; Accepted 27 February 2018  
0264-8377/ © 2018 Elsevier Ltd. All rights reserved.

distance transportation between agricultural areas and urban markets lead to 10–30% losses in product. Food prices and household income are major constraints (FAO et al., 2015). In Latin America and the Caribbean (LAC), poor urban households spend 60–85% of their income on food (Ilbery, 2010; Mougeot, 2005). The poor in developing countries suffer a more significant relative welfare impact of changing food prices or decreasing income than poor people in developed countries (Prakash, 2011).

In face of this situation, urban agriculture (UA) offers innovative solutions to safeguard the environment and economic sustainability of food supplies within urban settings and encourage healthier diets (Nadal et al., 2017). While UA in developing countries is a historical reality (Dubbeling et al., 2010; Renting, 2013), it has been poorly analyzed, particularly in regards to social perceptions, opportunities and barriers (De Bon et al., 2010; Orsini et al., 2013; Poulsen et al., 2015; Ruel et al., 1998; Warren et al., 2015). As described below in further detail, no studies analyze the relationship between UA and the city development in the context of Latin America's rapid urban transformations. Therefore, a better understanding of UA, its perception among public and private actors and its potential for further development is urgent.

With this in mind, this paper examines the social perception of UA in a Mexican “social housing” neighborhood in Mérida, Yucatán, as an example of the typology of housing built throughout the country. Our aim is to identify and understand the relationship between the role of UA in Mexican social housing neighborhoods and stakeholder perceptions about current and future UA developments. Two intertwined specific objectives guide the study. The first one is to expose the perceptions and motivations for UA, as well as the barriers, benefits and relationships that urban agriculture presents in built environments. The second one is to identify the main trends in feeding and logistics and health related to vegetable consumption.

Four social housing neighborhoods of Mérida (Yucatán, México) were chosen as representative cases of Mexican urban developments during the last ten years, using criteria such as location, housing typology, urban plan and neighborhood design, and year of construction. We combine quantitative and qualitative research methods involving different stakeholder groups that have the greater potential to be involved in UA developments.

After this introduction, a background section outlines the state of UA, particularly in Latin American and Mexican contexts. After that, the study area and the quantitative and qualitative methodology used in the study are presented, followed by the results and discussion. In the conclusions we present future perspectives regarding the social perception of UA in the scope of analysis.

### 1.1. Background. Urban agriculture and changing Mexican cities

UA comprises growing food plants and raising livestock within and around cities (FAO, 2011). The variety of UA forms can be classified in various ways, depending on its actors, purpose, land use, scale, location, property, technology, and production system (Fig. 1). UA is easily adaptable to built environments, through different typologies (such as green walls, urban orchards, green roofs, rooftop greenhouses, facades, balconies, backyards, basements), scales, orientations and purposes (Nadal et al., 2015).

The multiple benefits of UA are clearly related to gains in food provision—e.g., by tackling food production constraints; providing direct access to of nutritionally richer and more varied diets according to local culture and food preferences; increasing the stability of household food consumption (Armar-Klemesu, 2000; FAO, 2011; Zezza and Tasciotti, 2010)—but not restricted to them. UA also contributes to improve individual and collective health (Gockowski et al., 2003; Smith and Eyzaguirre, 2007), to enhance social cohesion (FAO, 2016; Sanyé-Mengual et al., 2016), and to promote environmental education (FAO, 2005; Mezzetti et al., 2010; Smit and Bailkey, 2006), among other

social and economic benefits that exploit the multi-functionality of urban areas (Arosemena, 2012; Aubry et al., 2012; Zasada, 2011).

The increased interest worldwide in self-growing vegetables is therefore understandable, with 25–30% of urban dwellers are involved in the agri-food sector (Orsini et al., 2013). Yet research and information regarding the role of UA in developing countries are limited (Orsini et al., 2013; Poulsen et al., 2015; Warren et al., 2015).

This is particularly true for the case of Latin America where, during the past thirty years, the tendency toward the segregation and division of diffuse urban structures has formed the so-called “cities of islands” or “urban archipelagos”. Some classic characteristics of Latin cities are there combined with four new types of areas: *islands of wealth* (gated communities for the upper and middle classes), *islands of production* (industrial production in suburban areas located in peripheral industrial parks), *islands of consumption* (construction of numerous malls) and *islands of precariousness* (social housing neighborhoods and informal settlements located on the edge of the city) (Janoschka and Glasze, 2003). Besides eroding social cohesion and leading to increased instability and insecurity, this new configuration of the city has important implications in terms of constraining the potential for UA.

In Mexico, this structure is clearly linked to the current housing policy by the Federal Government, encompassing social housing for lower-income populations usually located on the city outskirts. The target buyers are workers with individual or family income of 1–3.9 times the monthly minimum wage (mmw) in Mexico City. The three types of social housing are: *economical* (with a cost of up to 118 times mmw), *popular* (from 118.1 to 200 mmw) and *traditional* (from 201 to 350 mmw). The main difference between these types is the size of the dwelling in square meters (m<sup>2</sup>) (Cerón-Palma et al., 2013; SHF, 2015). But, social housing have extended over areas previously used for agriculture (Galindo et al., 2004).

The residents are frequently dissatisfied with housing characteristics. In 2014 the ‘Satisfaction index of Mexican housing’ and the ‘Satisfaction index of complex housing and Mexican cities’ were both unfavorable (SHF, 2015). The discontent refers to either physical, spatial, functional and environmental characteristics of the housing itself or its location, as well as the perception, equipment and services in the housing complex and the city.

As a result, the residents tend to remodel and extend their homes to fit their needs. The original or basic social housing model typologies undergo an architectural transformation that, based on the literature (García-Huidobro et al., 2011) and own observations, typically includes the three stages:

- Establishment: minor modifications to ensure the safety of the property and confer individuality;
- Densification: the family incorporates new spaces (e.g., bedrooms and bathrooms) as it grows, demanding strong constructive effort that is self-engineered and self-funded;
- Consolidation and diversification: the house becomes a conglomerate of aggregate functions and social values.

From the construction perspective, these changes occur progressively along four steps (Fig. 2). The first one is the original configuration, without any modification or change. The second one is the construction of a front or backyard annex. This is usually a two-car garage that covers the entire facade of the house and means the loss of space from the front garden. This annex involves the construction of a roof. A backyard annex usually consists of the construction of a new bedroom and/or porch. The covered area of the house increases and limits the backyard space. This annex involves the construction of a roof. In the third stage, the house has a bedroom and a porch built in the backyard, which further limits the free space on the ground. The fourth stage involves the construction of spaces on the second level of the house, and very rarely on three or more levels. The last two steps of this process result in the initial available land area of the house (104 m<sup>2</sup>) shrinking

Download English Version:

<https://daneshyari.com/en/article/6546323>

Download Persian Version:

<https://daneshyari.com/article/6546323>

[Daneshyari.com](https://daneshyari.com)