Growing urban health. Questioning the role of urban gardening in distressed urban areas.

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Abstract Given its integrated benefits, urban agriculture, especially community gardens, may significantly enhance the socio-environmental condition of vulnerable districts and communities. This review examined different aspects of urban agriculture to highlight its value beyond profitability and food production in terms of social empowerment, health, and well-being. The paper seeks to understand the reasons behind the failure of a community garden initiative that took place in a distressed urban area of the city of Rome and to clarify the connections between community garden initiatives, socioeconomic context, and urban structure. Multiple-case study research was conducted to compare successful best practices with the case study mentioned above to identify invariants and draw cross-case conclusions. All case studies are linked to bottom-up processes in marginal areas where public space could represent a catalyst capable of embracing cultural, social, environmental, and eco-systemic matters. The study indicates how critical elements for a successful and long-lasting implementation of community garden initiatives must include identification of the community's primary needs, institutional and financial support, extensive engagement of inhabitants, and the role and diversification of stakeholders. These aspects drive the meta-design phase and long-term planning of the overall process.

Keywords Urban gardening, Urban health, Distressed urban areas, Case study research

11.1 Introduction

The work presented in this chapter is part of a broader research-action project that is characterized by a community-based approach. The project is led by a multidisciplinary research group of Sapienza University of Rome in collaboration with other social, health, and local institutions, including the Local Health Unit

(ASL Roma 1), the Department of Epidemiology of the Health Regional System of Lazio (DEP), the XIII Municipality of Rome, the National Institute for the Promotion of the Health of Migrant Populations and the Contrast of Diseases of Poverty (INMP). The research aims to investigate the effect of the unequal distribution of social determinants on the health of a population characterized by poor housing and socioeconomic vulnerability. More specifically, the research intends to develop regeneration strategies for the distressed urban area of former Bastogi complex in the northwest of Rome, Italy. The research group has focused on the conditions of neglect that characterize outdoor public spaces in the complex. Within this context, an urban farming initiative led by the neighborhood Committee took place. This urban agriculture (UA) initiative, launched by the Committee at its participatory peak, sadly ended after only two years of practice. This chapter examines the reasons behind the initiative's failure and seeks to clarify the connections between UA, socioeconomic context, and urban spatial patterns.

According to a group of experts of the Instituto Universitario de Urbanística de la Universidad de Valladolid integrated urban regeneration is considered as the natural outcome of joining together two basic recommendations of the Leipzig Charter: making greater use of integrated urban development policies and paying particular attention to deprived neighborhoods (Alvarez Mora and Roch Peña 2010). Urban regeneration focuses primarily on building and physical upgrading, such as improving the energy efficiency of the residential stock, without considering the role it can play in enhancing inhabitants' social and economic conditions. Urban agriculture, especially in distressed urban areas, can blur the lines between the natural, the artificial, and the cultivated, providing a linked network of natural and semi-natural elements capable of providing multiple functions and ecosystem services with positive economic and social benefits for humans and other species (Battisti and Calcagni 2023; Naumann et al. 2011; Benedict and McMahon 2012). The Food and Agriculture Organization and several other international organizations have promoted initiatives and released reports on implementing efficient and sustainable food production systems to ensure access to quality food and livable environments. According to the COST Action on Urban Agriculture Europe (Lohrberg et al. 2016), urban agriculture spans all actors, communities, activities, places, and economies focusing on biological production in an 'urban' context. It is structurally embedded in the urban fabric and integrated into the city's social and cultural life, economics, and metabolism. Within the broader urban agriculture category, it is possible to outline a more precise subcategory: urban community gardening. Community gardening comprises any piece of land (publicly or privately held) that is cultivated by a group of people based on bottom-up initiatives and tended collectively. In this case, the predominant purpose is not food production but social functions for community empowerment. This is why this subcategory is suitable for distressed urban areas, which, according to the OECD definition, are situations of underdevelopment in developed contexts, that is, areas of a city that suffer social, economic, cultural, and ecological deprivations within the city. Distressed areas have higher concentration of low income households, suffer from physical deterioration of infrastructure, higher crime rates and vandalism and other similar socio-economic deprivations (OECD 1998). As a

nature-based solution and green infrastructure, UA brings about ecological, health, economic, and social integrated benefits (Fig. 11.1), creating a direct link between producer and consumer, giving birth to the so-called prosumer.

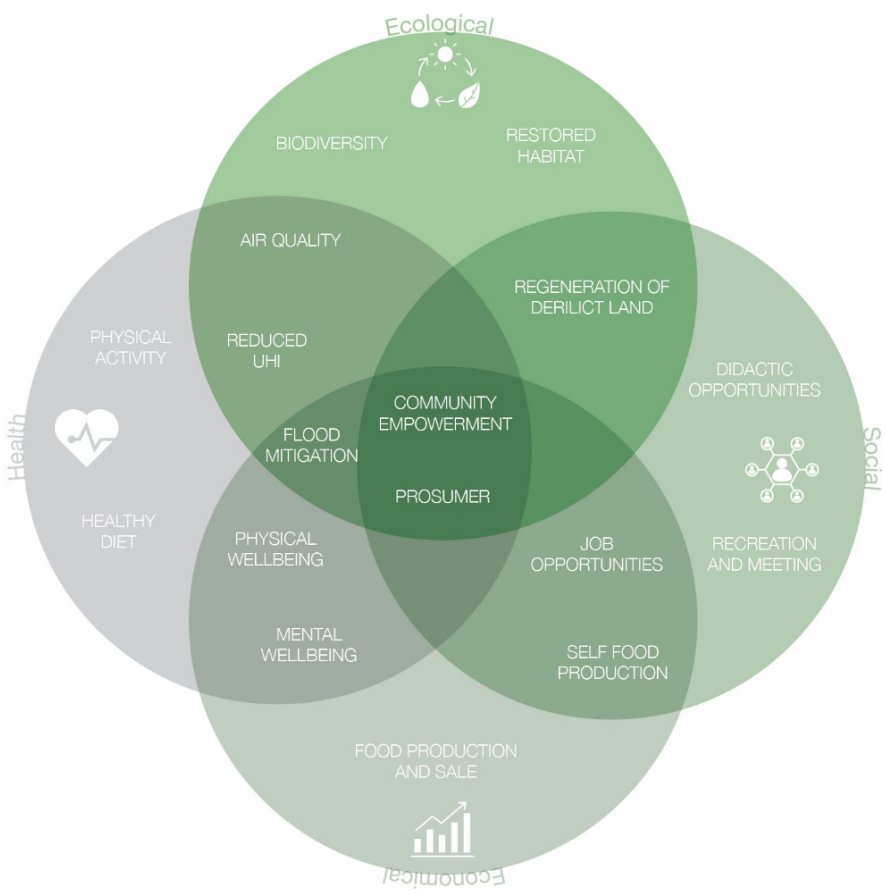

Fig. 11.1 Integrated and overlapping social, economical, ecological and health benefits of community gardens as green infrastructures.

In terms of mental health and sense of well-being, for instance, community gardens have a huge impact (Ilieva at al. 2022; McGuire et al. 2022):

- promotion of a healthier lifestyle by fostering outdoor physical activity and a correct food diet
- improvement of air quality by absorbing atmospheric CO2
- reduction of urban heat island effect and mitigation of microclimate conditions
- community empowerment and engagement, offering inhabitants meeting and social opportunities

- promotion of the biophilia effect
- creation of enhanced recreation spaces and indirect education and didactical opportunities on sustainable and quality food issues.

However, the lack of formal recognition of urban agriculture in planning policy, the lack of awareness about the socio-economical and environmental role of UA in cities, the lack of clear government responsibilities for the management of UA, land use issues - specifically availability of land, access to land and usability of land - and the lack of resources, technical and financial support from the government for UA, pose significant hurdles not only to the implementation of UA but especially to its long-term management and operation (Quon 1999).

11.2 Methodology

Given the intent of understanding in-depth a specific social phenomenon like community gardening, seeking to understand why and how it works, case study research was carried out. As the boundaries between the phenomenon and context may not be evident, the empirical case study research method enabled us to investigate contemporary phenomena (projects) in depth and within a real-world context, retaining a holistic perspective. The review covered multiple cases and a comparative analysis to draw a set of cross-case conclusions (Yin 2018), allowing us to understand the critical elements for the success, acceptance, and popularity of UA community garden practices. It is both illustrative and exploratory, as it aims at generating hypotheses for later investigation.

A preliminary screening of the objectives to be pursued in the design, implementation, and operation of the case studies allowed the selection to be directed towards examples that could be, on the one hand, considered best practices and, on the other, suitable for a comparison with the former Bastogi area. The criteria addressed in their selection consider scale and location, process, goals, and stakeholders.

Building scale in marginal areas:

- small to medium size plot (500-2000 sqm)
- shared building spaces: flat rooftops, courtyards, shared gardens
- unused/derelict urban space: vacant lots, pocket spaces

Participatory processes and bottom-up initiatives:

- community needs and requirements
- support from local authority/municipality / public administration
- participation in all phases

Project objectives:

- local food production for self-consumption
- environmental sustainability

- public shared spaces –community involvement
- educational, recreational, and rehabilitator activities

Stakeholders:

- neighborhood inhabitants (0-100 aged)
- architect, landscape architect, technical figures
- municipality, public administration
- local associations, committees, voluntaries

To construct validity (Yin 2018) the case study analysis relied on multiple sources of evidence, ranging from scientific and gray literature, document analysis (municipality reports and administrative documents), media coverage (online newspaper articles, architecture websites), and direct observations. To prevent biased documentation, a process of corroboration of the information allowed the comparison of different sources (Yin 2018). The data for each case study was analyzed by applying an assessment protocol developed in previous studies by the authors (Calcagni 2023) to identify invariant patterns and issues. In addition to a whole series of data relating to the project (year of construction, location, type of project, main characteristics, actors involved), the development over time of the entire process (design, construction, and operation) was analyzed to detect the key factors that contributed to the success or failure of the initiative. Finally, each case study was evaluated according to three main criteria and sub-criteria: social impact (community empowerment, related activities, social catalyst), management (participatory process, administration, funding), and cost-effectiveness (low-tech techniques, recycling, and reuse, food self-production). For each sub-component, a score was assigned to obtain a global one for each case study, thanks to their sum.

11.3 Urban gardening initiatives across Europe: 5 case studies

De Ceuvel, Amsterdam, The Netherlands (Fig. 11.2). This project focuses on environmental and social regeneration of a former shipyard in the industrial area of Buiksloterham, Amsterdam North, once heavily polluted, into an innovative, sustainable community and innovation hub. In 2012, the land was secured for a 10-year lease from the Municipality of Amsterdam after a local thriving community of young entrepreneurs and artists, supported by a group of architects, won a tender to turn the site into a regenerative urban oasis. The goal was to create a low-impact biomass production area, conceived as a playground for sustainable technologies, as much energy self-sufficient as possible: processing waste and producing food. The greenhouse is the key to recycling nutrients at De Ceuvel by integrating it with aquaponics. It produces vegetables and herbs for Cafe de Ceuvel using a closed-loop aquaponics system combining fish and vegetable production. The fish excretes are broken down into nutrients for the plants, and the plants provide a natural filter for the water in which the fish live. Inputs include primarily local nutrients like

worms from composting bins and struvite from their struvite reactor, produced by human urine from the community. De Ceuvel has proved to be an engaging educational environment for the starting community and an attraction for all the other neighborhood inhabitants, becoming a new facility for the entire area, still lacking other services and facilities (De Ceuvel; Assemble Papers 2015; Barba Lata and Duineveld 2019).

Esto no es un solar 2-27, Zaragoza, Spain (Fig. 11.3). "Esto no es un solar" means "This is not a plot of land," to emphasize that an empty space, mainly used for garbage and crime, within the city, can become a collective space due to temporary use strategies. These spaces are equipped with a minimum cost, and a contract is established with the owner, who gives it for free to the municipal administration. The majority of the neighborhood population was involved in the conception and construction of the projects, as well as unemployed citizens or people involved in socially useful jobs. Within this strategic program, more than twenty spaces underwent a regeneration process between 2006 and 2014. Amongst these two areas were assigned to urban farming. Installing portable structures was conceived to revitalize the area, thus generating the missing urban function. San Pablo neighborhood hosted the first intervention and an experimental program. All the materials used are low-cost and often recycled. A series of wooden pallet platforms define green spaces of lavender, rosemary, and different types of plants as a botanical garden. It is also a space for didactic activities for local nearby schools and is entirely managed by the adjacent senior center (as the design phase had established). A second urban garden was planned, and on this occasion, a group of users was also formed (local Public School, Children's center, Senior Center), guaranteeing a mixture of users. The spaces that had not been entrusted to associations that were responsible for them have been subject to decay and abandonment. An incorrect interpretation of the population's needs has emerged in some cases, and some foreseen uses have yet to be accepted (Esto no es un solar 2020; Archdaily 2016; Archdaily 2014).

The StadtAkcer, Munich, Germany (Fig. 11.4). The StadtAcker is a bottom-up initiative for a community garden of around 1.000 m^2 in Munich in the Ackermannbogen district. This initiative came from the Ackermannbogen association, in collaboration with citizens – who strongly wanted the garden - and the Municipality. The idea was born in 2011, but it had to wait around six years to be allocated a gardening plot on municipal property. In the meantime, the idea was actively promoted and kept alive among the population through small, mobile, and decentralized gardening events in the neighborhood. As the garden is intended to be an authentic community garden, the main goal was to establish an open space for sharing knowledge and cooperation and improving social cohesion.

For this reason, there are no single plots, but the entire gardening group maintains the garden together, subdivided into thematic specialized sub-groups such as vegetables, herbs, compost, berries, or bees/flowers. The rules and usage conditions of the StadtAcker community garden were defined through speakers of the different gardening groups in close cooperation with the Association. The Municipality of Munich supported the realization of the infrastructure of the garden (i.e., fencing,

groundwater, storage facility, soil, and other aspects), and each participant contributed an annual fee for its maintenance.

After the first year of operation, the garden is perceived as a valuable long-term neighborhood feature. Of course, Municipalities are crucial because they can provide aid and resources - first of all, the soil - to initiatives that cannot sustain their projects only based on volunteering (Environment & Society Portal 2019; LMU 2020).

Agrocitè, Colombes-Gennevilliers, France (Fig. 11.5). Agrocité is a project for an urban agriculture hub designed in 2013 by the "Atelier d'Architecture Autogérée" in Colòmbes as part of their broader project called R-Urban. The project consists of an area for community gardening with a shared garden for residents, an educational garden, an 'AgroLab' specialized in experiments with intensive production, a shared greenhouse, equipment for rainwater collection and other devices for energy production from renewable sources, a vegetable market and a Cafè. Several collective activities - widely sponsored via different media platforms - occur within the garden. The events are related to gardening practices and ecology, as well as to cooking, composting, and recycling. The workshops and laboratories organized are previously discussed and agreed upon through the General Assembly, in which some user representatives and some members of the Architecture collective take part. In 2017, despite numerous petitions and protests from citizens, the initiative was removed to make place for a parking lot promoted by the new local administration. Luckily, the following year, a new edition of Agrocitè found a place in the suburbs of Paris. Although the concept and the project are identical, it will take time to recreate the feeling of belonging and the social cohesion that characterized the first experiment, highlighting how users' participation can be considered the core for the success of this kind of project (Atelier D'Architecture Autogeree; R-Urban 2012; Le Parisien 2017).

Student Campus Community Garden, Ljubljana, Slovenia (Fig. 11.6). This case study is located in a student community rather than a residential one. In 2015, the student community in Lubiana reunited as a collective and set off a community garden initiative. This experience is very interesting because, despite being self-managed and self-financed, it has survived until now. In cooperation with the administration of Student Homes in Ljubljana, students managed to acquire land near dormitories based on a self-management agreement. They created two community gardens, one in Rožna Dolina and another in student dormitories in Mestni Log. The gardens are intended primarily for students. However, anyone interested is well accepted. The project's vision is to co-create a sustainable community space dedicated to socializing, connecting, learning, relaxing, and producing food, adding value to the space through various events and activities that encourage the creative use of public spaces. Participants are responsible for the entire garden area, from maintaining the basic infrastructure and equipment, including sheds, rainwater butts, and composters (in cooperation with the canteen kitchens) to landscaping the wider campus by planting herbs, spices, and fruit trees. The division and planning of the work are coordinated during regular weekly meetings. The student community garden project is an example of good cooperation between a civil initiative and a public institution. It is one of the rare examples of a

civil initiative that has been maintained and continues to be self-managed. Also, in this case, the Public Administration support was crucial.

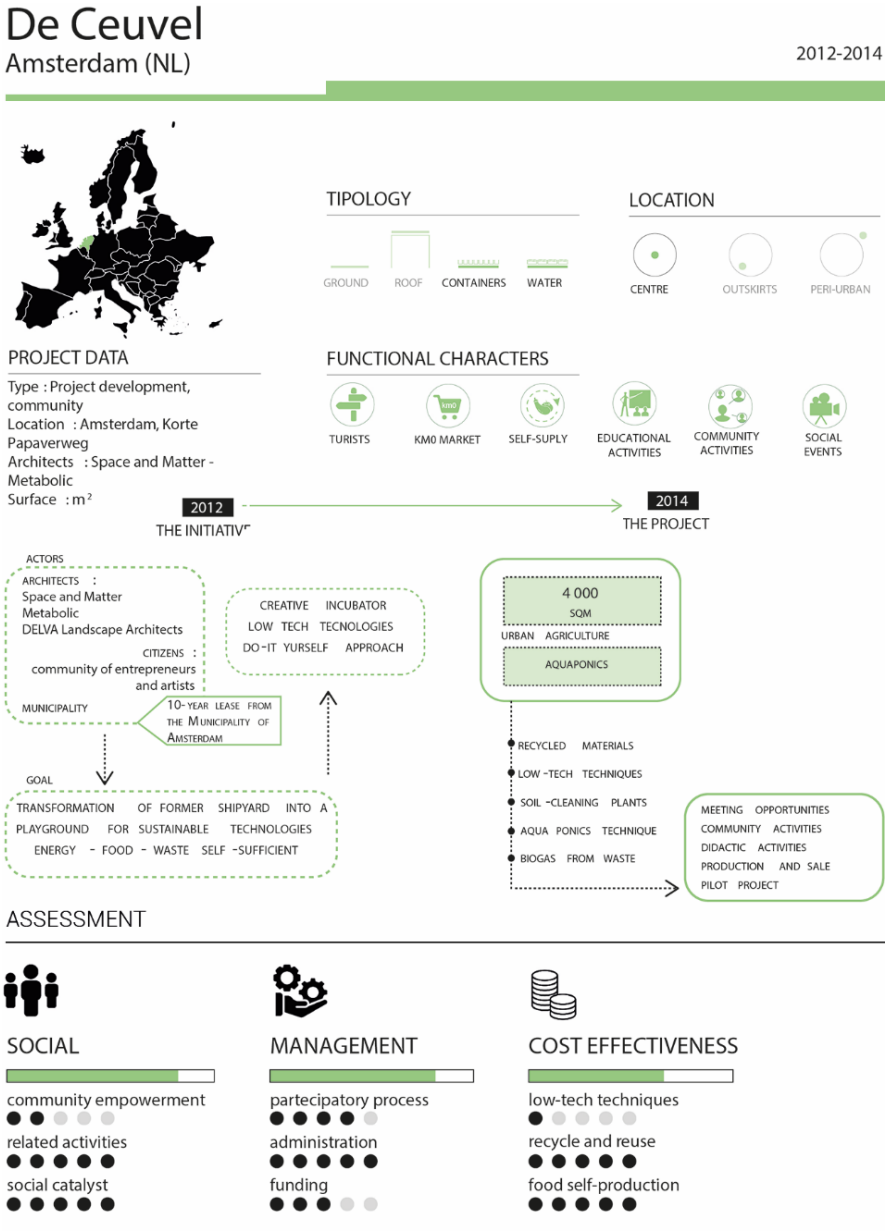

Fig. 11.2 De Ceuvel, Amsterdam (The Netherlands). Main features, process development and analysis.

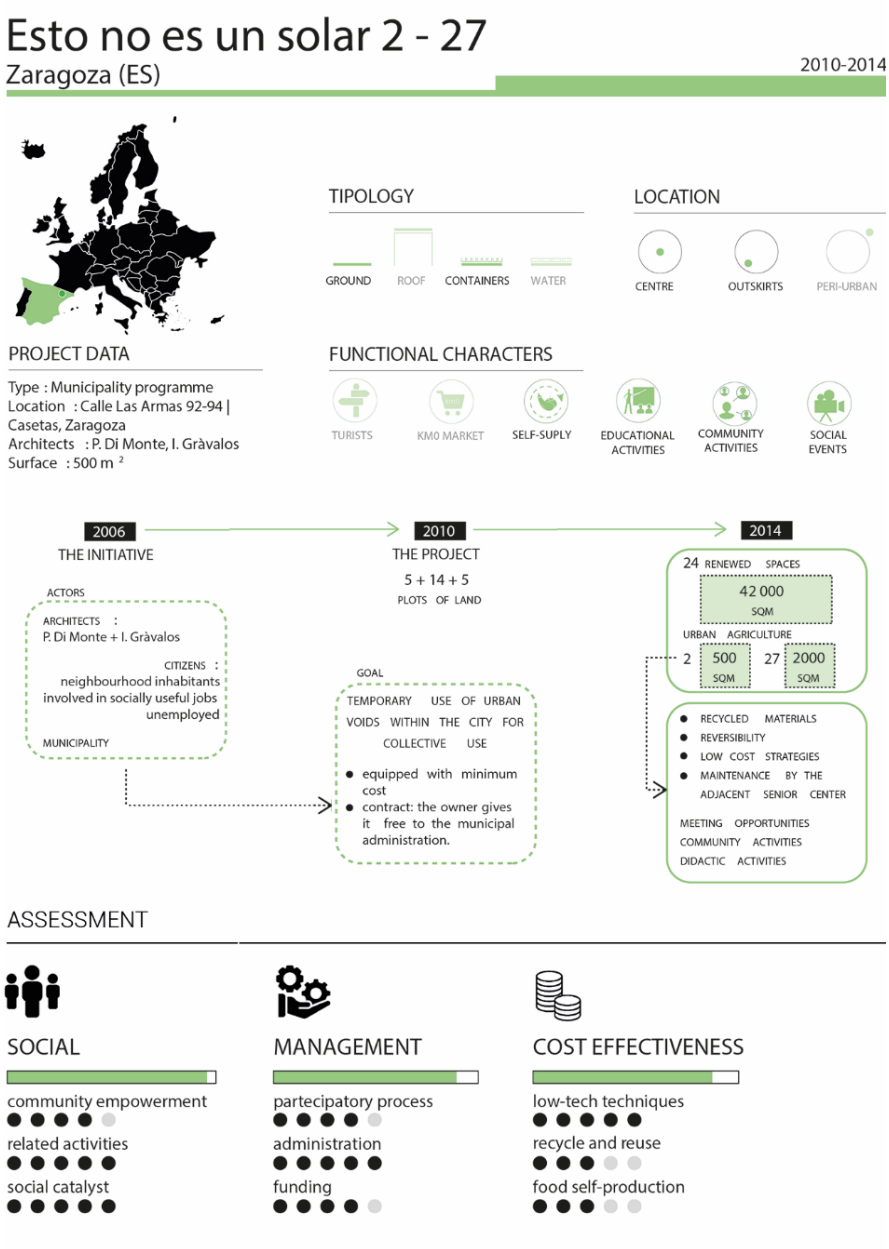

Fig. 11.3 Esto no es un solar, Zaragoza (Spain). Main features, process development and analysis.

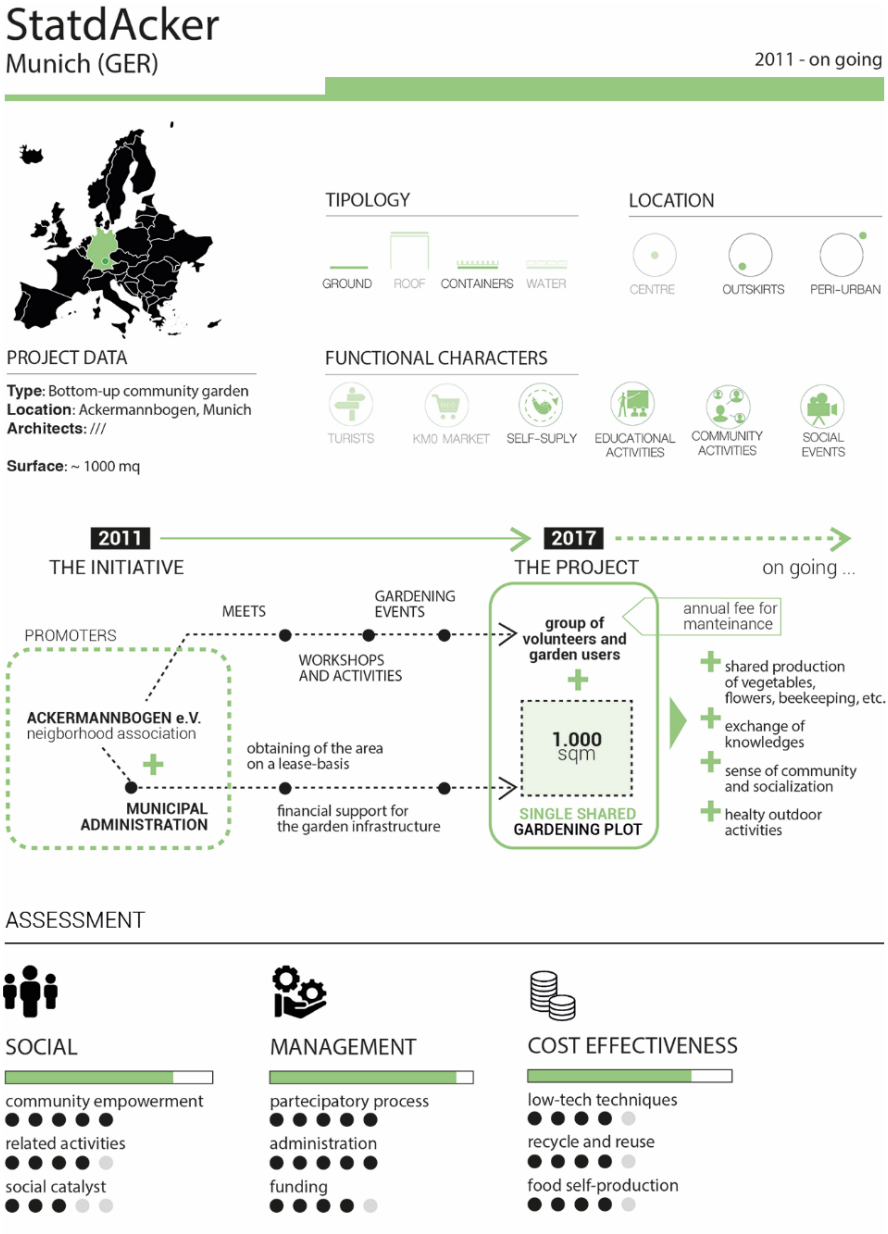

Fig. 11.4 StadAcker, Munich (Germany). Main features, process development and analysis.

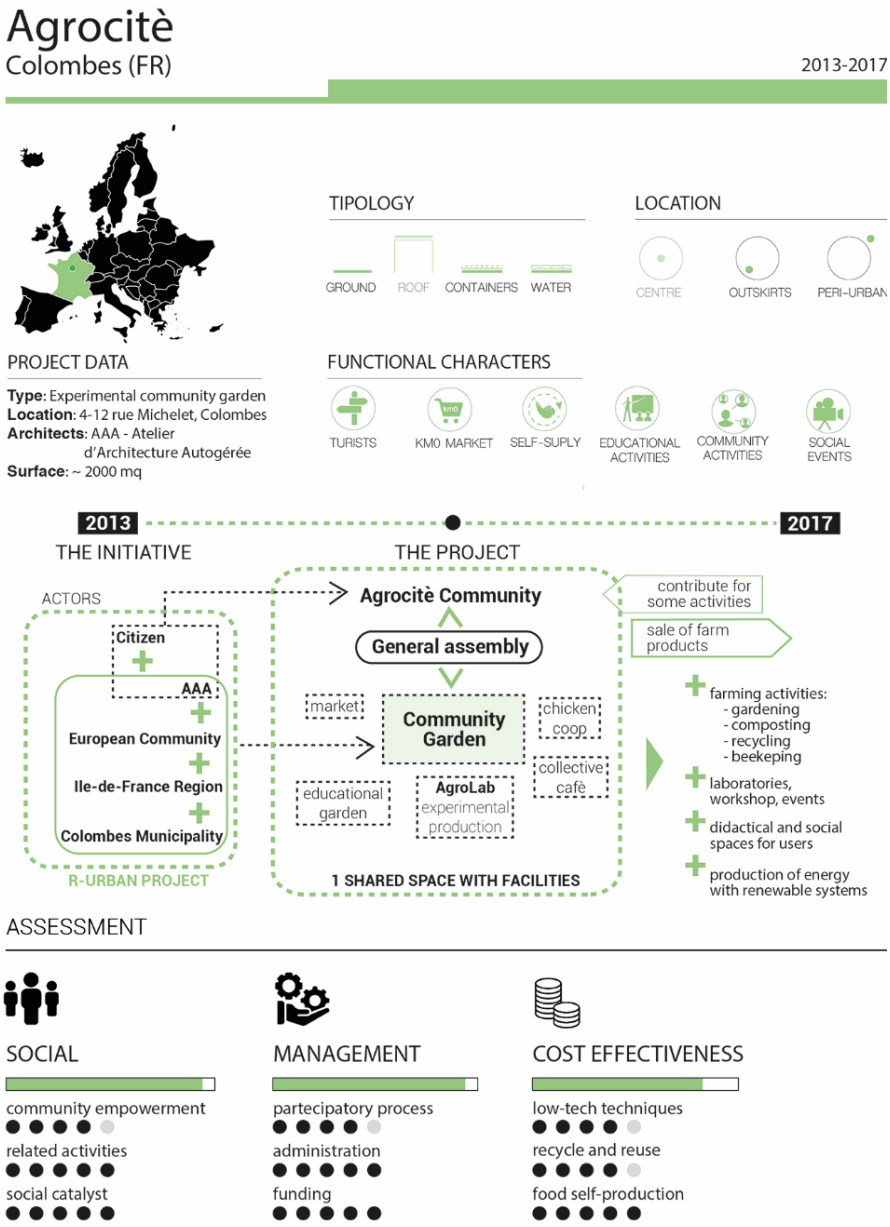

Fig. 11.5 Agrocitè, Colombes, Gennevilliers (France). Main features, process development and analysis.

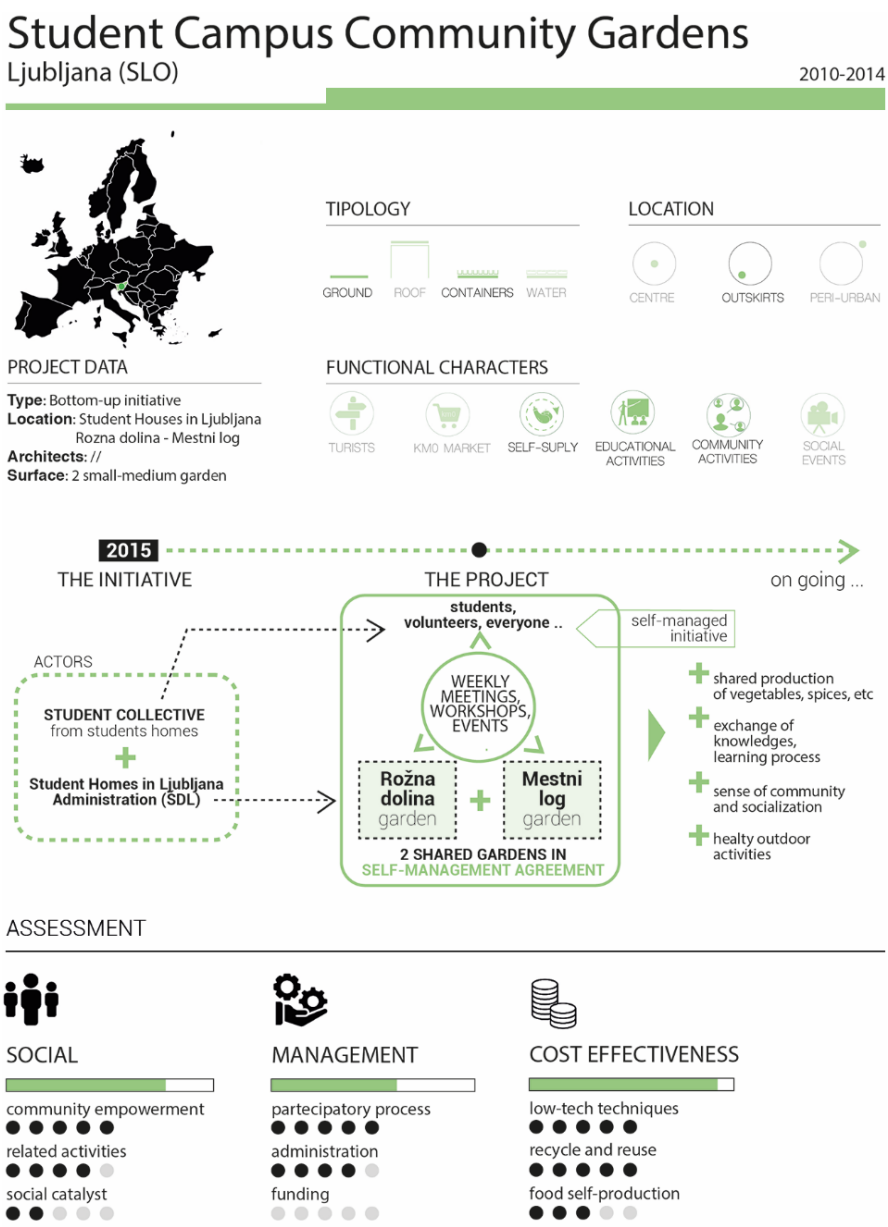

Fig. 11.6 Student Campus Community Gardens, Ljubljana (Slovenia). Main features, process development and analysis.

Very Important Quarter initiative in former Bastogi , Rome, Italy (Fig. 7). The former Bastogi-complex is located in the northwest of Rome and consists of 6 buildings built in the 80s as a residence for Alitalia employees. After some years, it was assigned by the Municipality of Rome to deal with the housing emergency. The complex was designed to accommodate users for short stays, but today, it has a stable population of more than 2000 inhabitants, according to qualitative studies (Battisti et al. 2021), twice as much as the figures provided in the ISTAT 2011 census. The awareness that former Bastogi was a complex system led to a preliminary assessment of the social, environmental, and architectural conditions to achieve an overall intersectoral understanding of the context. Community activities, such as Focus Groups, questionnaires, and community consultations with some members of the local population, followed this phase. The combination of qualitative and quantitative analysis showed how the former Bastogi is characterized by spatial and social segregation and marginalization. Former Bastogi is an enclave within the urban fabric of Rome that hosts various types of vulnerable groups: children and older people in a state of neglect, illegal migrants, people under house arrest, drug addicts, alcoholics, and people with HIV (Battisti et al. 2020).

In 2018, the Bastogi neighborhood Committee launched the urban community gardening initiative. The Committee at that time consisted of approximately ten members, and the plot chosen for the garden was a derelict piece of land adjacent to one of the buildings. The singularity of former Bastogi lies in the impossibility of ascribing it to any legal status in terms of property (Battisti et al. 2021) making it complicated for the inhabitants to undertake practical actions on their territory. This experience was characterized by the inhabitants' appropriation of this dismissed "public" green space without a formal agreement with the Municipality. Nevertheless, this initiative could be considered a bottom-up planning action for shared purposes rather than the expression of urban informality or an unauthorized action. The aim was to create a community garden, which could also represent an alternative for the young residents (children and teenagers), offering a new positive space for free time activities in which they could experience a healthy lifestyle. Considering the tenure's legal status and consequent management implications, the Committee could not find any funding to support the initiative. This led the Committee members to use either recycled or leftover materials and low-tech techniques to limit the budget as much as possible and to create a reversible solution given the uncertainty of the property.

Social and economic benefits included an initial increase in civic engagement from the neighborhood inhabitants, the promotion of outdoor physical activity, and access to quality fresh food. Social cohesion and community engagement are essential, especially in a vulnerable area characterized by one of Rome's highest social hardship indexes. The Italian PASSI surveillance (Progressi delle Aziende Sanitarie per la Salute in Italia) for the years 2015-2018 reveals that one in 5 deaths is linked to an inadequate diet and that only 10% of the population consumes five portions of fruit or vegetables recommended by the WHO.

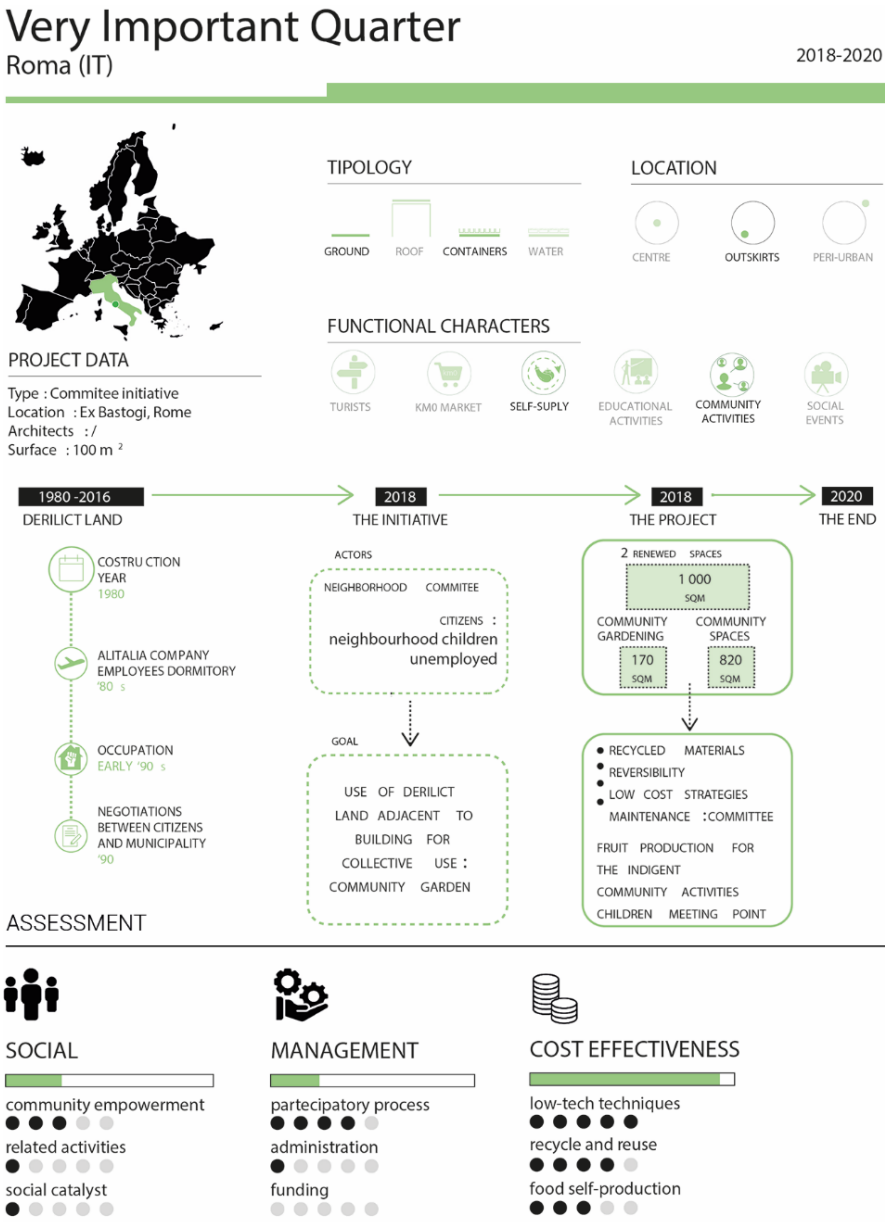

Fig. 11.7 Former Bastogi "Very Important Quarter" initiative, Rome (Italy). Main features, process development and analysis.

PASSI also reports that over 37% of individuals do not reach recommended physical activity levels, and the graphs demonstrate how a healthy diet and an

adequate level of physical activity are inversely proportional to income and education level, therefore potentially very low in former Bastogi. Considering that people spend 22 hours a day in indoor environments (U.S. Environmental Protection Agency 2013).

the condition in former Bastogi is further aggravated by the terrible conditions of the housing accommodations, characterized by mold, humidity, and overcrowding (Battisti et al. 2021). All things considered, the community garden offered opportunities for healthy lifestyles, adequate diet, and outdoor physical activity - that largely contribute to the decrease of Non-communicable Diseases (reference) - contributing to the overall health and social well-being of the inhabitants.

Another positive key element that distinguished this initiative was the use of derelict land for social purposes, as well as the intergenerational character of the group, which helped to strengthen, even if minimally, the sense of community and belonging.

In terms of environmental benefits, introducing fruit trees contributed to CO2 absorption, air quality improvement, and reduction of the urban heat island effect.

The Committee, which was entirely responsible for managing the community garden, gradually lost several members because of the absence of a structured organization defining the roles and duties of each component. The outburst of the COVID-19 pandemic in 2020 largely contributed to the lack of interest in participating in the daily activities necessary to maintain the community garden. The informal and short-term planning and the lack of promotion to the community through events, workshops, and reunions failed to involve new members and participants throughout the years. In addition, the lack of a formal agreement with the Municipality and no external funding for resources and training contributed to the members' lack of appropriate equipment and know-how. As a result, the initiative gradually lost momentum and ended in 2021.

11.4 Conclusions

The comparison between the best practices and the case study provides sufficient data to draw some conclusions about the constraints and challenges faced by the former Bastogi case study (Fig. 11.8). First, the urban farming initiative in Bastogi has been dramatically affected by the absence of institutional and financial support. The lack of dialogue and support with the local administration, combined with the ignorance of the opportunity to participate in tenders or funds, widely contributed to the short-lasting lifetime of the initiative. Another trigger to the project's failure is the poor promotion and the lack of engagement of the inhabitants on a large scale. More specifically, the number of participants over time not only did not grow but also decreased, presumably due to the lack of social cohesion and general diffidence among inhabitants towards new initiatives and community activities, as also confirmed by the low turnout during the focus groups carried out during the analytical phase (Battisti et al. 2021).

Since the initiative was launched by a relatively small initial community (not bigger than 8-10 members), the communication and promotion of the initiative should have started already in the preliminary design phase to ensure from the very start the engagement of a more significant portion of the community. Moreover, the lack of resources and know-how, combined with the absence of qualified personnel that could either support the community or provide basic technical training, represented a limit to the development and maintenance of the initiative.

Another critical aspect is the absence of a long-term design approach combined with a disorganized and non-structured organization that could not manage, divide, and assign labor, roles, and responsibilities from the beginning. In other words, the initiative rapidly lost appeal, given the sense of uncertainty widespread among the participants in terms of what they were supposed to do. This was also due to the lack of regular meetings and a time-work schedule.

In this particular case, it is essential to contextualize the experience within a vulnerable and marginal condition that the inhabitants face on a daily basis. Although urban gardens were felt as a necessity for the committee, they may not have been perceived as such by many of the local inhabitants. During the focus groups, the majority of the residents had revealed to be keener on having playground areas for young kids, after-school common rooms, spaces for socialization, wi-fi areas, and other similar functions. All things considered, it is essential to re-prioritize the community's needs when promoting urban transformation and regeneration initiatives that are highly demanding for its inhabitants.

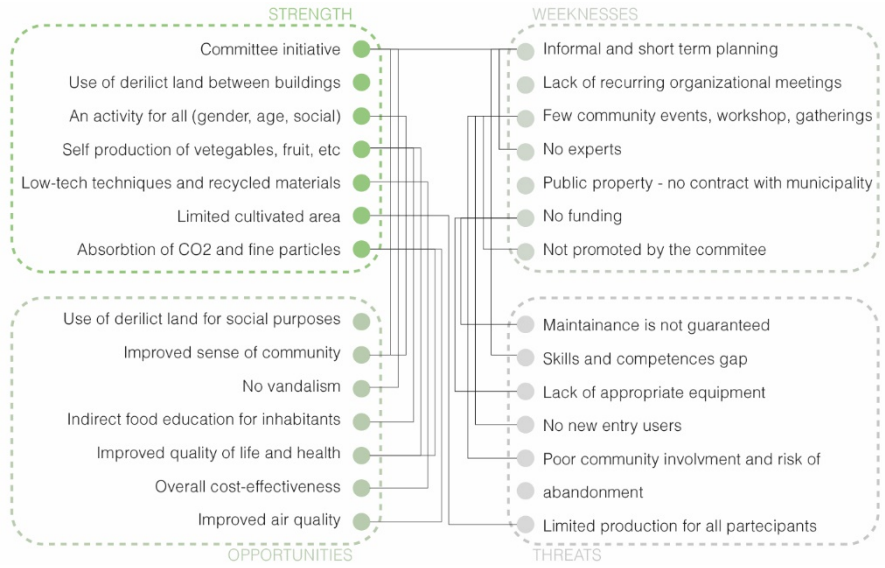

Fig. 11. 8. SWOT analysis and correlations between features that distinguished the "Very important quarter" urban gardening initiative in former Bastogi, Rome.

A drawback of the case study analysis is that, while it provides valuable insights into complex phenomena that would be difficult to study using other research

methods, the selected projects are limited in their generalizability. The findings from one case study cannot necessarily be applied to other cases. Nevertheless, the replication logic behind the multiple-case study research, which must be distinguished from the sampling logic that requires statistical procedures, allows us to extend this research to further investigate other potentially relevant variables by increasing the number of case studies. A larger number of cases could provide a more comprehensive understanding of the phenomenon and a robust and more accurate basis for identifying patterns and variables that ensure the effectiveness and success of community gardens across different contexts.

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