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REVIEW ARTICLE

Assessing motivations and perceptions of stakeholders in urban agriculture: a review and analytical framework

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ABSTRACT

Interest in the adoption of urban agriculture (UA) has grown in recent years. The compatibility of UA with the urban social context, in particular with urban stakeholders' attitudes, is crucial for its successful implementation and represents one of the key factors influencing its development. To this end, a literature review on different approaches to analysing stakeholders' and farmers' perceptions of UA is performed. The paper identifies the main approaches to assessing these aspects and designs an integrated framework to support the development of context-tailored analytical approaches for UA drivers' and stakeholder perceptions. The study aims to address and solve potential conflicts between UA practitioners and urban stakeholders and adapt the implementation of UA to contextual factors. This increases the possibility of developing successful UA strategies that meet the challenges currently facing urban food systems.

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Stakeholder analysis; social acceptance; urban food systems; analytical approaches; literature review

Introduction

Increasing urbanisation represents one of the main challenges facing local governments and international institutions in the near future. The effects of migration from rural to urban areas are particularly felt by more vulnerable populations in peripheral contexts (Drescher 2004; Gianquinto and Tei 2010). Urban overpopulation involves a series of negative consequences, such as the growth of food insecurity, urban poverty and an increased unemployment rate (Gianquinto et al. 2007; Orsini et al. 2013). The poorest strata of the urban population have limited access to food markets and can spend up 75% of their income on food provision without achieving sufficient food quality or quantity (Drescher 2004). Additional urban food system challenges derive from limited access to fresh food and healthy diets, resulting in obesity and other health problems (Shaw 2006).

Food provision systems such as urban agriculture (UA) can contribute to fostering independence from mainstream food markets through self-production, direct consumption and alternative markets, consequently increasing communities' resilience and access to healthy food (Mougeot 2000; Deelstra and Girardet 2000). UA has been defined as an activity that

> grows or raises, processes and distributes a diversity of food and nonfood products, (re)using largely human and material resources [. . .] found in and around that urban area, and in turn supplying human and material resources, products and services largely to that urban area. (Mougeot 2000, p. 11)

This broad definition integrates diverse types of UA. There is still a certain level of ambiguity regarding the different UA models. Several scholars have attempted to refine that definition and to develop a more specific UA taxonomy. One of the most commonly used classifications was developed by Simon-Rojo et al. (2016), whose definition divides UA activities into several groups based on their main functions *(ibidem)*. Vegetable gardens, or Backyard Gardens, managed by a household and generally used for self-consumption,

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are one of the first types of UA activities. Another widespread UA type is community gardens, which are bottom-up initiatives that are communally-managed. Allotment gardens are another relevant UA model. These initiatives usually originate from local governments involving specific population categories such as pensioners or low-income residents. Another type of UA is represented by its proximity to the urban area. Institutional gardens are another category, implemented in public institutions such as schools and universities, whose main objectives are educational. Finally, several farming models are emerging in peri-urban areas whose main objective is preserving and transmitting 'cultural heritage related to agricultural practices and landscape' (Simon-Rojo et al. 2016, p. 27).

The literature suggests that, owing to its multiple functions, UA positively affects different aspects of urban sustainability (Vásquez-Moreno and Córdova 2013; Deelstra and Girardet 2000, Specht et al., 2018). UA contributes 'to circular metabolism of nutrients and water in the cities' and supports a series of environmental benefits related to the creation of urban green spaces (Vásquez-Moreno and Córdova 2013, p. 207–208). UA plays a role in mitigating local air pollution as well as in filtrating rainwater and reducing the overall metabolic impact of the urban food supply (McClintock 2010). UA also contributes to reducing greenhouse gas emissions related to food transportation and increases local biodiversity (Deelstra and Girardet 2000; Camps-Calvet et al. 2016).

From an economic point of view, market-oriented UA can be considered an income-generating activity (Jacobi et al. 2000; Drescher 2004; Orsini et al. 2008). Further benefits are directly related to UA spatial proximity to urban centres. Economic advantages can potentially derive from a reduction in transportation, stocking and transformation costs due to the proximity between production sites and markets (Deelstra and Girardet 2000; Mougeot 2000). Furthermore, the spatial proximity to urban centres provides an opportunity to diversify services related to food production (Von Thünen 1966; Pölling et al. 2016). UA activities can offer different services not exclusively related to food production, such as leisure, education, and tourism (Simon-Rojo et al. 2016). UA contributes to social sustainability by increasing food security and supporting social inclusion, gender equity and community building (Vásquez-Moreno and Córdova 2013; Specht et al. 2017). Finally, the literature shows that UA can address specific aspects of sustainability according to the drivers and goals motivating the activities (Sanyé-Mengual et al. 2019). This makes UA a context-related activity that can respond to specific territorial demands and issues (Specht et al. 2017).

Despite the positive effects of UA on urban communities and environments, some critical points should be considered by policymakers and stakeholders when implementing UA.

The literature shows that UA can be responsible for health issues related to bad management of organic waste, which may cause the proliferation of insects responsible for tropical diseases (Hamilton et al. 2014). Further risks are connected with the inappropriate use of pesticides and consequent risks for water and environmental contamination (Mok et al. 2014).

Furthermore, UA can enhance existing social inequities (Horst et al. 2017; Specht et al. 2017). Limiting access to UA to a specific area or part of the population can contribute to 'reinforce[ing] and deepen[ing] societal inequities by benefitting better-resourced organizations and the propertied class', thus encouraging disadvantaged group marginalisation (Horst et al. 2017, p. 277). As with other 'green infrastructures', UA activities can lead to an increase in neighbourhoods' living costs in terms of rent and housing prices. Consequently, existing lower-income residents are forced to move due to living cost increases and neighbourhood sociocultural transformations (Anguelovski 2015).

Other critical situations derive from a lack of awareness, political guidelines and collective organisation, which can lead to undesirable conflicts between local authorities and UA organisations for the management of abandoned spaces that, in the worst case, can result in the termination of UA initiatives (Anguelovski 2015; Calvet-Mir et al. 2016).

UA faces different challenges due to its complex interactions with environmental, social and economic contexts; therefore, diverse stakeholders are involved in UA development. An understanding of how UA stakeholders interact and influence UA development is needed. The literature suggests that UA activities are managed mainly through the interaction of stakeholders from three major groups (Prové et al. 2016):

(1) Government: This category includes local, national and international levels as well as

government-led organisations and educational institutions.

(2) Civil society: In this category, stakeholders often correspond to those directly involved in UA and include individuals, volunteers, NGOs and environmental educational associations.

(3) Market: This category of stakeholders is relevant for profit-oriented UA activities and includes distributors, entrepreneurs and consumers.

UA governance models

The stakeholders involved in urban agriculture act on three levels of governance, as reported in Figure 1 (Prové et al. 2016). The first level is defined by the specific internal governance model. Horizontal governance (shared responsibility) is typical for community gardens and bottom-up initiatives, whereas hierarchical governance (centralised responsibility) can be observed in entrepreneurial initiatives (Prové et al. 2016). The main factors influencing internal governance are usually UA practitioners' motivations and objectives. However, in most cases, urban gardeners' activities depend on resources (e.g. knowledge, funds, land access, tools, seed) that are often owned or managed by external stakeholders such as policymakers and urban planners. This implies the necessity of better understanding and managing the relationship between policymakers and other stakeholders to better harmonise their interests (*ibidem*).

The second level concerns external partnerships between UA activities and representatives of government, civil society and the market. According to the type of relationships between UA and government, society and market actors, a range of UA types can be identified from full top-down UA, where the only stakeholder related to the activity is the local government, to full bottom-up UA, where civil society is the main influencing actor (Prové et al. 2016bb).

The third level regards the urban context characteristics influencing the diffusion of UA, such as the political and economic situation. The urban context also includes all drivers not directly related to UA that define various UA types and influence the partnerships between UA practitioners and other stakeholders. It also includes the political context and legal and spatial issues (Prové et al. 2016).

Since UA is a context-related and multisectorial activity, its effective management requires a multistakeholder approach to achieve good levels of engagement and participation among all the

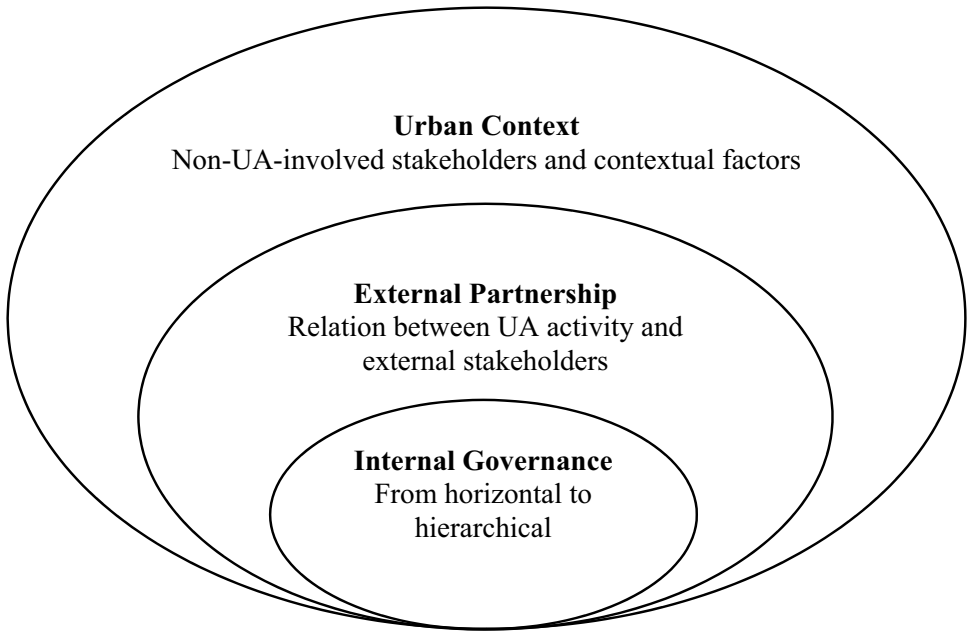

Figure 1. UA governance levels according to (Prové et al. 2016).

stakeholders involved (Cabannes and Marocchino 2018). The effectiveness of UA policies is made more likely by adopting strategies to 'address the needs and priorities' of the different actors (Dubbeling and Merzthal 2006). The more frequently adopted analytical approaches that address these needs and priorities focus on motivations for participating in UA (Dubbeling and Merzthal 2006). Different case studies show that participation in UA is motivated by several factors, such as food security, environmental protection, or political fulfilment (Mougeot 2000; Calvet-Mir et al. 2016). Several theoretical frameworks and analytical approaches have been developed to study these motivations. Some authors consider the existence of a geographical continuum along which different types of motivations can be located, from more individual motivations, such as food provision, to more general motivations that link UA to the 'global environment and economies' (Calvet-Mir et al. 2016: 338; Zoll et al. 2017).

Research gap and objectives

The literature analysing the motivations for and perceived benefits of participating in UA focuses mainly on the perceptions of UA participants (Calvet-Mir et al. 2016; Camps-Calvet et al. 2016). Studies on the 'multistakeholder' approach and its role in increasing engagement in UA policies are still lacking (Dubbeling and Merzthal 2006; Cabannes and Marocchino 2018), as is an analytical framework considering the roles and perceptions of different actors involved in UA. Therefore, an integration of analyses of drivers and motivations with stakeholders' perceptions of UA activities is needed.

To this end, this paper performs a literature review on UA that aims to do as follows:

- Identify the main findings and analytical approaches used to assess drivers and motivations for UA.
- Identify the main findings and analytical approaches used to assess stakeholders' perceptions and major categories of acceptance factors in UA.
- Develop a comprehensive analytical framework that represents a toolkit that will enable policymakers and researchers to assess motivations and perceptions of stakeholders in UA.

Methods

A literature review was performed that focused on the assessment of the literature dealing with the main motivations associated with UA participation and perceptions of UA among different stakeholders. The method used for the literature review was based on the PRISMA statement and followed a four-step research path (Liberati et al. 2009; Warren et al. 2015). The literature research was performed on the following web platforms and databases: Academia, Google Scholar, ResearchGate, Scopus and Web of Science. The literature also included bachelor's, master's and PhD theses. Papers were searched for the entire timeline without the exclusion of any dates. The keywords used in the database search were 'urban agriculture' combined with the words 'motivations' or 'drivers' and 'stakeholders' perception' or 'stakeholders' acceptance'. Keyword filters were then applied to focus on urban areas and the exact keyword 'urban agriculture'. Further articles were added following suggestions from platforms such as Academia and ResearchGate. Based on these selection criteria, 6,241 articles were found, as reported in Figure 2.

Focusing on articles specifically mentioning UA led to the exclusion of 5,998 articles. Among the remaining 243 abstracts screened, 72 cited UA motivations and stakeholder perceptions. The screening of the 72 articles led to 22 articles being excluded since they did not focus on motivation or perception or were repetitive or redundant. The remaining 50 articles were integrated, with three articles added based on web platform suggestions (Kingsley et al. 2019; Mourão et al. 2019; Ramalingam et al. 2019) and one was added through the snowball sampling technique (Da Silva et al. 2016). Additional articles were suggested by other scholars during the literature research process (Cook et al. 2015; Delgado 2018; Sanyé-Mengual et al. 2018b; Diehl 2020). The resulting 58 selected articles were organised as follows: 36 articles specifically focused on participants' motivations, while the remaining 22 focused on UA perceptions of stakeholders not directly involved in UA. The publication dates of the selected articles ranged from 2002 to 2020. The literature research did not exclude any UA

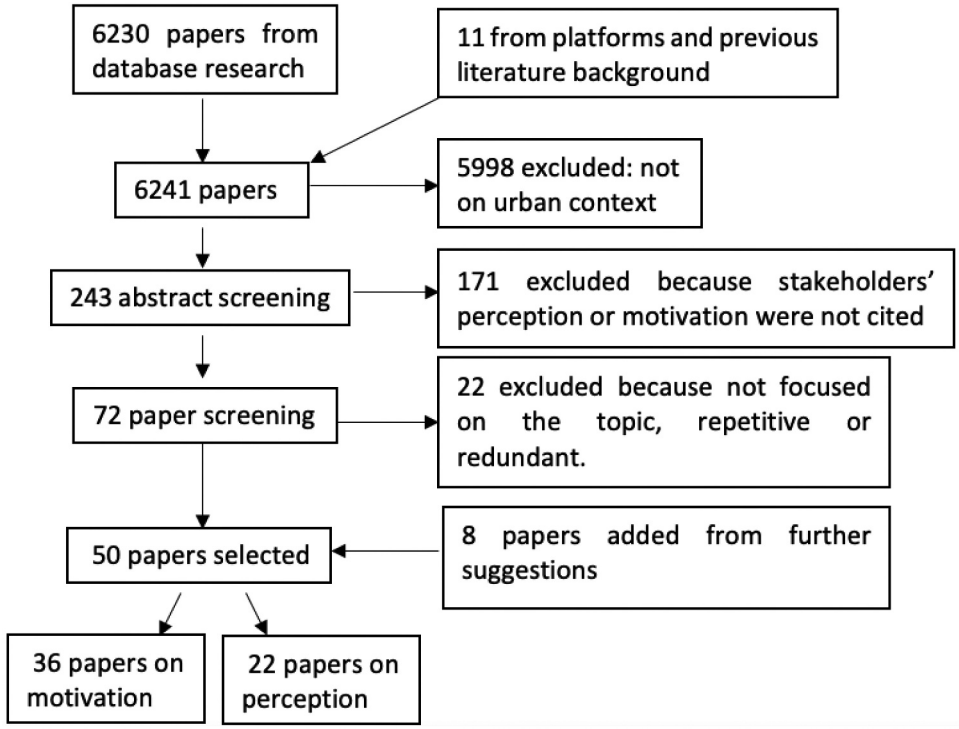

Figure 2. Description of the literature selection process.

type, and the studies were summarised according to the classification of (Simon-Rojo et al. 2016).

The selected articles were then analysed through a content analysis via the web application 'LidyaText', which helped in the extraction of key concepts regarding motivation and stakeholders' perceptions. These articles were analysed in-depth according to their country of provenance, type of UA analysed and analytical research methods adopted.

Results

Literature on motivation

Thirty-three of the 36 articles focusing on motivation refer to case studies, and the remaining three (Poulsen et al., 2015; Draper and Freedman 2010; Trendov 2018) refer to literature reviews. Sixteen studies were located in European cities, 9 in North America, 6 in Sub-Saharan Africa, 4 in Australia and 2 in Malaysia.

The articles presented data from five different types of UA (as defined by Simon-Rojo et al. 2016. The UA types found in the literature review were as follows: i) Backyard/family gardens were considered in 10 articles; ii) Community gardens were assessed in 20 of the 36 articles; iii) Allotment gardens were analysed in 10 articles; iv) Business-oriented activities were considered in four case studies; and v) Institutional vegetable gardens, the last category, were found in four case studies. It is worth mentioning that all the papers analysed more than one type of UA. With the exception of the three literature review articles, different methodological approaches characterised the selected studies. Qualitative methods based on participant observations and semi-structured and in-depth interviews were used in 15 papers. Other articles (14) used quantitative statistical analysis and structural equation models. Finally, a few articles (4) used mixed approaches (see Table 1).

Motivation categories

Several categories of motivation emerged from the literature, some of which partially overlap. The

synthesis of the categories observed mainly in the analysed literature is displayed in Figure 3.

The most frequently assessed motivation is 'psychological and physical health', which is mentioned in 23 of the 36 papers. This category includes all motivations referring to physical and psychological benefits; UA is often considered a good opportunity for physical exercise and a healthy lifestyle, including access to healthier food. Physical exercise is often related to psychological benefits, which are referred to in the studies mainly in terms of stress relief and mental relaxation.

The second most mentioned category of motivation is food security (22 papers). It refers to participation in UA as a way to access food and/or satisfy local food demand. Education, the third most mentioned category (21 papers), refers to the willingness to participate in UA to learn (or teach) how to produce food. Economic reasons, including savings and income generation, were mentioned in 17 articles. This category included both business models related to UA and informal selling of home-grown products. UA as an activity supporting socialisation was mentioned in 16 of 36 studies. In this sense, socialisation refers to an activity supporting social interaction in a 'twofold process that must be viewed from the vantage of the group as well as the individual' (Mortimer and Simmons 1978, p. 422). Food quality, referred to as the willingness to participate in UA not to satisfy the demand for food but as a way to obtain fresh and high-quality food, was mentioned in 15 studies. The same number of articles considered ecology and environment as a category that includes motivations related to environmental issues and ecosystem preservation. Community building was mentioned in 14 papers. In contrast to socialisation, community building expresses the need to create 'a functional spatial unit meeting sustenance needs, which is made of patterned social interaction, developed as a cultural-symbolic unit of collective identity', less linked to individuals' need to socialise and more linked to the need to create a community (Hunter 1975, p. 538). Other motivations found in the literature analysis were a willingness to spend leisure time on UA without any further specific objective (14); family background or farming lifestyle and attitude (12); political commitment (10); community improvements (8), referring to participation in UA in response to community challenges such as crime and waste management; biophilia (8), defined as the willingness of humans to be in contact with nature (Wilson 2017); aesthetic improvements (7) in both the household and the urban context; lack of formal employment (5); and limited access to agricultural land (4).

Differences emerged according to the geographical context (see Figure 3). Political motivations, aesthetics and the need for contact with nature were reported in Europe and North America only. Food security is the main driver in six of the eight papers analysed in Malaysia and Africa. In four out of these eight papers, participants mentioned unemployment, five papers cited economic reasons, three papers cited limited access to land, and three papers cited socialisation and community improvements as driving factors for UA participation.

The literature also shows the existence of different urban farmer profiles based on different motivations (Kettle 2014; Ruggeri et al. 2016). Gardener profiles are defined by their attitudes towards gardening activities and their social status. For example, Kettle (2014) defines practical gardeners as those who are participating for reasons related to 'self-provision, food production and intergenerational connections to UA. Older men and women, from working-class backgrounds, who possess an agrarian habitus' (Kettle 2014, p. 39). The same author defines another type of urban farmer as 'the Idealist Eco-Warrior', who belongs to the 'new middle class investing in allotments in Dublin today. Their motivations are part of wider concerns for the environment and ecological sustainability' (Kettle 2014, p. 43). Some of the analysed studies show that motivations reported by urban farmers are also determined by latent factors, such as cultural background and lifestyle, as well as to exogenous factors, such as economic conditions (Poulsen 2017; Roberts and Shackleton 2018; Trendov 2018).

Literature on stakeholders' perception

The literature on stakeholder perception includes 22 papers that focused on different topics related to UA perceptions, including social acceptance and the compatibility of UA with the social context. The majority of the reviewed articles use qualitative methods, with the exception of Islam and Siwar

Table 1. Types of UA and methods used in the analysed literature on motivation. Number of articles = 36. The majority of the articles analysed several UA types.

	Community Garden	Backyard Garden	Allotment Garden	Business Garden	Institutional	Qualitative	Quantitative	Mixed Methods	Literature Review
North America	Draper and Freedman 2010; McClintock and Simpson 2018; Poulsen et al. 2014; Poulsen et al. 2017; Poulsen 2017; Dobernig and Stagl 2015; McClintock et al. 2016	Conway 2016		McClintock and Simpson 2018; Poulsen et al. 2017; Poulsen 2017; McClintock et al. 2016	Trendov 2018; McClintock and Simpson 2018	Poulsen et al. 2014; Poulsen et al. 2017; Poulsen 2017; Dobernig and Stagl 2015	McClintock and Simpson 2018; McClintock et al. 2016	Conway 2016	Draper and Freedman 2010;
Oceania	Kingsley et al. 2019	Kirkpatrick and Davison 2018			Guitart et al. 2014	Guitart et al. 2014; Zainuddin and Mercer 2014; Kingsley et al. 2019	Kirkpatrick and Davison 2018		
Asia	Ramalingam et al. 2019				Tiraieyari and Krauss 2018		Ramalingam et al. 2019; Tiraieyari and Krauss 2018		
Europe	McVey et al. 2018; Trendov 2018; Calvet-Mir et al. 2016; Camps-Calvet et al. 2016; Langemeyer et al. 2018; Calvet-Mir and March 2019; Scheromm 2015; Gauder et al. 2018; Pourias et al. 2016;; Yap 2019	Trendov 2018; Calvet-Mir et al. 2016; Calvet-Mir et al. 2012; Reyes-García et al. 2012;	Trendov 2018; Calvet-Mir et al. 2016; Camps-Calvet et al. 2016; Langemeyer et al. 2018; Kettle 2014; Ruggeri e al. 2016; Calvet-Mir and March 2019; Pourias et al. 2016; Mourão et al. 2019; Da Silva et al. 2016		Trendov 2018	McVey et al. 2018; Calvet- Mir et al. 2016; Kettle 2014; Calvet-Mir and March 2019; Scheromm 2015; Yap 2019	Reyes-García et al. 2012; Ruggeri et al. 2016; Gauder et al. 2018; Mourão et al. 2019; Da Silva et al. 2016	Calvet-Mir et al. 2012; Camps-Calvet et al. 2016; Langemeyer et al. 2018: Pourias et al. 2016	Trendov 2018
Africa	Roberts and Shackleton 2018	Battersby and Marshak 2013; Simatele and Binns 2008; Smart et al. 2015				Battersby and Marshak 2013; Simatele and Binns 2008	Adebisi and Monisola 2012; Roberts and Shackleton 2018; Smart et al. 2015		Poulsen et al. 2015

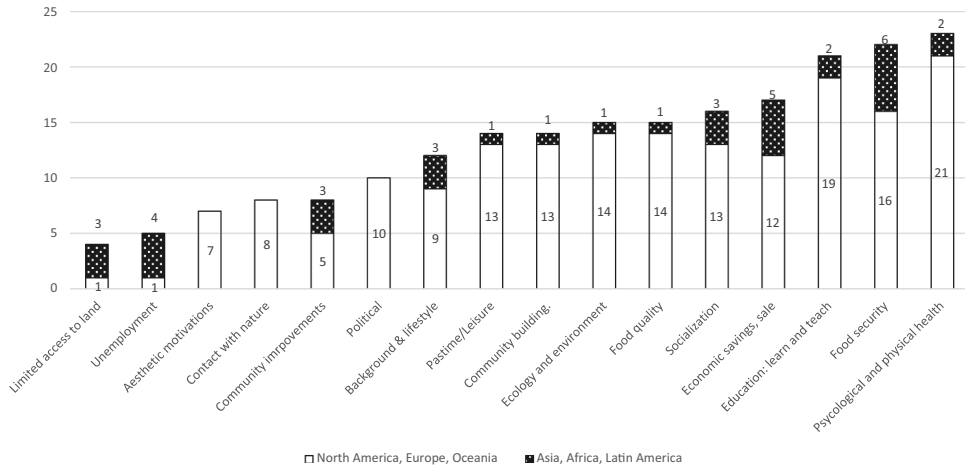

Figure 3. Number of articles citing each category of motivation. Number of articles 36. Each article could mention more than one motivational category.

Table 2. Types of UA and methods used in the analysed literature on stakeholder perceptions. Number of articles 22.

	Qualitative	Quantitative	Mixed Methods	Literature Review	Policy Analysis
North America	Paddeu 2017; Cohen and Reynolds 2014	Grebitus et al. 2017			Napawan 2016
Oceania	Pollard et al. 2017	Diehl 2020			
Asia	Hara et al. 2013; Ramaloo et al. 2018; Cook et al. 2015			Islam and Siwar 2012;	
Europe	Delgado 2018; Sanyé-Mengual et al. 2016; Specht et al., 2016a; Specht et al. 2016b; Specht and Sanyé-Mengual 2017; Ercilla-Montserrat et al. 2019	Jürkenbeck et al. 2019	Sanyé-Mengual et al. 2018; Sanyé-Mengual et al. 2018bb		
Central & Latin America		Nadal et al. 2018			
Africa	Vásquez et al. 2002;				Rogerson 2011

(2012) literature review and two that are policy analyses (Rogerson 2011; Cohen and Reynolds 2014; Napawan 2016). Other articles use both policy analysis and in-depth interviews (Grebitus et al. 2017; Sanyé-Mengual et al. 2018, 2018bb; Ercilla-Montserrat et al. 2019; Jürkenbeck et al. 2019), which adopt mixed methods, quantitative analysis and structural equation models to predict consumers' behaviour and willingness to purchase UA products (see Table 2).

These case studies assess UA perceptions of several types of stakeholders. The first stakeholder category is the urban farmers themselves. This category of stakeholders is represented by effective food producers who can be either professional or amateur farmers (Hara et al. 2013; Cook et al. 2015; Sanyé-Mengual et al. 2016; Specht et al. 2016b; Delgado 2018; Nadal et al. 2018; Diehl 2020). Other stakeholders involved in UA are food supply chain actors involved in urban food provision, such as restaurants interested in buying UA products or NGOs promoting local markets for urban and peri-urban agriculture products. These stakeholders are relevant in guaranteeing the access of UA products to urban markets (Sanyé-Mengual et al. 2016; Specht et al. 2016b; Pollard et al. 2017). Another stakeholder category is the potential consumers, in particular citizens who may be (potential or actual) UA product consumers. This is relevant mostly for business-oriented activities (Jürkenbeck et al. 2019;

Grebitus et al. 2017; Sanyé-Mengual et al. 2018, 2018bb; Ercilla-Montserrat et al. 2019). Local and national governments are also emerging as a relevant stakeholder group in the analysed papers. The actors involved in policymaking can influence the effectiveness of UA initiatives. More specifically, restrictions on UA activities or their promotion through government-led UA programmes such as allotment gardens can be introduced (Vásquez et al. 2002; Rogerson 2011; Cohen and Reynolds 2014; Sanyé-Mengual et al. 2016; Specht et al. 2016b; Paddeu 2017; Specht and Sanyé-Mengual 2017; Delgado 2018; Nadal et al. 2018). Local administrators and technicians represent another important stakeholder category. Even though they are not directly involved in UA, some of their decision-making can influence relevant aspects of UA development, such as urban planning, infrastructures, technical aspects and new technologies (Sanyé-Mengual et al. 2016; Napawan 2016; Specht et al. 2016b; Pollard et al. 2017; Paddeu 2017; Specht and Sanyé-Mengual 2017; Nadal et al. 2018). Finally, the literature suggests that local residents can promote or hinder UA activity implementation. UA can evoke changes in urban patterns, and its implementation can therefore lead to conflicts (e.g. related to an increase in noise and smells). (Specht et al., 2016a; Sanyé-Mengual et al. 2018; Ramaloo et al. 2018; Nadal et al. 2018)

Perceived benefits associated with UA and promoting context factors

Different authors analyse stakeholders' perceptions by addressing the general attitudes and benefits associated with UA. There is a wide range of UA types, including more experimental types such as soilless gardening and aquaponics (Sanyé-Mengual et al. 2016; Specht et al. 2016b; Specht and Sanyé-Mengual 2017; Pollard et al. 2017). Stakeholders' attitudes towards UA are generally positive, and UA is associated with the environment, food production, leisure, alternative food networks and food quality (Grebitus et al. 2017; Delgado 2018; Sanyé-Mengual et al. 2018). These concepts are often connected with the perceived benefits of UA and are similar to the motivations found in the motivation-centred literature. However, this part of the literature addresses categories of benefits that are not directly connected with individual wellbeing, such as 'physical and psychological health', but rather addresses potentially positive societal impacts. The main social benefits perceived by stakeholders are similar to those assessed in the literature in relation to elements such as environmental education, social inclusion and food security (Nadal et al. 2018; Delgado 2018; Sanyé-Mengual et al. 2018b).

Other benefits are often linked to environmental issues, such as rainwater management, organic waste recycling and pesticide use reduction (Vásquez et al. 2002; Napawan 2016; Specht et al. 2016b; Sanyé-Mengual et al. 2018; Nadal et al. 2018; Delgado 2018). Economic benefits are related mainly to general urban economic benefits, such as job creation and the reuse of abandoned spaces (Napawan 2016; Specht et al. 2016b; Ramaloo et al. 2018). Other economic benefits assessed in the literature are related to cost reductions due to self-production and proximity (Nadal et al. 2018; Sanyé-Mengual et al. 2018b). Some stakeholders associate aesthetic benefits with UA, both in terms of single buildings and of the urban context as a whole (Specht et al. 2016b; Pollard et al. 2017).

Finally, the literature shows that several potentially promoting contextual factors need to be considered when analysing UA acceptance. These factors can be summarised as follows:

- Political context: the possibility of integrating UA with local policies so that it becomes part of the local government strategic vision (Cohen and Reynolds 2014; Specht et al. 2016b; Nadal et al. 2018).
- Legal framework: compatibility with local laws and the existence of a UA legal framework and recognition (Cohen and Reynolds 2014; Specht et al. 2016b; Paddeu 2017).
- Market: the existence of a market and need for market-oriented UA (Cook et al. 2015; Specht et al. 2016b; Ercilla-Montserrat et al. 2019; Jürkenbeck et al. 2019; Diehl 2020).
- Land and space availability: the existence of proper space that allows cultivation and limits the possibilities of contamination in an urban environment (Hara et al. 2013; Specht et al. 2016b; Nadal et al. 2018; Diehl 2020).
- Cultural background: UA needs to be part of a cultural process that allows its acceptance by

citizens and residents (Hara et al. 2013; Specht et al. 2016b; Nadal et al. 2018).

Risks and challenges associated with UA

The analysis of UA stakeholder perceptions points to hindering factors, negative aspects and challenges related to UA. Stakeholders are concerned with potentially negative impacts of UA on their quality of life in terms of noise, smell, logistics, possible product contamination and aesthetics (Sanyé-Mengual et al. 2018b, 2018b). Some potential UA consumers consider soilless and hydroponic products to be 'artificial', 'low quality', 'tasteless' and far from the conventional idea of 'agriculture' (Jürkenbeck et al. 2019; Pollard et al. 2017; Specht et al., 2016b). A correlation between low education levels and negative perceptions of soilless production has been observed (Ercilla-Montserrat et al. 2019). Furthermore, some UA stakeholders perceive soilless UA as too complex in terms of technical requirements, consequently increasing the cost and environmental and health risks associated with bad management (Specht and Sanyé-Mengual 2017; Pollard et al. 2017). Other negative aspects of UA are linked to more practical daily living problems, such as a higher probability of theft and vandalism, lack of time, lack of space and lack of community commitment (Conway 2016; Gauder et al. 2018; Kingsley et al. 2019). Other characteristics of the urban spatial and political context and its management (such as urban planning, policies and interaction between urban and agricultural activities) can also have a negative impact on UA development.

As suggested by Specht and Sanyé-Mengual (2017), the level of acceptance of UA also depends on how the city interacts with the rural environment. UA acceptance is higher in cities where agriculture has always been integrated into the cityscape. In the European context, the distinction between rural and urban areas is very clear, and 'urban stakeholders that have never dealt with agricultural production' might show an adverse attitude towards UA (Specht and Sanyé-Mengual 2017, p. 16). According to the literature, the constraints on UA development related to the general urban context are not exclusively related to citizens' perceptions but can be considered a consequence of hindering contextual factors (Specht et al. 2016b). The proximity to building areas and the phenomenon of urban sprawl often represent a threat to UA activities' continuity in the absence of any legal recognition of UA (Hara et al. 2013; Cook et al. 2015; Diehl 2020).

Towards an analytical framework for analysing UA stakeholder motivations and perceptions

The analysis of the literature shows a wide range of motivations for assessing the different needs of urban farmers, from individual needs, such as food security, to more altruistic needs, such as ecological and environmental motivations. Bearing in mind that these motivations are interconnected and sometimes overlap, there is a need to classify them to provide an organic and more manageable analytical framework. We can divide the motivations into three main categories as follows:

- Basic needs satisfaction and personal fulfilment: motivations related to satisfying physiological needs and the need for human relations.
- Community wellbeing and ideological issues: motivations related to relational aspects and societal improvements.
- Exogenous factors: latent drivers such as cultural background and lifestyle as well as contextual characteristics such as unemployment and limited access to land.

These exogenous factors directly affect the type of motivations influencing UA participation. This clearly emerges when comparing different geographical contexts. Motivations such as 'aesthetics', 'contact with nature' and 'political protest' were found only in studies carried out in North America and Europe. In other contexts, UA is driven by other external conditions, such as unemployment or lack of access to land. In the case of African and Asian contexts, food security motivation is driven by these contextual factors. This aspect differentiates them from European and North American countries, where contextual factors are not as cited as in other countries. This highlights the importance of developing an analytical framework that assesses exogenous drivers and personal background as elements that influence individual motivations. A possible analytical approach should thus focus on assessing the exogenous factors collected through demographic information and analysing how different cultural backgrounds and socioeconomic conditions influence the

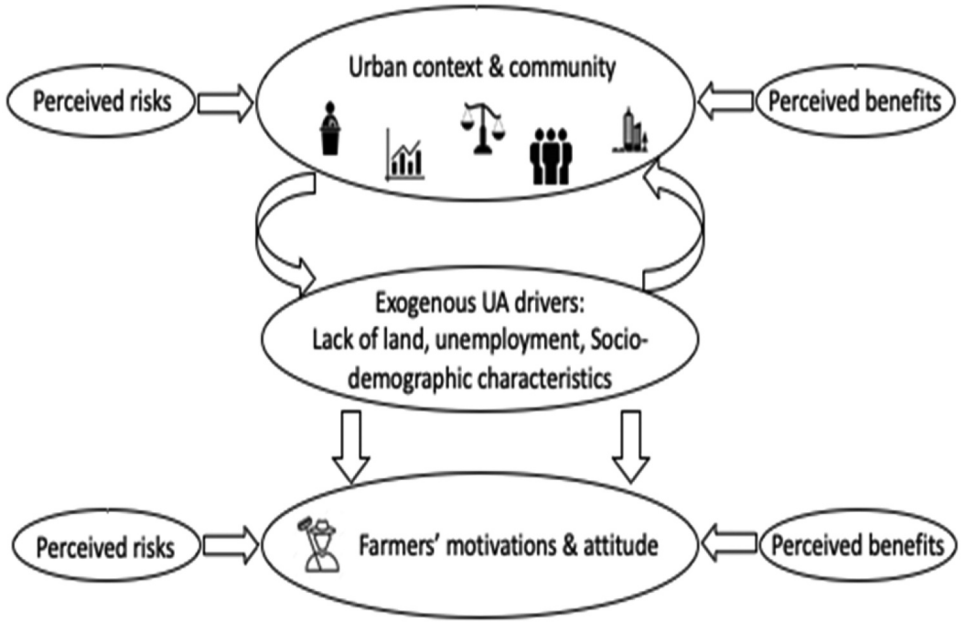

Figure 4. Interaction among the UA dimensions.

typology of motivations affecting individual participation in UA (see Figure 4).

An integrated UA analytical framework

As mentioned before, a multistakeholder approach could support UA harmonisation with the urban context. To this end, a UA analytical framework should consider how different stakeholders perceive and influence UA development. Several approaches describing different stakeholders' perceptions of UA emerged from the literature review. Integrating these approaches can be useful to policymakers in developing tailored strategies aimed at preventing possible conflicts and inequitable access to UA. Starting at the urban level, the stakeholders involved are actors not directly connected with UA but strongly influencing its development, such as policymakers, public administrators, urban planners and technicians (see Table 3).

In particular, the development of different UA types is strongly influenced by compatibility with the vision and priorities of local government. To this end, the analysis of UA should start by considering the political context in which UA operates. This implies the need to assess governmental stakeholders' attitudes towards UA. Other aspects, such as the legal framework and urban planning, are also crucial factors influencing UA development. An analysis carried out by interviewing public administrators, urban planners and technicians can describe UA legal compatibility regarding food production in a certain urban area and its integration with the urban space. Another important contextual dimension is how the community perceives UA, particularly from the perspective of both the market and citizens. The food market attitude towards UA is explored in several of the studies reviewed. It can be assessed through a quantitative analysis of UA customers' behaviour and interviews with supply chain stakeholders and UA practitioners. In particular, the willingness of food chain actors to accept UA products as well as urban farmers' need to sell their products is analysed. The last dimension, cultural background, emerged as an important aspect influencing UA social acceptance, in particular the role of the related 'not in my back yard' (NIMBY) phenomenon. The influence of geographical location and specific UA type on the role of NIMBY in UA acceptance also emerged. Furthermore, understanding how citizens perceive sustainability in relation to UA activities could help in creating a more participatory way of determining priorities in the UA development agenda.

Finally, the different UA dimensions are connected and shape UA development and urban farmers'

Table 3. A possible analytical framework to assess motivations and perceptions of UA stakeholders.

Urban level				Community		Urban Agriculture
Dimension to Be Analysed	Policy Framework	Legal Framework	Urban Planning	Market	Cultural Background	UA Initiatives
Objective	Understand political views regarding UA activities. Which policies promote and hinder UA?	Are there any legal restrictions on or laws in support of food production in urban areas?	How does the city relate to UA? Are there any restricted areas? Need for soilless technology?	Is there a possible market for UA products? Are sales important for urban farmers?	What are the risks and benefits associated with UA? How is sustainability perceived in relation to UA? What type is most acceptable? Is there any NIMBY phenomenon?	Are urban farmers driven mainly by basic need satisfaction and personal fulfilment or by community wellbeing and ideological motivations? How important are exogenous drivers?
Stakeholders	Governmental stakeholders	Public administrators	Urban planners, technicians	Consumers, food supply-chain stakeholders, UA activists	Residents	Urban farmers
Analytical Approach	Semistructured interviews and content analysis	Interviews and secondary data analysis	Semistructured interviews and secondary data analysis	Quantitative analysis of consumer attitudes and semistructured interviews	Surveys based on acceptance models (Venkatesh et al. 2003), mixed-method approaches	Qualitative interviews assessing possible drivers and confirmative surveys on motivation influence and demographic information
Reference Literature	Specht et al. 2016b; Nadal et al. 2018; Rogerson 2011; Islam and Siwar 2012; Napawan 2016; Cohen and Reynolds 2014	Specht et al. 2016b; Nadal et al. 2018; Rogerson 2011; Hara et al. 2013; Islam and Siwar 2012; Cohen and Reynolds 2014, Paddeu 2017	Sanyé-Mengual et al. 2016; Specht and Sanyé-Mengual 2017; Specht et al. 2016b; Nadal et al. 2018; Rogerson 2011; Hara et al. 2013; Islam and Siwar 2012	Pollard et al. 2017; Specht et al. 2016b; Sanyé-Mengual et al. 2016; Jürkenbeck et al. 2019; Grebitus et al. 2017; Sanyé-Mengual et al. 2018	Sanyé-Mengual et al. 2018bb; Ramaloo et al. 2018; Nadal et al. 2018	Conway 2016; Calvet-Mir et al. 2012; Camps-Calvet et al. 2016; Langemeyer et al. 2018; Pourias et al. 2016, Diehl 2020; Cook et al. 2015

attitudes, as displayed in Figure 4. In particular, urban context/community acceptance and exogenous UA drivers are interdependent and, in turn, influence individuals' involvement in UA. From this perspective, understanding stakeholders' perceptions, participants' motivations and the respective perceived risks and benefits will help the assessment of hindering factors, possible conflicts and UA management strategies.

This study was affected by two main limitations. The first is the limited access to non-English language studies, which did not allow a fair representation of the principal UA drivers and perceptions in these contexts. This was due to language limitations caused by the scarcity of articles in English language journals about the Latin American and Asian contexts. In general, unbalanced geographical representation could lead to an incorrect evaluation of drivers' and stakeholders' perceptions in these less represented contexts. It would be very promising to implement studies on drivers' and UA stakeholders' perceptions in these

world regions. A second limitation is directly connected with the first. The analytical framework can thus be suitable only for contexts more similar to European and North American contexts. This will hinder the capacity of the developed framework to allow holistic UA analyses in less represented contexts.

To this end, the next research step should be focused on empirically testing the methods suggested in the framework. This will help to test the framework validity for North American and European contexts. Furthermore, the framework would probably need to be redefined and tailored for African, Latin American and Asian countries to improve its applicability.

Nonetheless, the framework provides a series of analytical strategies that could be implemented to develop a comprehensive understanding of the role and impact of public and private UA strategies in urban sustainability. First, the framework can be a tool of analysis to determine the impact of UA on social and environmental sustainability, focusing on conflicts with the policy agenda, the legal framework and acceptance among citizens through an analysis of the acceptance of UA. Furthermore, the framework could address economic sustainability through an analysis of UA acceptance in local markets and the drivers and barriers behind urban farmer participation. Finally, the analysis of the urban planning context could help to assess the overall sustainability contribution of UA according to contextual characteristics.

Conclusion

This paper aimed to use a review of the existing literature to develop a holistic analytical framework to assess the motivations and perceptions of UA stakeholders. The results of the literature review on motivations showed that the main motivations are related to individuals' psychological and physical health, followed by food security. Differences emerged according to the geographical context, especially regarding the higher influence of contextual factors as drivers of UA implementation in African, Latin American and Asian countries, including local policies, land use, cultural aspects, and socioeconomic conditions. This led the literature review to focus on the perception of UA according to the local stakeholders potentially involved during the UA implementation process. This includes all relevant stakeholders influencing several aspects of UA, such as local policies, urban planning, the food market and residents' acceptance. The literature focusing on stakeholders' perception analysis revealed that several risks and hindering factors need to be addressed when developing UA, including lack of space, conflict with the market in accepting UA production, conflicts with residents and cultural resistance to soilless production. The literature review revealed six main categories that should be considered when assessing UA development strategies: policy framework, legal framework, urban planning, market, cultural background, and UA initiatives. These dimensions have been included in the proposed analytical framework, and methodological approaches to address these aspects have been suggested within the framework (see Table 3).

The overall objective of the analytical framework is to create a tool that could support the definition of strategies for UA implementation in several contexts through an integrated analysis of the different aspects related to these activities. A holistic approach such as the one proposed in the paper is particularly relevant for the successful implementation of UA that involves multiple stakeholders and multidimensional activities. This will help us to understand the compatibility of UA activities in the several contexts in which they are implemented. Finally, empirical applications of the framework can be implemented in case studies in future research. This will help us to better address the potential limits associated with the dimensional complexity of the framework.

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Disclosure statement

No potential conflict of interest was reported by the authors.

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