



Growing in Cities

Interdisciplinary Perspectives on Urban Gardening

COST-Action 1201
Urban Allotment Gardens in European Cities

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Full Papers

Institute Social Planning,
Organisational Change and Urban Development



University of Applied Sciences and Arts Northwestern Switzerland
School of Social Work

ILS - Research Institute for
Regional and Urban Development gGmbH



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Organizers

The COST Action TU1201 Urban Allotment Gardens in European Cities and the University of Applied Sciences and Arts Northwestern Switzerland (FHNW) welcome participants to GROWING IN CITIES: Interdisciplinary Perspectives on Urban Gardening International Conference, 9 - 10 September 2016, in Basel, Switzerland. The conference is hosted by the FHNW School of Social Work, Institute for Social Planning, Organisational Change and Urban Development ISOS in partnership with ILS - Research Institute for Regional and Urban Development, Germany.

We expect two days of scientific discussions and exchange of innovative ideas presented by internationally renowned keynote speakers and contributors from diverse disciplines, in the plenary and parallel sessions, discussion roundtables, and poster presentations. The conference also marks the conclusion of the 4-year EU COST Action Urban Allotment Gardens in European Cities (pre-conference for Action members on 8th September).

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Conference theme

The conference aims to explore the dynamics of existing and emerging forms of urban gardening in Europe and beyond.

This is timely in the wake of the contemporary and projected social, economic and environmental changes and challenges faced by cities. Urban gardens, particularly traditional allotments, have been part of the city; however, with the emergence of community and modern pop-up to rooftop gardens, they are becoming permanent and prominent part of the urban and suburban landscape.

Creating healthy and inclusive cities, which are environmentally sustainable and economically affordable in an ever more urbanizing world, are vital challenges for scientists, policy-makers, and CITIZENS alike. This, along with a global commitment to the implementation of the 'New Urban Agenda', focusing on policies and strategies that can result in effectively harnessing the power and forces behind urbanisation, will help urban gardens enter into a new era.

Urban gardens create growing places for PEOPLE, but also act as catalyst in building viable and equitable communities, enhance quality of life, and help create safe and prosperous neighborhoods. The conference aims to further critical dialogue and advance knowledge on the subject.

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Kitchen Gardens

A photographic project by Francesco Sinni

The history of kitchen gardens in C.E.P. (Centro di Edilizia Popolare) neighborhood of Pisa was born in 1995.

C.E.P. residents wanted to create a green area to allow socialization among different generations and cultures. In this way Pisa became more and more conscientious about slow food and organic farming issues.

„The Kitchen Gardens“ photographic exhibition shows a sequence of portraits about farmers in C.E.P. neighborhood of Pisa. Each farmer was photographed in his own garden. In this way they reveal own sensitivity and personality inside their green microcosm.

Land plays an essential role. In fact it is not only necessary to produce fruits but, at the same time, land is place where each farmer (old, young, foreign, capable and beginner) teaches to others own culture baggage.

All farmers are aware of the power of land provided that they devote love to it.

In the garden we hear often this expression „Land is low“.

In order to obtain fruits by the land is necessary to bow in front of it as well as all of us bow in front of something bigger than us.

Francesco Sinni: I graduated at the school of photography „Ettore Rolli“ in Rome in 2004. In 2006 I graduated in Economics at the University „La Sapienza“ in Rome. My master degree thesis was a photographic thesis concerning the historical and socio-economic developments in the territory of Terracina (LT). Thereafter I carried out several photo shoots working in theatres and movie sets in Rome. In 2006 I taught photography and cinema at high school. In the same year I was the director of photography in the short film „September“ winning the audience award in the film festival „lazio: terre, gente e miti“ in Rome. In 2007 I was the still photographer in the film „Pa-ra-da“ directed by Marco Pontecorvo. The shooting took place in the cities of Bucharest and Paris. In 2009 I produced two photo reportages: „Impruneta 51“ about squatters living in Rome (Magliana district) and „Sikh“ describing the Indian community of Punjab in San Vito (LT). In 2010 I went to Mexico in order to portray the Acapulco taxi drivers. In 2012 I carried out a photo shoot concerning the social and shared gardens in Pisa (CEP district). The photographic portraits were exhibited in a photo exhibition entitled, 'Kitchen Gardens', and published in the book „locus“ by Felici publisher. In the same period I shot a documentary on social gardeners working in the CEP district in Pisa. This documentary was screened at the Arsenale Cinema in the month of March 2013 during the event „Pisa in Fiore“. In May 2014 I shot a documentary interview to the director Jonathan Nossiter during the preview release of his last movie „Natural Resistance“ in the city of Pisa and San Gimignano. Currently I am involved in a photography project at the Gorgona jail (LI).



Parallel Sessions 1

* = full paper

A1 Can urban gardens change our cities? Critical perspective on urban gardening as a practice and strategy of urban social work

Chairs: Tanja Klöti, Simone Tappert & Matthias Drilling

*** Allotment Gardens in Switzerland – the challenges of self-governing communities in transforming cities**

Authors: Nicola Thomas / Patrick Oehler / Timo Huber; all: University of Applied Sciences Northwestern Switzerland

Urban gardening and the right for centrality. Critical considerations from a disciplinary social work perspective

Author: Christoph Stoik, FH Campus Vienna

*** Greening Cityscapes and Well-Being: Theory and Practice in Urban Social Work**

Author: Lena Dominelli, Durham University, United Kingdom

Tomatoes, yes! But how to grow them? And for whom? A critical analysis of non-commercial urban agriculture projects in the neoliberal city

Author: Sarah Kumnig, University of Vienna, Austria

B1 The question of spatial justice and governance

Chair: Maria Partalidou

*** Urban Gardening in Vienna between emancipation & institutionalisation**

Authors: Eva Schwab, University of Natural Resources and Life Sciences Vienna, Austria / Philipp Rode, OPK Offenes PlanerInnen Kollektiv, Austria

*** Spatial justice and heritage enhancement in the urban gardening**

Authors: Paola Branduini, Politecnico of Milan, Italy / Coline Perrin, INRA UMR Innovation Montpellier, France / Raul Puente Asuero, Universidad Pablo de Olavide, Spain

*** Public policy and community gardening in Rome: progress and contradiction**

Authors: Filippo Celata, University La Sapienza, Italy / Raffaella Coletti, University La Sapienza, Italy

*** Urban gardening in Lisbon & Leipzig: a comparative study on governance**

Authors: Ines Cabral, German Centre for Integrative Biodiversity Research, Germany / Ulrike Weiland, University of Leipzig, Germany

C1 Quantifying the sustainability of urban agriculture

Chairs: Francesco Orsini, Esther Sanyé-Mengual

Urban gardening: available tools for quantifying sustainability benefits

Authors: Daniela Gasperi, University of Bologna, Italy / Giorgio Ponchia, University of Padova, Italy / Giorgio Gianquinto, University of Bologna, Italy

Stewardship of Urban Ecosystem Services - Understanding the value(s) of urban gardens

Authors: Johannes Langemeyer, Autonomous University of Barcelona, Spain / Marta Camps-Calvet, Autonomous University of Barcelona, Spain / Laura Calvet-Mir, Universitat Oberta de Catalunya, Spain / Erik Gómez-Baggethun, Norwegian Institute for Nature Research & Norwegian Institute for Nature Research, Norway / Stephan Barthel, Stockholm University, Sweden

*** Integrating geographic, social and environmental tools for urban agriculture sustainability in Barcelona**

Authors: Susana Toboso, Autonomous University of Barcelona, Spain/ Joan Aynès, Autonomous University of Barcelona, Spain / Roger Liarte, Autonomous University of Barcelona, Spain / Carlos Torres, Autonomous University of Barcelona, Spain / Iván Muñiz, Autonomous University of Barcelona, Spain/ Joan Rieradevall, Autonomous University of Barcelona, Spain / Anna Petit-Boix, Sostenipra (ICTA), Spain

*** A methodological approach to evaluate the links between access to a garden plot and household food insecurity in deprived neighbourhoods of Paris and Sevilla**

Authors: Jeanne Pourias, AgroParisTech, France/ Raul Puente Asuero, Universidad Pablo de Olavide, Spain / Christine Aubry, AgroParisTech, France / Thomas Ducrocq, AgroParisTech, France

D1 From theory to practice (I). Exploring innovative initiatives all over Europe

Chair: Annette Voigt

*** Community Gardens in Poland – Impulse, Assistance, Expansion**

Authors: Donata Kaluzna, Green Cross Poland, Poland/ Andrzej Mizgajski, Adam Mickiewicz University in Poznan & Green Cross Poland, Poland

*** Urban gardens in Istanbul, Turkey: Forms, uses and challenges**

Author: Basak Tanulku, independent scholar, Turkey

Cooperative Kalkbreite – green transition. From parking lot to collective gardening (2009 –2016)

Author: Yvonne Christ, ZHAW, Switzerland

Floating garden demonstrating the future prospects of a new district

Authors: Krista Willman, University of Tampere, Finland

Allotment gardens in Switzerland – the challenges of self-governing communities in transforming cities

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Keywords: Self-governance, Community Development, Urban
Transformation, Allotment Garden Associations

Abstract

This article discusses the current situation of allotment garden associations in the context of social and spatial transformations taking place in allotment gardens: new user groups are renting gardens and bring different gardening cultures and meanings with them, as well as gardens being increasingly under pressure to be re-used as construction land in the context of growing cities. By drawing upon two case studies in the Swiss cities Basel and Bern, the potential and challenges of the associations' self-governing communities in dealing with an insecure future is explored and discussed.

Introduction

Allotment gardens in Switzerland have a long tradition as being important subsistence and recreation spaces for low-income groups living in dense urban areas. Located on public land, but managed by individual associations, allotment gardens in Switzerland are self-governing communities, that set and implement their own rules and gardening culture in addition to the formal rules set by the public authorities.

Mirroring larger transformations in Swiss cities, in recent years allotment gardens are undergoing changes: new user groups, often with migration background, or younger creative groups, are increasingly renting gardens. In addition, allotment gardens in larger Swiss cities are also under growing pressure from local administrations, to use the land as construction sites. These transformations present the association bodies with multiple challenges: how to govern increasingly heterogeneous garden sites, where different, often conflicting practices and ideas meet? How to position the garden for the future?

This paper will discuss these questions by drawing upon two case studies in the Swiss cities Basel and Bern. After the description of the historical and current situation of Allotment Gardens in Switzerland and the case study sites, the applied research method and preliminary findings will be presented. Finally, the role and challenges of the studied allotment garden associations will be discussed.

Allotment Gardens in Switzerland: State-of-the-Art

The history of Allotment Gardens in Switzerland dates back many years, with the first allotment gardens already existing in medieval cities. Their importance started to grow during Industrialization, where self-sufficient spaces of food-production were in high demand for the growing number of impoverished working classes in cities. This was especially the case during both world wars, where vacant land was used for subsistence agriculture (Kretzschmar & Schulin 2004; Schwerzmann 2013), but even in economically difficult times, allotment gardens also served as places for leisure, relaxation (Gallati & Schiller 2011) and provided a tool for the empowerment of the population (Gross & Kibbel 2013). With the strong economic growth that followed the Second World War, the importance of the food-producing function of allotment gardens decreased, while its function as a leisure and recreation space for the ascending working classes increased.

In recent years diversification of the formally predominantly Swiss working class users has taken place. Though Swiss citizens above 50 years still dominate, users with Southeastern-

European migration background have been rising in numbers (Frauenfelder & Delay 2011). Despite new pioneers increasingly discovering the appeal of allotment gardens, young persons, according to Kretzschmar and Schulin (2004) are underrepresented in Swiss allotment gardens. They argue this is due to time resources needed to cultivate and maintain gardens, and the association structures, rules and regulations not being attractive to younger generations.

Research on community aspects of allotment gardens have however also stressed the important role of the garden association as administrators, controllers and organizers of communal work and activities (BMVBS & BBR 2008), that brings together a heterogeneous group of people, and whose spatial infrastructure, association size and social constitution of its members, influence the intensity of the community (Verk 1999). As community-building facilitators, the garden's spatial infrastructure (such as a clubhouse) was found to play an important role in enabling spontaneous contacts and activities, while internal association conflicts and external pressures e.g. reduction in size of the garden area was found to disrupt the garden communities (ibid.) These conflicts are visible also in the case study sites.

Case studies

Both case study sites, the Dreispitz allotment garden site in Basel (Fig. 1-2), and the Schlossgut allotment garden area in Bern (Fig. 3-4), are located in transforming neighbourhoods and threatened with the danger of dislocation due to building projects.

The approx. 96 plot large Dreispitz site is located in the southern outskirts of Basel, close to an industrial area undergoing major transformations (new housing and an art university are being built there) as well as a container housing for 150 - 250 refugees currently being set up right next to the site.

The 184 plot large Schlossgut site is located in the southwestern fringe of the city, in an area called Holligen, which has a reputation for being an ethnically diverse district

that in recent years has attracted new, more affluent inmovers. The Schlossgut site was in talks to be replaced with new housing constructions, but strong resistance from the association led to the plans being put on hold; however the future to this point remains unclear. The situation is different at the neighbouring allotment garden site located across the road, which will be used as the construction land for a new housing project (yet to be developed).

Both case studies show similarities: they have been diversifying with younger users and/or migrant tenants taking over plots from elderly users, who have given up their garden plot due to old age. Both are run by association committees, whose core functions are taken over by Swiss plot holders, who have been renting their own gardens for many years. And finally, both garden associations are facing the challenge of how to handle the increasing diversification, as well as reacting to the threat of being dislocated due the site being used for construction projects.



Figure 1: case-study Basel, Dreispitz Allotment Garden Site in Basel (source: <http://freizeitgarten.ch/sides/standorte.html>)



Figure 2: case-study Basel, Dreispitz Allotment Garden Site from above
(source: <http://www.aargauerzeitung.ch/schweiz/gaertner-planen-widerstand-1968097>)



Figure 3: case-study Bern, Schlossgut Allotment Garden Site in Bern (source: http://www.fgvb.ch/regionen_vereine.html)



Figure 4: case-study Bern, Schlossgut Allotment Garden Site (source: Huber)

Methodology

The findings described in this paper are the result of an ethnographic research study based on the Glaser and Strauss (2005) Grounded Theory research paradigm, which follows three different phases (explorative, focused and selective field and analysis phase), during which data collection and analysis is closely intertwined.

The first research cycle aimed at analysing how the allotment garden communities are (re-)produced and how they function. For this, observations of everyday practices, ethnographic interviews with plot holders, visual documentation through photographs and collection of field artefacts (monthly magazine, event folders) were made. In total, in this explorative stage, approx. 30-40 hours of observations were made, ad hoc interviews lasting between 5 to 60 minutes with 20 plot holders in the case study Basel, and 18 in the case study Bern were conducted. The interviews were conducted in the main gardening seasons of spring/summer/autumn 2015, where most gardeners are active in their plots. The winter season was then used to analyse the gathered data in greater detail.

In the second research cycle, to explore the image external stakeholders have of the case study sites, expert interviews with a sample of stakeholders (n=6 / case study) from the field of community and neighbourhood development, planning officials, social workers and civil society organizations were conducted. Currently in the third research cycle, now the themes and concepts that have emerged from the previous data collection and data analysis are being studied in greater detail. Especially the association committees have emerged from the data as being central to the functioning of the communities, and hence also to their future existence. In order to explore this in greater detail, a round of group interviews (n=2, case study) is currently being conducted.

Preliminary Findings

Community Building

How do allotment garden communities function, how are they (re-) produced? These questions were the starting point for the ongoing research project, and through observations and interviews, amongst other methods described above, the researchers analysed the process of community building in both case studies.

The community building process was found to be multifactorial, meaning depending on various different elements (referred to as "reality", as these are embedded in the everydayness of the gardens), which were categorized as:

- Organizational reality
- Cultural reality
- Spatial reality
- Practical reality

Plot holders in the studied allotment garden sites share a number of "realities", which together form the base for the garden communities: the plot holders follow the same focal activity (gardening), share the spatial reality (each gardening plot is of approximately similar size, and located within the enclosed garden site), and renters must follow the same rules

and obligations set by public officials and the gardening association (organizational framing).

When it comes to the social structure, the community is characterized by a heterogeneous group, consisting of people from different national backgrounds, as well as different age groups. In the Basel case study, approx. 60% of all plot holders hold Swiss nationality, followed by Italian (9.1%) and Turkish nationals (7.1%). In Bern 40% of all users are Swiss nationals, followed by Italian (14.7%) and Spanish (13%) nationals. The age distribution of users is similar in both case studies, with people in the age group 46 - 64 years being the largest group (48.5 % in Basel, 40.65 % in Bern) and approx. one third of users in both sites being 65 years old or older. Users between the ages 31-45 form a smaller part in both garden sites (11.1% in Basel, 19.8% in Bern), while users in the 18-30 age group are an even smaller minority: only 1% of users in Basel and approx. 3% in Bern are younger than 31 years.

These heterogeneous user groups attach different meanings and values to their garden: while the traditional Swiss plot holders especially value the garden as a leisure and relaxation space, for migrant plot holders using the land for growing vegetables for their own use often has higher importance. These different meanings show in the individual landscape design of the gardens, with "leisure gardens" having larger lawns and less grown vegetables and fruit plants than "agricultural gardens".

Yet, despite these differences, all user groups value their garden as a green withdrawal space and a creative production space, where the everyday practices and everyday interactions both between smaller and larger groups are important parts of the culture and community building.

Conflicting Allotment Garden Images

There are significant differences regarding the perception and meaning of the allotment garden sites between the involved users of the sites and public officials. While for the users the private value (having a safe, relatively autonomous space to withdraw to) of their garden is important, for public officials the transformation of the sites into more public green areas is

desired. For public officials the potential public value of the gardens is important, and future plans point in the direction of a greater communalization of the gardens (public paths, public uses), something not necessarily desired by the users themselves.

Connected to these differing perceptions is the use intensity of the gardens. Public officials see the current garden use being of low use intensity and aim for an intensification, e.g. by bringing new public uses into the sites. However the researchers' observations and talks found that in practice the sites are already characterized by high use intensity and use multiplicity. The garden plots are often shared with other family members and friends, a great diversity of plants and vegetables (often the seeds are brought from the original home country) are grown in the gardens, and in general the garden requires high time and work investment.

The public transformation plans are not grounded in the sites themselves, with the gardeners not expressing any similar transformation desires, but rather developed top-down based on the desired image of public officials.

Role of the Association managing committee

In both case studies the managing committee (consisting of 3 to 6 persons) plays an important role in how well the gardening community functions both internally but also externally, regarding the relationship with public officials. In both case studies the committees are made up of middle aged to elderly Swiss citizens, and are mostly men. The managing committee, especially the president of the garden sites, takes on an important intermediate role between the individual plot holders as well as the public department responsible for green spaces in the city, which set the official rules.

On the one hand, the committee tries to ensure that the individual gardeners keep to the official rules regarding the infrastructure and garden, as e.g. unweeded, overgrown gardens or unauthorized built extensions to the gardening hut can result in gardeners losing their plot of land. On the other hand, they feel a sense of obligation towards the individual gardeners, and

try to represent their interest when interacting with public officials, e.g. by trying to exert influence regarding the future existence of the gardens by starting an initiative against the planned housing construction.

The degree of strictness thereby depends very much on the individuals' interpretation, with the president and site manager deciding which rules they ensure are adhered to (most often this being visible and thereby punishable rules, such as hut extensions), and which rules they are more tolerant about (this often being rules less visible, such as the allowed share of lawn/vegetables/flowers, distances towards paths etc.).

In both case studies, the garden sites have experienced diversification in recent years. Despite the committee in both case studies wanting to include the newcomers in their association activities, their efforts, according to interviewed committee members, show little success. The failed integration is mainly measured on the attendance of public events such as the yearly summer party and association meetings. However, the interviewed committee members did emphasize that on a small scale the integration does work, with migrant users greeting their neighbors, exchanging a few words, and there being a general social cohesion in the sites. Nonetheless, not participating in institutionalized social activities is viewed as being a sign for failed integration. However, the interviewed committee members are aware that this might also be the result of larger changes in society taking place, such as changes in working and leisure life being hard to combine with the often rigid association structures.

In interviews, gardeners named lack of time resources due to work and/or leisure commitments as reasons why they could not participate more in association meetings and activities. A further reason could also be that the style of governing of the associations does not reflect the realities of the younger pioneers, who frequently are exposed to new styles of government, flatter hierarchies and networks in their working environments.

Conclusion - the challenges of self-governing allotment garden communities

The association committees in both case studies take on an important role when it comes to managing the garden community. Most rules are set by the gardening department of the city council, which provide the garden sites with its operating and legal framework, as well as being the final conciliation committee if conflicts between gardeners cannot be resolved by the gardening association. Yet, the associations can nonetheless be described as being self-governing, for the functioning of the garden sites on the everyday level is determined and overseen by the association committee members. As well as having a high degree of autonomy in deciding how official rules should be implemented, they take on mediation tasks (if there are conflicts amongst gardeners) as well as ensuring a certain degree of spatial order in the garden site.

Both associations are characterized by a clear division of responsibilities, tasks and functions as well as democratically elected representatives, who have a paternalistic understanding of their function - gardeners trust representatives to represent their interests, presidents at the same time feel a sense of responsibility and obligation towards their members. Since the association work is done voluntarily, it also heavily relies on support from gardeners to fill the roles. However in both case studies, the associations are facing challenges in reaching out to the new plot holders. Even though the association committee expressed the desire to see more users taking over communal responsibilities (such as clearing paths or organizing festivities), at the same time the members expressed acceptance for users not participating in formal association activities. Furthermore, when integration of the users is not measured by participation in communal activities, and instead by informal interactions both garden sites can be described as being well functioning, integrating places.

While allotment gardens often are viewed as outdated and in need of reform (cf. Kretzschmar & Schulin 2004), recurrently the land is sold to developers and the future is insecure. As most

current gardeners have limited resources and live in small rental apartments without gardens, the importance of allotment gardens for its users as spaces of recreation and regeneration, as well as creative spaces of production cannot be stressed highly enough. Therefore, the associations need to ask themselves how they can position themselves in such a way to ensure they can exist in the future also. Possibly one path could be to form alliances with other organizations, be it other allotment garden sites, local community stakeholders, nature or political groups, etc., to give their interests a larger base. However, what is also needed are open discussions in society in general about how future urban development should look like – which values should urban development be based on? Which uses and groups is urban development currently catering to, with other uses and groups being pushed to the side? How should the high social value of allotment gardens be measured against the financial value the redevelopment into housing projects would bring to the land owners? And finally: in what kind of environment do we want to be living in the future? These are questions that need to be discussed.

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Greening cityscapes and well-being: Theory and practice in urban social work

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Keywords: Cityscapes, Well-being, Hyper-urbanisation, Green Social Work, Urban Social Work

Abstract

Cities are becoming concreted over as developers try to maximise the profits they can extract from land. Their practices can stress the physical environment as they squeeze more and more people into small spaces, producing higher and higher apartment blocks and undermine the well-being of people, and plants and animals that formerly roamed over green fields before they became concreted land in a hyper-urbanised landscape. This paper examines the changing face of cities from an urban social work perspective that is critical of the exploitation of land with little regard for the health and well-being of people, other living things and our planet. It considers examples of green social work practice in urban areas where greening the city through community gardens in many cityscapes ranging from car parks to roof-tops have transformed local communities. These transformations have included providing grassy green places with trees and plants for leisure activities for all age groups; vegetable gardens or allotments providing poor people with a modicum of food security and a supply of fresh fruit and vegetables; creating wildlife reservations that help safeguard biodiversity; restoring degraded soils through composting schemes; and giving people neighbourhood activities that bring them together and, in multicultural communities, growing plants together helps promote social cohesion and multicultural activities celebrating the foods they have grown themselves. Greening cities is, therefore, also a therapeutic activity. Urban social workers following green perspectives can make a

difference in reducing greenhouse gas emissions by greening the urban jungle and growing food locally; enhance resilience among community members, and reduce the impact of bleak concrete landscapes on their lives.

Introduction

A growing world population, now in excess of 7 billion, and predicted to rise to 12 billion before stabilizing at 9 billion in 2050 by the United Nations is leading to pressure to release agricultural land for building purposes, and to raise the number of people housed per hectare of land. Skyscrapers reaching higher and higher into the heavens are seen as providing the logical answer to this dilemma. And while there are many critics of this urbanisation policy, the 'small is beautiful movement' trumpeted by Schumpter has received a setback as the majority of the world's inhabitants became urban dwellers in 2015, and some countries, e.g., the Peoples Republic of China are increasing the exodus of individuals from the countryside by planning for urbanised living largely in cities no smaller than 16 million residents, in a policy I have termed 'hyper-urbanisation' (Dominelli 2012).

Throughout the world, city after city is becoming concreted over as developers try to maximise both land use and the profits they can extract from land. Their practices can stress the physical environment as they squeeze more and more people into small spaces, produce higher and higher apartment blocks and undermine the well-being of people, and plants and animals that formerly roamed over green fields before they became concreted over in a hyper-urbanised landscape. The protagonists of this approach argue that high density and high-rise housing conserves resources such as land and can deal more effectively with population growth. However, this strand of thinking ignores the possibility that small cities, self-sufficient in many of activities and functions, would avoid the worst excesses of urbanisation, especially those embedded within centralised notions of cities that ask people to spend long hours commuting

into work with the attendant traffic jams, pollution, and extra energy costs.

Fortunately for those of us concerned about this state of affairs, there are green and sustainable initiatives that seek to counter such trends. Using their imagination, small community initiatives involving community workers and social workers among other professionals, have sought to create green urban spaces. This is particularly applicable to green social workers promoting renewable energy alternatives to fossil fuels, planting trees, plants and vegetables, conserving spots for wildlife, and turning concreted spaces at both ground and roof levels into allotments to grow produce for human consumption and wildflower gardens for birds, bees and insects. They are also turning (wild) physical spots into therapeutic spaces to rehabilitate human beings, and have refused to succumb to the planners imperative to turn green space into gray concrete and glass.

This paper examines the changing face of cities from an urban social work perspective that is critical of the exploitation of land with little regard for the health and well-being of people, other living things and our planet. It considers examples of green social work practice in urban areas where greening the city through community gardens in many cityscapes ranging from carparks to roof-tops have transformed local communities. These transformations have included providing grassy green places with trees and plants for leisure activities for all age groups; vegetable gardens or allotments providing poor people with a modicum of food security and a supply of fresh fruit and vegetables; creating wildlife reservations that help safeguard biodiversity; restoring degraded soils through composting schemes; and giving people neighbourhood activities that bring them together. In multicultural communities, growing plants as a group helps promote social cohesion and multicultural activities celebrating the foods they have grown themselves. Greening cities is, therefore, also a therapeutic activity. Urban social workers following green social work perspectives can make a difference in reducing greenhouse gas emissions (GHGs) by challenging the unhealthy aspects of the urban jungle and

promoting greening activities within it; growing food locally; enhancing resilience among community members, and reducing the impact of bleak concrete landscapes on their lives.

Urbanising the Planet

Organising social relations to make the best use of space and resources in meeting people's needs is an anthropomorphic view of the world in the historical period known as the Anthropocene. It has involved people making trade-offs between their demands for resources and the skills they have to turn them into products for use. In contemporary societies, this equation is being solved through a globalised capitalist system known as neoliberalism. Neoliberalism is a continuation of the ideologies characterising modernity, namely that 'men' were entitled to control nature to meet their needs. Hence, the exploitation of natural resources was subjected to profit-margins and treated as ripe for exploitation in the speediest and cheapest manner possible. Modernity was also the 'age of reason', and the belief that planning and technology could solve all human problems, including those caused by over-population, the super-exploitation of natural resources, and technological innovations to move humanity forward.

The earth is being urbanised rapidly. The United Nations (UN) claimed that 55% of the planet's population lived in cities in 2015. Moreover, these settlements consumed 80% of the world's energy and released most of the GHGs. Urbanisation is expected to encompass 70% of the population by 2050. The Dutch group Arcadis has sought to rank the world's cities in terms of liveability, using criteria that include factors that impact directly on people, the planet and profit. Their ranking shows that the four most liveable cities are in Europe – Frankfurt, London, Copenhagen, Amsterdam; while of the four least liveable cities, three are in China and India – Mumbai, Wuhan, New Delhi, while the worst one – Nairobi, is on the African continent. These figures do not augur well for the health of either people or the planet if urbanisation is to proceed at its current hectic pace, especially in the fast growing areas of the world in Asia and sub-Saharan Africa.

In contrast to this pessimistic picture, is the optimism contained in the *Vertical City* (www.verticalcity.org) which argues that individuals living high in the sky can reduce their requirements for utilities infrastructures including energy, water and sanitation, by taking individual action such as using local, renewable energy sources, conserving water, reducing waste, and eating locally produced food. Of course, all these activities can be undertaken in smaller cities, and at less cost to the environment because energy is not consumed to take this utilities from ground level to sky level.

Within the framework of modernity, the problem of urbanisation is cast as one that planners can solve. Certainly, there have been a variety of movements aimed at finding sustainable solutions to the problems of urbanism. The key ones, rooted in the concept of the environment-friendly neighbourhood as a liveable space, have been the Garden City, the Neighbourhood Unit, Modernism, Neo-traditionalism, and Eco-urbanism (Sharifi 2016). For those who inspired these ideas, for example, Ebenezer Howard who established the Garden City idea amid the slums of Victorian London, healthy, liveable and sustainable communities based on neighbourhoods appeared high on the list. They are similar to our concerns today, although we have to add addressing the problems that the failure to produce sustainable cities in the past has created for us today, especially climate change globally.

Sustainability is crucial to green, living cities, but there is not agreed definition of what it means. However, the notion of inter-generational equity and the integration of social, political, cultural, economic, organisational and environmental considerations are deemed inherent to all the city concepts mentioned in the paragraph above (Brundtland 1986; Dominelli 2012; Sharifi & Murayama 2014; Wheeler 2004). There is hope for some decayed cityscapes in that soil degradation has been the subject of interdisciplinary work that enables physical and social scientists to focus on soil health, especially in brownfield sites, and develop links with social workers and engage with local communities. One of these, Karen Johnson, at Durham University has led ROBUST (Regeneration of brownfield

land using sustainable technologies), has been able to restore carbon and minerals into the soil. Soil regeneration also contributes to healthier lives for people as well as to provide more solid ground upon which to build infrastructures.

Social Work Endeavours in Greening Urban Spaces

Social workers have been involved in green or environmental initiatives since the 1990s. The work of Besthorn (2011), Rogge (2000), and Ungar (2002) were important in critiquing the way in which 'the person in the environment' had become focused largely on socio-economic, political and cultural systems at the expense of the environment. While their work was crucial in identifying the issues that had been ignored for too long, they failed to embed their critique in understandings of the crucial guzzler of resources – neoliberal capitalism, and its voracious appetite for people, energy and other physical and material substances to fuel its development and technological innovation; and the unequal power relations within which social and human development occurs. Green social work does that (Dominelli 2012). I define it as a holistic approach to social development that takes account of the needs of people, the earth's flora, fauna and physical environment, the socio-economic and political systems within which social development occurs, and the power relations that exist between and among people, and between people, other living things and earth as a holistic ecosystem (Dominelli 2012:25). Moreover, I have based green social work within the contexts of addressing both 'natural' and (hu)man-made disasters, coproduction of solutions to the problems raised by outdated modes of social development rooted in neoliberalism, egalitarian partnerships and interdisciplinarity wherein the physical and social sciences and arts and humanities holding scientific expert knowledges engage in dialogical exchanges with local/community and indigenous knowledges. This approach has redefined the 'duty to care' from focusing only on people, to one that encompasses all living things and the physical environment (Dominelli 2012). If we care for the earth, it will care for us, and thus reinforce the mutuality of existence, and not the dualism favoured by modernity.

The remit of green social work, therefore, has no arbitrary limits. Those working on specific projects will determine its scope and scale. Most green social work initiatives to date have been based on small communities based on neighbourhoods where spatial considerations linked to apply identity communities and interest communities. However, the size of a community nowadays can be enlarged significantly through the internet where virtual communities exist unbounded by traditional notions of time and space, and where speed in communication and also travel are taken for granted. While positive in many respects, especially in bringing the world closer together, both these developments have significant energy costs to service the servers and computers involved which can stress the environment by contributing significantly to climate change. Some interesting developments which include holistic, transdisciplinary approaches are the products of community development work, much of which has occurred in rural areas, e.g. in Misa Rumi in Argentina. Here, making solar-powered stoves available for cooking and heating reduced the carbon emissions by 80,000 tons, reduced the communities need for firewood from the nearly extinct Yaruta tree, and saved women much work in collecting firewood (Stott 2009). The island of Eigg in Scotland, has also worked hard to become self-sufficient in renewable energy. It now produces 90 % of its energy from wind, solar and hydro sources, and won the Gold Ashden Award for its endeavours in improving energy efficiency (Chmiell & Battacharyya 2015).

However, community workers are also active in the cities, where solar-powered electricity is being produced for both heating and cooking. In the US, 20 cities – representing only about 0.1% of U.S. land area – accounted for a stunning 6.5% of U.S. solar photovoltaic (PV) capacity (Pentland 2015), and a number of universities have used social work students to green the land in the communities within the cities. In others, practitioners have taken the lead in working with social work students and service users to green specific buildings, including their own workplaces. An example of this is the Burnside Gorge Community Centre in Victoria, Canada, which helps children and families seeking to turn their lives around, following child protection

considerations. They got involved in building a rooftop garden. The building itself is green to the extent that it meets the Leadership in Energy and Environmental Design (LEED) certification to platinum standard. In other places, e.g. Vancouver, community workers have been involved in many community initiatives including replacing car parks with allotments growing vegetables, as well as rooftop gardens. The construction of high-rise green buildings have taken off in many countries including China, Singapore, and Qatar. Tower 101 in Taipei, Taiwan, displays its green credentials with pride. The extent of this greenness in cities has been contested, and residents often complain about the lack of green spaces in which children can play, older people can sit, and everyone can enjoy leisure activities. Yet, everyone is agreed that green spaces in cities contribute to human well-being, physical and mental; provide havens for wild-life; and add to the attractiveness of the cityscape.

The Therapeutic Power of the Environment

Social workers have appreciated the therapeutic value of the environment, although this has been used primarily for young people, especially those in urban areas who got into trouble. Rehabilitation usually took the form of building up young people's characters by taking troubled young people into the great outdoors, and wilderness, e.g. Outward Bound courses. Outward Bound is a charity that has existed since 1941. The therapeutic value of such approaches, especially those labelled 'intermediate treatment' in the UK are well-established, even though they do not work for all young people. Such programmes aim to build young people's self-esteem, resilience, capacity to get along with others, and to make decisions in a mature manner. For many, such activities turn their lives around. Intermediate treatment lost favour in statutory social work in the UK in the 1990s, when a number of stories including that of 'Safari Boy' highlighted how those who had had thousands of pounds spent on rehabilitating them through expensive character-building trips abroad continued with their criminal careers (Gladdis 2012).

Conclusion: Ways Forward for Green Social Work in Urban Space

Urban spaces do not have to be grey concrete deserts that are soulless and destructive of human aesthetic capacity and appreciation. Green social workers should challenge the view that small, boxy apartments that cost the earth are appropriate habitats for poor, marginalised people while wealthy individuals appropriate the best, greenest and healthiest landscapes for their personal use. This means working in partnership with local communities to protect human beings, the earth's flora and fauna and physical ecosystem from the predations of a capitalism interested only in the bottom line – more and more profits from less and less monetary investment.

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B1 - The question of spatial justice and governance

Urban Gardening in Vienna between Emancipation and Institutionalisation

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Abstract

Viennese city planning has increased its investment in public spaces since the early 2000s and grants them an essential role as medium of change for the renovation and development of the city. Since 2010 the city is governed by a red-green coalition which puts special emphasis on the 'attractive' design of public space, because quality of life is 'significantly' supported by it. The government agreement addresses the involvement of civil society on the local level, self-harvesting and community gardens are explicitly mentioned as welcome, because the local level and socio-productive uses of public green space are ascribed the potential to serve as testing ground for alternative lifestyles and city models (Häupl & Vassilakou 2010). Against this background, this paper critically reviews the emancipatory content of Vienna's urban gardening practices and regulations and presents research on current urban gardening practices in Vienna inspired by the notion of an emancipatory urbanism (Amin & Thrift 2004; Mörttenböck & Mooshammer 2013). Specifically, it enquires into the spaces used for urban gardening practices, into the actors of current initiatives and their relationship with official administration as well as the emancipatory content of their practices using site analysis, semi-structured interviews as well as document and secondary sources. This research has found that the initiatives and their practices have enriched the understanding of public space through its socio-productive use as well as addressed issues surrounding social re-densification and planning shortfalls in urban space. At the same time, strong tendencies of particularism and institutionalisation can be detected. The specific Viennese planning culture and policies

(Dangschat & Hamedinger 2009) contain the risk to choke alternative expressions of the urban gardening idea and thus hinder the constant revival, critique and contestation that are the foundation of an emancipatory urbanism.

Introduction

Vienna is the capital and largest city of Austria with about 1,8million inhabitants. The city covers about 415km², and is divided into 23 districts as political administrative units. After decades of stagnation and decline in population, the city has started to record growth since the 1990s. The population of Vienna has grown by about 10 % since the early 2000s. This growth entails increased socio-spatial inequality, which manifests in territorial concentrations of aging and migration processes, and is associated with a strained housing market. Furthermore, the proportion of green space in each district varies from between 3 - 13% in the densely built-up inner city districts to 70% in the western outskirts. Traditional allotments take up 4.8 % of green spaces, whereas the more recent community or neighbourhood gardens represent 0.02% of green spaces.

Viennese city planning has increased its investment in public spaces since the early 2000s and established them as a versatile domain of politics. Public space plays an essential role as a medium of change for the renovation and development of the city. Thus the issues of social integration, urban development and environmental protection were linked with the development, designing and use of public space, especially in local, small-scale projects. There is a growing interest of civil society in Urban Gardening since mid-2000s, which finds expression in a number of newly created community gardens. Some of these initiatives make explicit reference to discourses such as 'The Right to the City', 'The Commons' or 'Guerrilla Gardening' and addresses alternative or emancipatory forms of space production. At the same time, the city government supports this trend as a contribution to the high quality of life in Vienna, which represents an essential location quality for Vienna in the international competition among cities.

Since 2010, Vienna is governed by a red-green coalition (after elections in 2014, the coalition continued). The planning department

is headed by Greens. The department for environment, which administrates urban green spaces, is led by a social-democratic councillor. While historically engaging in opposing approaches to city planning, an approximation of approaches between Social Democrats and Greens can be identified especially in the joint focus on public open spaces in the government agreement. There is an emphasis on 'attractive' design of public space, because quality of life is 'significantly' supported by it. Green spaces are mainly appreciated for their function as recreational and ecological compensation. The government agreement addresses the involvement of civil society at the local level, with pilot projects playing a major role (Häupl & Vassilakou 2010:58). Self-harvesting and community gardens are explicitly mentioned as welcome (ibid. 59). We can see that an impetus for change is addressed: The local level and socio-productive uses of public green space are addressed as a testing ground for alternative lifestyles and city models. Using empirical data from site analysis, semi-structured interviews and document and secondary source analysis, this paper critically reviews the emancipatory content of Vienna's urban gardening practices and regulations making reference to planning culture & urban design as well as critical planning theory.

Civil society initiatives between Emancipation and Privatisation

Urban gardening has been related to the idea of emancipatory urbanism, in which initiatives and associations develop emancipatory content within existing political structures and initiate social and cultural change (Amin & Thrift 2004:234), especially by using public space in an attempt to change its meaning and bring social change (cf. Mörtenböck & Mooshammer 2013; Reynolds 2010). It is argued that civil society initiatives test new models of society especially in times of crisis, like in the current neo-liberal crises (Laimer 2013). A critical appraisal of urban social movements and emancipatory urbanism is offered by Mayer and Boudreau (2012) who argue that these contain a supra-local perspective through the interplay between local initiatives and global discourses; this offering a potential renewal for forms of contestation in which urban movements take on the challenges to corporate urban development, claims for social and environmental justice, and anti-globalization (ibid. 284). An essential form of their expression is 'small acts of re-appropriation of urban space' (ibid. 285). This approach is found mainly in dense

cities and dense social networks, i.e. within a circle of existing acquaintances, and may be primarily attributed to a young, educated population. The well-known forms of expressions are urban gardening, interventions in public (road) space and activities in public parks (ibid. 286). From a political geography perspective, Harvey critically highlights a 'militant particularism' (Harvey 1996 in Mayer & Boudreau 2012:276) with conservative and self-referential motives within these local initiatives.

Forms of Urban Gardening in Vienna

A survey conducted in spring 2014 shows that about 45 gardens and green spaces in the city of Vienna are used as community gardens. A large part of these projects, about 58% is situated in densely built-up, historic urban space. Further 13% are located in urban development areas or in newly constructed projects, 11% in residential neighbourhoods at the outskirts of the city. About 7% of the projects are found in large-scale settlements dating from the 1970s/1980s.

About half of the projects are located in existing parks; more than one-third of these show a peculiar spatial configuration (such as internal courtyard, linear layout, micro- open space) or utilize underused border areas. Approximately 13% of the projects use open spaces of residential developments, another 9% are active in internal courtyards or portions of built-up plots. Approximately 11% are located on abandoned or underused land; only 7% of the projects are located on agricultural land. The ownership structure mirrors these findings: Almost 70% of the land is owned by public authorities. In 9% of cases, developers or investors are the owners of the land, and private individuals own about another 9%.

The first projects were documented in 1998 and 2001, then as temporary and arts based projects. Since 2009, a significant increase of urban garden projects can be identified, which reached its height in the years 2011 and 2013 with ten new initiatives respectively – a trend which continues up to the present. A long-term intention can be distinguished for most projects; only about 13% of the projects are explicitly intentioned as temporary.

In one-third of the cases, neighbourhood groups or associations initiated the projects. Among these, the Gartenpolylog association is an interesting case. Starting from a temporary urban gardening project

during an arts festival in 1998, a neighbourhood initiative formed and worked in close co-operation with the municipality (MA 42) to develop a guideline for urban gardening in Vienna. Since then, Gartenpolylog has developed in a city-wide player and forms a network node in the urban gardening scene. The association has developed or helped establish about 20% of community gardens in Vienna. Other main actors are Local Agenda 21, which triggered more than 13% of the urban gardening projects and the area-based urban renewal offices and private sector actors, which each initiated another 9% of projects.

The majority of the projects - about two thirds - are organized as an association. Only in two cases there is no formal management body of the project, the actors remain anonymous. In all cases, the intention of the project focused on enhancing the neighbourhood at the local level. The social aspect is an essential moment in the emergence of an initiative as well as the durability of their commitment. In the current urban gardening initiatives, initiators consist of existing groups of people who link their private interests with expression of values and social commitment and mainly use the support offered by the City of Vienna. Central issues are environmental education, ecologically oriented concerns - such as self-supply- and the aspect of democratic self-organization for social change. There are a few cases, however, in which a more individualistic focus became apparent, e.g. when promoting gardening as hobby. An emancipatory streak can be observed in 13% of the projects, e.g. when the development of urban alternatives is targeted; only 4% of the projects aimed at formulating protest.

Conclusions

Two essential characteristics become manifest through the analysis: the Viennese urban gardening scene was formed relatively late and is strongly institutionalized. As such, the urban gardening movement can be read as an exemplification of planning culture in Vienna, which is characterised by a late and "softer" manifestation of international trends (Dangschat & Hamedinger 2009), owing to a high degree of political and economic stability and social partnership arrangements. Hence, it is not surprising that even though the start of most initiatives can be traced back to civil society engagement, the structural and spatial implementation shows attributes of a settled movement, integrated in bureaucratic structures. This is due to the

municipal policy which ties the allocation of public land to the establishment of certain structural bodies for taking over the responsibility for the utilization of the plot. Therefore the initiatives are long-lived and have committed gardeners. However, they can hardly be called radical. This raises the assumption that such a strong integration of social movements into enduring bureaucratic structures weakens their emancipatory content.

An extended understanding of urban green space

Looking at the initiatives' intentions, their focus on public green space can be interpreted as sign of dissatisfaction, which concerns the administration of green spaces, and also criticizes the traditional understanding of urban green space. The intentions of the initiatives are clearly connected to self-empowerment and self-organisation. A main achievement has been a conceptual and discursive expansion of the notion of urban green space by production aspects. Thus urban green is no longer reduced to ecological compensation, the framing of representational spaces in the historic centre and recreation opposing urbanity. In contrast, green space is considered as an integral part of the city by the urban gardeners, who understand themselves as producers. In this regard, the initiatives have changed the meaning of public space and partly triggered social change (Mörtenböck & Mooshammer 2013), showing emancipation from the idea of the all providing state.

Social re-densification and planning shortfalls

From a planning and urban design perspective the emergence of these initiatives reflects three different tendencies: Foremost, the re-densification of already densely built-up areas is also visible in open space - micro open spaces that were designed as interspaces or flower beds are socially densified by active use. The design as functional urban green spaces is thus replaced by a more user and productivity-oriented design, which only in rare cases show improvisational character. This is again linked to the process of institutionalisation, as municipally funded gardens tend to have standardized design. Improvised or self-made designs, which would extend the municipal notion of design, constitute the exception. Secondly, unfavourable configurations of linear or fragmented open spaces around the inner urban fringe have received new use and significance through the initiatives. This dynamic is owed to socio-

cultural considerations, to what extent this is in answer to design shortcomings remains to be verified. Thirdly, the initiatives deal with socio - cultural problems of large-scale housing, both in newly built housing – where they are part of a funding strategy to achieve social sustainability – as well as in the older peripheral housing estates.

The gardening initiatives' use of existing parks and green spaces can be interpreted as a critique of their design and role in urban development, since open spaces with difficult formal configurations and fragmented layouts are a clear sign of their subordinate role as urban leftovers.

Emancipatory Potential?

The majority of the Viennese garden initiatives focused on strengthening local neighbourhoods in socio - cultural aspects and social cohesion within a distinguished community. The smaller part of the initiatives deals with the development and implementation of urban alternatives critical of market driven urban development processes, spurred by discourses such as "Right to the City" and "Guerilla Gardening". These initiatives also tend to have a more emancipatory content, which manifests itself in a stronger autonomy regarding organisational structure and standardized implementation. Hence, we can assume that it is this strong focus on the local level which might hinder activating emancipatory potentials. In the absence of exchange and networking, individual comfort concerns could replace critical views. Another pitfall might lie in observable tendencies of privatization of public space. Fencing off can be called a distinguishing garden feature, but this socio-spatial practice applied in public space reduces its accessibility and publicness. While this may be due to vandalism experiences, it also reflects particular interests of the members and particularistic tendencies (Harvey 1996).

The attitude of the current government is to be characterized as ambivalent – the support of the initiatives should be evaluated positively and also reflects the willingness to further develop the notion of urban green space and participatory planning practices. However, the phenomena of design standardisation and structural institutionalisation represent clear signs of control, which also carry streaks of discursive misappropriation. If these tendencies continue, there is a risk that the initiatives become ever more self-

referential. Urban Gardening in Vienna has become a mainstreamed strategy, which is tactically exploited for marketing issues in commercial and political respects. The Viennese policies contain the risk to choke alternative expressions of the urban gardening idea and thus hinder the constant revival, critique and contestation that challenge particularistic tendencies and the strong local state. Propelled by emancipatory ideas, the urban gardening initiatives have undeniably brought about renewed concepts of urban green space and a strengthening of civil society initiatives. The observed institutionalisation and particularism however reveal a problem: Lacking emancipatory content, the urban gardening hype is bound to produce privatised or underused urban spaces awaiting the next crisis to be re-interpreted.

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Spatial justice and heritage enhancement in the urban gardening

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Keywords: Rural Heritage, Social Justice, Urban Agriculture, Urban Gardens

Abstract

Urban agriculture activities can enhance rural heritage by taking care of the tangible heritage and by supporting intangible heritage transmission, re-interpreting the agricultural function through the needs of contemporary city (Branduini 2015). Urban gardens hold a multiplicity of actors that use the space in different ways and share knowledge, tools and skills, not only agronomic, but also social, relational and economic: they can have different feeling of justice. Comparing different typologies of urban gardening (family, allotments, squatter, community, educational, therapeutical) recognized by the COST Action UAE (Simon-Rojo *et al.* 2015) in three Mediterranean metropolis (Seville, Marseille, Milan), the investigation identifies how social justice (investigated in the ongoing JASMINN project funding by the French National Research Agency) is expressed and translated in a spatial form. Results evidence that transmission of tangible heritage is incisive if deliberately chased by the main aims of the association managing the garden, thus the dissemination of intangible heritage is mainly an intergenerational and intragenerational transmission. The procedural justice is a shared tool: once a rule is a priori defined, the participants accept and follow it, no matter if it concerns the maintenance of heritage, the quality of space, the technique and philosophy of cultivation. The commitments are shared and planned in the meetings and are rarely defined by the garden rules. The specific design of the urban garden

has also an impact on its inclusiveness. External partnership and educational purposes are fundamental when the gardeners ask for legitimation of the space. Finally, the three metropolis are pursuing similar actions but with different agendas.

Introduction

The city expansion has reduced the extent, the structure and crop variety of agricultural land at the city borders, decreasing traditional landscape features. In this context, urban food gardening and urban farming can both perform cultural services for society, maintaining traditional cultural landscapes and their components, crop varieties and cultivation techniques, and transmitting customs and traditions. Tangible heritage pertains to the material elements of the agricultural landscape, to their historical authenticity and their physical permanence through time; intangible heritage pertains to the significance attributed by people to places, to techniques and skills that have enabled the creation of landscapes and to features dictated by economic and behavioural factors (Branduini 2015). All these values enhance people's lives and benefit society because they contribute to a sense of place (ICOMOS Australia 1999; UNESCO 1972). Cultural heritage is linked to outstanding landscape as well as to daily landscapes and even to abandoned areas (ELC 2000).

Multiple users use urban gardens in different ways, taking advantages of available resources (e.g. water, soil), asking for new resources (e.g. electricity) and interacting with the rural heritage: they can respect it, re-utilize or modify it. In this regard, the urban gardens are authentic schools of training for people and groups. The path along an urban garden grants knowledge, tools and skills, not only agronomic, but also social, relational and economic. In an urban garden, new intergenerational relations (from children to old people) and intragenerational relations (exchange of competence) can take place; the management of all the actors entailed can be organized by internal forces (self-organisation) or external input (partnership). In an agronomic social view, a multi-product space (balanced agro system with a variety of vegetables) is composed by a "multi-social" space, where different types of people (age, social and work conditions, nationalities, race and religion) live together.

Talking about social equity in agricultural land protection, Jacobs considers an effective farmland protection as an intergenerational equity issue (Jacobs 1989). In a similar way, the transmission of the rural heritage to future generations may be considered not only as an issue of public interest but also of intergenerational equity and more generally of social justice. It questions the possibility of a fair policy to address the needs of humanity, present and future. There are very diverse philosophical positions about "justice", with sometimes contradictory planning policy implications (Fainstein 2010). In this paper, we consider two fundamentals of social justice: 1) distributive justice, that refers to the perceived fairness of policies' outcomes with a special focus on the (re)distribution of resources (of goods, of services etc.) among diverse people or social groups, and 2) procedural justice, that insists not only on an equal treatment of all individuals, but also on the need for a wide public participation and for the recognition/inclusion of various social groups (Fraser 2009) in the process of policy elaboration and during implementation. Finally, space matters. Soja (2010) has shown that justice and injustice are embedded in spatiality, in the multi-scalar geographies in which we live. He uses the concept of spatial justice to put an intentional and focused emphasis on the spatial or geographical aspects of justice. This approach is a way of looking at justice from a critical spatial perspective, revealing spatial injustices and explaining the underlying processes producing them.

In this paper, we thus propose to shed a new light on the enhancement and transmission of rural heritage through the lens of spatial justice (investigated in the ongoing JASMINN project funded by the French National Research Agency). We compare four different types of urban gardens (allotments, squatter, community, educational) from the types recognized by the COST Action UAE (Simon-Rojo *et al.* 2015) in three Mediterranean metropolises (Seville, Marseille, Milan)¹ in order to identify how social justice is expressed and translated in spatial forms. We analyse the relationship between the sense of respect and a sense of equity in the community of gardeners and the duty of taking care of tangible heritage and the transmission of intangible heritage (cultural and historical value). We present the first results of the

¹ The gardens analyzed are 11: allotment gardens (Milan, Marseille, Seville) community gardens (Milan, Marseille, Seville), squatted gardens (Milan, Seville), educational gardens (Milan, Marseille, Seville).

investigation, carried out through web documentation and the authors personal knowledge of the case studied.

The work aims to answer the following groups of questions in the case study analysed:

1. Do the present policies take into account citizens' requests?
2. What is the tangible and intangible heritage and how is it transmitted?
3. How is justice carried out in the urban food gardening, what are the rules established and by whom (distributive justice)?
4. What are the forms of public participation and how are they planned, do the garden rules include the heritage maintenance and transmission and how (procedural justice)?
5. Does the taking care of heritage influence/effect the legitimization of garden space?

In order to answer these questions, we consider the following factors: the tangible and intangible heritage, the types of heritage transmission (education) (Table 1), the resources' distribution (access to land, duration and maintenance rules), the recognition of actors' specificity (stakeholders) and the participation tools (methodological framework in Fig. 1).

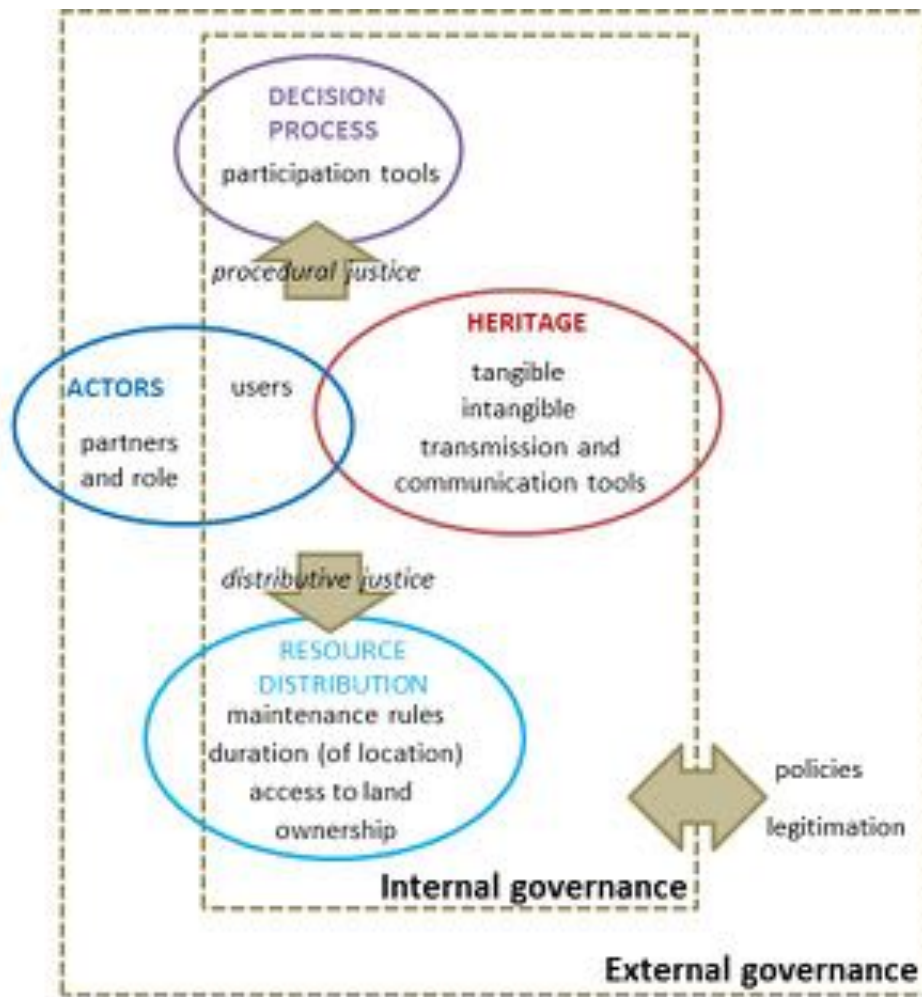


Figure 1: The methodological framework: the heritage and the actors are put in relation with the resource distribution and the decision process in order to identify distributive and procedural justice. Legitimation and policies are input and output of the process (implemented by the authors from Provè 2015:66)

MAIN TYPOLOGY	GARDEN NAME	TANGIBLE HERITAGE	INTANGIBLE HERITAGE	HERITAGE TRANSMISSION
ALLOTMENT GARDEN	Miraflores huertos	former agricultural buildings, roads, olive oil mill, spring and well, tobacco dry kiln	technique: olive press process, water catching and irrigation; events: celebration of olive, potatoes and tomatoes harvest, Belen celebration	building restoration courses (1991-2013); adults guide visits; teenager and children workshops
	Orti Cascina Albana	former agricultural buildings, well, lavatory; old cherry trees	gardeners' knowledge and traditions; courtyard celebration	from gardener to gardener
	Jardins de Mazargues	historical gardens (beginning of XX c.); pine grove	selection of traditional vegetables	horticultural workshop for families, school visits
COMMUNITY GARDEN	CEPER Polígono Sur			horticultural workshop for families, school visits
	Terra chiama Milano	former agricultural buildings (XIII c.), vegetable producers' hedgerow	techniques latest vegetable producer	building restoration courses; adults workshops for permaculture
	Jardins de Font Obscure			horticultural workshop
SQUATTER GARDEN	Huerto Rey Moro	historical residence and garden, archaeological ruins		agro ecological workshops
	Cascina Torchiera	former agricultural buildings		shared knowledge from gardener to gardener
EDUCATIONAL GARDEN	Jardin d'Adam	previous gymnasium	agrobiodiversity	horticultural workshop with an expert gardener
	IES Joaquín Romero Murube		techniques from old generation to new generation	horticultural workshop
	Orti a scuola		techniques from old generation to new generation	horticultural workshop

Table 1: Heritage types and their transmission in the urban gardens analysed (yellow, Sevilla; red, Milan; green, Marseille)

First results and discussion

Policies in the three urban contexts

In Marseille, urban gardens have been a long tradition since the industrial revolution, but most of them disappeared with urban sprawl. The remaining gardens are managed by the *Federation Nationale des Jardins Familiaux et Collectifs*, a national network. The municipality has reserved open spaces for gardens in its new Local Development plan and has promoted them with the *Charte des jardins partagés*.

Urban gardening in Milan dates back to 1942 with the "war gardens". In the sixties, squatted gardens started to spread over the outskirts of suburbia. In the early '80s, the municipality began to assign plots of public land, mostly in the periurban parks, to the elder people. In the last five years, the municipality has recognized squatted gardens and their social value, through new negotiation tools and programs like *ColtivaMI* and *Giardini Condivisi* (Laviscio, Scazzosi & Branduini 2015).

In Spain, workers' urban gardens were not widespread and most of them had disappeared with urban sprawl. However, from 2008, urban gardens have proliferated in the context of economic crisis and growing unemployment rates (around 27%). In Andalucia (Southern Spain), the number of gardens has raised from 10 to over 100. This incredible explosion is not supported by regional or national policies. Only in 2016, the municipality of Sevilla created the *Oficina de Gestión de los Huertos Urbanos*, a network aimed at unifying the management of urban gardens.

The transmission of tangible and intangible heritage

Groups of people deliberately seek after transmission of *tangible* heritage by when they include the duty of taking care of the heritage as the main aim of the association, in the case of community gardens and squatter gardens (Terra chiama Milano, Fig. 1), or when the impulse comes from the citizens in the allotment gardens (Miraflores gardens, Fig. 2-4). The recognition and valorisation of historical material permanencies, more or less visible (from entire old agricultural buildings to few hidden ruins), is part of the process that federates the group of people: consequently, many actions are planned for its transmission.

In squatter gardens, the preservation of heritage and its maintenance relies exclusively on the resources present on the site, like energy and water, because the sites are not connected to urban services (Branduini 2015). In allotment gardens, the maintenance relies only on a rule in the contract signed between gardeners and the municipality or the organisation (Italia Nostra, Legambiente).

Transmission of *intangible* heritage in allotment gardens concerns mainly the horticultural knowledge, cultivation technics and appropriate tools, acquired during adolescence or from their parents or grandparents and it is transmitted individually. It can also concern the general historical value of the garden (Jardin de Mazargues, Fig. 5-6). In the community gardens, specific courses (ortotherapy, healing herbs) are provided to members and to the public including the common technical courses. In some recent community gardens (*Huerto del Rey Moro* in Seville, *Jardin d'Adam* in Marsella, *Terra chiama Milano* at Cascina S. Ambrogio in Milan fund in 2013), sharing the permaculture philosophy is part of the initiation process for obtaining a parcel and it is also a way to check the ability of new citizens to become a gardener and take care of a common space (Fig. 7).



Figure 1: Communication panels describe restoration phases of a fresco rediscovered in the ice keeper (former apse of S.Ambrogio church) in the *Terra chiama Milano* community garden (source: Branduini).



Figures 2, 3: The farm in the Miraflores gardens of Seville (on the left) is listed as cultural heritage and was restored from an initiative of the urban gardeners (on the right) (source: Puente Asuero).



Figure 4: A gardener explains the water mill mode of operation in Miraflores gardens, Seville (source: Puente Asuero).



Figure 5: Dated from 1930, Jardin de Mazargues allotment gardens has a high historical and environment value in the Marseille city (source: Puente Asuero).



Figure 6: Memorial to Abbe Lemire and Joseph Aiguier, founders of Federation National des Jardins Familiaux et Collectifs en France, Marseille (source: Puente Asuero).



Figure 7: Gardeners participate at the preparatory course in permaculture in the *Terra chiama Milano* community garden at Cascina S.Ambrogio (source: Branduini).

Transmission of heritage and resources distribution (distributive justice)

The procedure of plot assignment (chosen at random, age criteria, waiting list etc.) and the duration of assignment (only one or more than one year) are not apparently discriminant factors in the transmission of heritage. Once a rule is *a priori* defined, the participants accept and follow it, no matter if it concerns the maintenance of land (no pesticide), the quality of space (no boundaries, low division), the technique and philosophy of cultivation (ecological agriculture, permaculture). This is true in any kind of gardens, single or shared, allotment or community. What is important is the initial sharing of the aim of the garden. In allotment gardens, the aim is often fixed by a written rule, defined by an association or

by the municipality (French Federation of *Jardins Familiaux* in Marseille, Municipality of Milan). In community and squatted gardens, the aim is explicitly imparted or explained in sharing discourses. The distributive justice of the allocation of parcels can thus only be assessed considering the shared aim of each garden.

In terms of spatial justice, the squatted gardens reproduce existing forms of socio-spatial segregation between the city-centre and the periphery. On the urban outskirts, squatted gardens may be seen as a just compensation for low-income social groups, whereas in the city-centre, where they involve more wealthy members, they are valued for social cohesion but they also contribute to green gentrification.

The specific design of the urban garden has also an impact on its inclusiveness. If urban gardens are closed, they benefit exclusively to the gardeners and exclude the neighbours and other citizens. They reinforce urban segregation by privatization of urban public space. In Seville, this happens in some gardens (Polígono Sur), due to the lack of the municipal legitimation and control. On the contrary, in Milan, the design rules of community gardens are shared between the community and the municipality in the first phase of project (from ColtivaMi to Giardini Condivisi program). Community gardens are public space, open to all the public, and without fences between plots. Urban agricultural initiatives have thus very distinct social impacts and may reinforce rather than reduce social and spatial inequalities (Tornaghi 2014).

Transmission of heritage and decision process (procedural justice)

Periodic meetings *in situ* are the usual way to guarantee sharing of ideas, of duties, of actions. They are planned monthly or yearly and they take place in every kind of gardens. Other ways of communication include web blogs and social networks, frequently in the gardens populated by mid-age people and families (community, squatted and educational gardens). The commitment, both, of taking care of tangible heritage and in organizing courses for the transmission of knowledge and traditions, is shared and planned in the meetings. It is rarely defined in the garden rules (only in allotment gardens of Milan), because it is conceived as a joint commitment of the gardeners' community. Besides guaranteeing meetings, the presence of a leader or a group of leaders, with specific management skills, is recognized as a help and a guide (Terra chiama Milano, Miraflores). Furthermore,

planning and management skills are also required when an entire garden area is offered to an association: in the "ColtivaMI" program, promoted by the Municipality of Milan, small associations were *de facto* excluded because they weren't able to produce sufficient planning documentation in a very short time.

In terms of procedural justice, the periodic meetings, that are planned and announced in advance, guarantee the possibility of a wide participation to the decision making process in most of the already running gardens. However, publicity and extensive participation do not guarantee the inclusion and the recognition of the special needs of the various social groups. It depends on the capacity of each group to make its voice heard. The example of the ColtivaMI call for projects shows a case of exclusion. Public authority should be aware of such issues and adapt their procedures in order to improve the social equity of the program. They could for example invite candidates to present their projects themselves, and then give some more time to a selection of candidates to develop their full project in agreement with the various stakeholders involved. Such a two-step procedure would be more inclusive than a one-step selection.

Transmission of heritage and legitimation

Proponents are heterogeneous groups of neighbours that occupy vacant plots (community and some squatted gardens) or families inside or outside the school area. External partnership (associations for environment preservation, institutions for social insertion, cultural foundations) becomes fundamental when the gardeners ask for the security of land tenure, in name of the social benefit provided to the city. The recognition occurs slowly for most of the actions launched (Miraflores garden, Jardin d'Adam) but it can be accelerated with the creation of a strong partnership (Terra chiama Milano)². Municipal rules that legitimate the initiatives help to improve the management, but are not necessary: in Milan, some gardens before the "Giardini condivisi" resolution show the best practices of tangible and intangible care and transmission of heritage. In squatter gardens, knowledge and heritage transmission is a shared output of the collective work without any internal or external rule. Some squatted

² Cascinet association has obtained in four year a 30-year contract with the municipality of Milan (after a 2-year contract) due to the large communication to the public of their initiatives of heritage maintenance and meeting for young people.

garden are not even looking for a legitimization (Cascina Torchiera in Milan), because they claim the freedom of self-organisation. The failed gardens' initiatives (evacuacion), as Parque Alcosa (Seville) e orti di cascina Albana (Milan), show the need of a diversified external partnership and a connection to gardens network in order to enlarge the critical mass of people concerned and to demonstrate the role of gardens' initiatives in heritage transmission to the Municipality or private stakeholders. Among the garden users, a social, age and profession diversity fosters inter- and intra-generational knowledge transmission and generates internal cohesion in the face of external threats.

Conclusion

In the three Mediterranean cities, the small agricultural heritage is rich and can enhance landscape quality and reconnect people to its local identity. Facing the same economic crisis, the three metropolis are pursuing similar actions but with different agendas. Milan has developed a varied policy in the last five years, thanks to the Expo 2015, and has promoted the recovery of rural heritage. Gardeners have raised issues of social justice related to plot assignment criteria, and they have obtained new more fair policy tools. In Marseille, citizens recognize the role of urban gardens and the need to recover rural heritage partially cancelled by urbanisation, but municipal policy is still insufficient. Seville, finally, shows a lack of legitimization and public recognition of the role of urban gardens.

Among the gardens types, the community gardens show the greatest potential for social justice and heritage transmission: they gather people from the same neighbourhood sharing the aim to take care of a neglected place, through self-organization of the activities and of the management of the garden. Successful urban gardens, both formal community gardens and informal squatter gardens, show the involvement and recognition of a diversity of local stakeholders. These results confirm the relation between procedural justice and intergenerational equity: open participatory governance is a key factor for the successful enhancement and transmission of rural heritage. Furthermore urban food gardening initiatives are most suitable for recognizing, taking care, protecting heritage and transmitting it: they represent an important opportunity for Municipalities not only for neglected spaces but also for acknowledged public heritage, because they provide

human resources and save money in the maintenance and dissemination of heritage values. Lastly, urban gardens can foster the intergenerational transmission of the Mediterranean Diet, recognized as a wealthy diet and a UNESCO intangible heritage. Beyond heritage transmission, urban gardens also provide knowledge to groups of people who want to dedicate themselves to social and business activities.

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Public policy and community gardening in Rome: progress and contradiction

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Abstract

Community gardening has been regarded as a practice through which citizens can challenge dominant power relations and claim back their rights to the city. It has also been considered a form of collaborative government used to reduce state responsibilities in social service provision in a context of neo-liberalization. In any given case, understanding whether public policies are enabling or disabling community gardening initiatives by providing specific regulations, public support or a favourable environment for community organizing, is crucial. This issue has recently garnered much attention worldwide and the aim of this paper is to contribute to this debate by focusing on the case of Rome, Italy. Like many other cities in the world, Rome is witnessing an important diffusion of community gardening initiatives. Thus far, the proliferation of community gardening has taken place in an almost completely spontaneous form and risen from the grassroots level in a lack of a legislative and regulatory framework, both at the national and local scale. In July 2015, the municipality of Rome enacted a regulation in this vacuum which is currently in its initial stages. This paper aims at understanding the aims and expected outcomes of this specific regulation, focusing, in particular, on the extent to which such a policy simply promotes the diffusion of community gardening initiatives, or aims at regulating and disciplining their practices.

Introduction

In the last fifteen years, an important debate regarding community gardening has arisen, including specific attention to the role of policies and their enabling or disabling effects on community gardening initiatives. In some cities, community gardens are regarded by local governments as something to be encouraged and supported in order to promote revitalization and redevelopment (London Assembly – Planning and Housing Committee 2010). Scholars have documented other cases where the policy environment is, by far, less encouraging (Ghose & Pettygrove 2014; Staeheli, Mitchell & Gibson 2002; Smith & Kurts 2003). A crucial issue is that of land use and competing urban functions (Pudup 2008). From a more critical perspective, community gardens and allotments have been interpreted as spaces of antagonism towards formal political institutions: grassroots activism is regarded as a means through which citizens can challenge dominant power relations and claim back their rights to the city (Baker 2004; Ghose & Pettygrove 2014; Mares & Peña 2010). At the same time, citizen activism has been interpreted as a form of collaborative governance which legitimizes and allows a reduction in state responsibilities in the provision of social services in a context of neo-liberalization (Ghose & Pettygrove 2014; Pudup 2008; Rosol 2012). Following McClintock (2014), we argue that the ambivalence of community gardening constitutes both a challenge and a legitimation to the current political regime which is inherent to the movement.

This paper seeks to contribute to this debate, by discussing a recent regulation on urban gardening enacted by the municipality of Rome in July 2015. The regulation includes gardens and allotments cultivated and managed by associations of citizens, hereinafter referred to as community gardens.

Methodology

The paper is based on:

- five in-depth interviews (see Table 1 in annex), conducted between February and April 2016;
- secondary sources, including the regulation on Community gardens and allotments (*Delibera* 38/2015), Guidelines for community gardens (2014), technical information on the municipality website

(www.comune.roma.it), newspaper articles and communication materials; and

- participation in the closing event of the EU-funded project *Sidigmed*, organized by the municipality of Rome from 8 to 10 April 2016, and including a one-day conference and two days of field visits in pilot community gardens

Community Gardening in Rome: Citizens' Initiatives and Political Responses

Rome is the biggest European municipality in terms of rural land, covering 40% of the municipal territory (Cutrufo 2010). Individual allotments in the city have been active since World War II, while community gardens have a more recent history, tracing back to the second half of the 2000s. The creation of community gardens is driven by very different interests and aims: citizens may be motivated by the idea of producing healthy food, generating social inclusion and participation or responding to the current economic crisis. A common underlying issue in many of the initiatives in Rome is the protection of public areas from urbanization and real estate speculation which are particularly problematic in the city.

The community gardens movement has grown rapidly: since its emergence, some associations have begun cooperating with each other in order to define common rules for the allocation and management of the areas and plots. Common guidelines for community gardens were produced and presented to the City Council in 2014; these guidelines are the basis of the first regulation for community gardens (*Regolamento per l'affidamento in comodato d'uso e per la gestione di aree a verde di proprietà di Roma capitale compatibili con la destinazione a orti/Giardini urbani*), approved by the municipality in July 2015 (Del 38/2015). In the meantime, gardeners associations are taking further steps to institutionalize their dialogue with the municipality, trying to obtain the establishment of a permanent consultative body on issues related to community gardens in order to increase their voice in policy making.

This regulation was not only the result of pressure from activists, but also paralleled by some attempts from the municipality of Rome to promote and regulate community gardens. The municipality first began dealing with urban gardens in the early 2000s. At that time, gardens and allotments were exclusively privately managed and well-diffused,

and there was a need for the administration to establish common rules, in particular in terms of food quality and working safety. In 2002, the municipality established a Municipal Unit for Urban Gardens and Allotments (*Servizio Orti Urbani*), located in the Department of the Environment, with the aim of mapping existing allotments and defining common rules for their management. The map was prepared in 2006 but never published, while the draft of the regulation began bouncing from one office to another without ever being formally approved.

In the meantime, things were changing both outside and inside the municipality. Externally, as already mentioned, the typology and rationale of urban gardening was rapidly changing so as to include a growing number of community gardens with social and political aims. Internally, in 2008, the right wing Mayor Giovanni Alemanno was elected. The new mayor had an interest in gaining political visibility on a topic – agriculture – traditionally relevant for the right wing electorate. In 2009 he moved the *Servizio Orti Urbani* to the Department of Agriculture; in 2010 the municipality created the first municipal community gardens in *Via della Consolata*, and the “mayor’s allotment” was inaugurated in the Campidoglio hill (the official seat of the municipality of Rome), following the example of Michelle Obama’s vegetable garden in the U.S. White House. At the same time, during Alemanno’s term, the *Servizio Orti Urbani* was downgraded to a simple office in 2009; furthermore, from 2009 to 2012 the office was heavily understaffed and left vacant for some time.

In 2012 a new public official was put in charge of the *Ufficio Orti Urbani*. The office’s new staff invested in creating relationships with several associations; in the same year, the municipality assigned a first group of areas for community gardening. Such assignment was done informally, due to the lack of formal regulations. Moreover, the municipality participated in three EU-funded projects on community gardening.³ These projects offered an important framework for developing a dialogue between the municipality and the city’s community gardeners. Consequently, the regulation approved in 2015 is not only an answer to the “bottom-up” pressure of community gardeners’ associations, but it is also the result of increasing interest from the municipality. The regulation was drafted by the *Ufficio Orti*

³ EU’GO (January 2012 - December 2013); Gardeniser (October 2013 - October 2015) and Sidig Med (November 2013 - November 2015, but further extended).

Urbani, inspired by similar regulations in other European cities, and by the guidelines already produced by the activists in Rome. Furthermore, a process for the consultation of citizens regarding the regulation was established. The regulation discursively frames community gardens as means to protect the environment, fight poverty and social exclusion and educate young people. The regulation establishes that public land will be offered as free community gardens, in coherence with the city's masterplan (Art. 5). Areas can be assigned to associations (with a formal legal status), for a duration of six years (renewable once). The municipality can revoke the assignment at any time, due to "supervening grounds of public interest" (Art. 8). The regulation also includes specific technical rules for the management of community gardens, including an obligation for organic cultivation as well as the need to have direct access to water sources. Moreover, it establishes that community gardens cannot build permanent structures and that produce from the gardens cannot be commercialized (Art. 10). The regulation was approved under the guidance of left wing Mayor Ignazio Marino (elected in June 2013). As with Mayor Alemanno, Marino also "politicized" community gardens, celebrating the approval of the regulation as an important political success.⁴ However, the approval was one of the last acts of his administration as Marino resigned in October 2015. Implementing the regulation before his administration left was not possible and it is currently at a standstill.

The regulation on community gardening: progress and contradiction

This section presents the results from the interviews with local stakeholders. In some respects, interviewees agreed that the regulation described above represents a step towards the recognition of the role of community gardening in Rome. Its approval legitimized the existence of community gardens, and was also due to a virtuous encounter between the needs expressed by grassroots initiatives and the municipality.

A thorough evaluation of the approved, yet not implemented, regulation is not possible. However, some problems are already visible within and

⁴ A video published by mayor Marino in its personal website announcing the approval of the regulation: <https://www.facebook.com/ignaziomarinovideos/10153188566539217/>. The mayor celebrates Urban Gardens making reference to healthy food and a life close to nature, and he ensures that the regulation will make it easier for citizens to organize urban gardens.

beyond the text of the regulation, and these are generating tensions between community gardens and public institutions. Firstly, according to our interviews, meeting some provisions of the regulation is particularly complicated. For example, in order to gain access to the water supply, a specific authorization has to be first approved and issued by other offices of the municipality. Legally obtaining this authorization for direct access to a water supply requires high upfront costs and is very expensive for associations. Considering the overall limited duration of the concession and the risk of revocation on "supervening grounds of public interest", these expenses can hardly be justified. A critical issue raised by several interlocutors is that, according to the regulation (Art. 5), community gardens have to be located in coherence with the city's Masterplan. This provision was especially contested by activists who claim that it was not included in the first draft of the regulation presented for public discussion. Furthermore, they lament this provision because community gardens cannot build permanent structures and, consequently, they claim that there is no necessity to be subjected to the masterplan.

Moreover, access to public information on this issue is almost impossible to obtain. Particularly from the perspective of activists, the main problem with this regulation lies "outside" the actual text, and has to do with the lack of transparency in managing green areas in the city. While other cities have detailed and open access information about the "green" destination of some areas, this does not happen in Rome. Some of our interviewees perceived this as being due to the critical relevance of this information in a city where real estate is the one of the most remunerative economic activities, and where real estate developers have an extremely powerful lobby. This lack of transparency makes obtaining legal assignment for land extremely difficult, if not near impossible, for many of the existing community gardens because it makes it very difficult for the associations to understand where it is possible for them to create community gardens, if the places they occupied de facto could actually be occupied and if, ultimately, the implementation of the regulation will strengthen or constrain their activity.

Finally, according to many interviewees, the specific problems related to community gardens, and the regulation of 2015, are further exacerbated by general inefficiencies and internal tensions at the

municipal level. The municipality of Rome is divided into 15 sub-urban districts - each with its own President, Council and administrative structure - that often claim a lack of adequate resources and capacities to fulfill their responsibilities. These internal tensions among different levels of governance affect citizens and associations, making it difficult to identify the right interlocutors and, in many cases, extending the time needed for any process. Further tensions often exist between the political and administrative levels of the municipality. On paper, technical offices work as bridges between associations and the political level but there are also cases of internal tensions between the political (which mainly pursues visibility and political returns) and the technical (that is more embedded in the associations' needs and vision).

Conclusions

The analysis presented in the paper shows that the municipality of Rome promotes community gardening, in particular in terms of political discourse. Both Mayor Alemanno and Mayor Marino, despite the differences in their political background, emphasized the relevance of community gardening for the production of healthy food, for saving money, for re-establishing a relationship with nature and for the promotion of social inclusion and participation. As a consequence, the two mayors encouraged the spread of community gardening in the city through several acts: the empowerment of the *Ufficio Orti Urbani*, the establishment of municipality allotments, the "informal" assignment of green abandoned spaces to citizens for community gardening and, finally, the approval of a formal regulation on community gardening which was requested by local associations and activists in order to be formally recognized as stakeholders in the public sphere. The regulation was presented by Mayor Marino as a crucial document that was going to make it easier and safer for citizens to actually do community gardening.

At the same time, the analysis of the regulation sheds light on the mechanisms of control and limitation that it contains. The accomplishment of some provisions is particularly complicated, or discouraging to citizens who need to invest time and money in creating a community garden. A specific case is related to the masterplan which clearly clashes with a lack of transparency that characterizes Rome in the management of green areas. Overall, according to local activists,

some of the provisions included in the regulation represent a threat to the survival of community gardening in the city –paradoxical for a regulation presented as an instrument for the diffusion of these kinds of practices.

The peculiar situation of this regulation can be partially ascribed to the level of bureaucracy and complexity in the city of Rome, but, in a wider perspective, we think it reflects the ambiguities inherent to community gardening. As mentioned in the introduction, one of the main contradictions related to the role community gardens play in cities of the global North is between interpreting them as a way for citizens to challenge the dominant power relations and claim rights to the city or, conversely, as forms of collaborative government used to reduce state responsibilities in social service provision in a context of neo-liberalization. These two apparently conflicting interpretations often coexist in the politics and practices of community gardening, producing ambiguous and ambivalent effects. In the case of Rome, on the one hand, the municipality sincerely wishes to support community gardening for its social, economic and environmental benefits and for its capacity to regenerate relevant portions of the city with no cost to the public. On the other hand, the “right to the city” implicitly (or explicitly) claimed by community gardeners has to be controlled and limited, in particular, when it comes to the management of green areas in a city where the real estate development lobby is particularly powerful and influential.

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Urban gardening in Lisbon and Leipzig: a comparative study on governance

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Abstract

Urban gardening has seen resurgence in many cities across the globe. Whereas Central European cities have a long tradition of urban gardening and are facing new forms of community gardening, Southern European cities are implementing new urban horticulture programs. In this paper we focus on Leipzig and Lisbon as representatives of the two European regions. After characterizing each city including their gardening approach, we identify governance practices within each city that can be shared. We used fieldwork to identify the main initiatives in both cities and compared their governance status according to a set of predetermined criteria.

We conclude that regulatory governance modes, which have been identified in both cities in their different forms of gardening, should be resolved towards more collaborative modes in order to increase socio-ecological resilience. This way, self-determined citizens can react in a more resilient manner under stress or pressure.

Introduction

Urban gardening (UG) comprises both allotment gardens and community gardens. While we find the oldest urban allotment gardens (AG) in Central Europe, a recent trend has emerged all over Europe: the community gardens (CG). The CG have different functions for the gardeners them-

selves, but also play particular roles for other urban dwellers by addressing environmental pedagogy and social integration (Rosol 2006; Firth *et al.* 2011). The governance modes between AG and CG differ considerably, while also differences between various countries can be ascertained. In the recent European COST Action TU1201, several European cities gardening approaches have been studied (Bell *et al.* 2016) and various comparative studies have been carried out (Drilling *et al.* 2016). As part of that project, a comparison between Lisbon and Leipzig was developed (Cabral & Weiland 2014), as well as an in-depth study on Leipzig (Cabral *et al.* 2015).

Methodology

In order to address research objectives and research questions with regard to our very different case-studies adequately, we apply a comparative social science research approach (Kenneth 2004). In order to compare the cities' gardening approaches within their particular socio-economic and governance contexts, according to a common framework, we first address the macro socio-economic and geographic conditions of both cities. Then we characterize every gardening approach in detail by using both literature reviews and data gathered in the field, using semi-structured interviews.

Findings

Socio-economic context of gardening

Urban gardening as a complement for the household income in allotments gardens was traditionally a phenomenon of low and medium income households, while households with higher income often dispose of private gardens or large balconies. Nevertheless, both in Lisbon and Leipzig, allotments more and more are used mainly for recreation. Community gardens are used for several purposes, a.o. leisure, social integration, environmental pedagogy, and production of healthy food.

Leipzig and Lisbon share several socio-economic similarities and urban dynamics. Both cities have a medium GDP (Leipzig: 24,600€/capita, Lisbon: 22,500€/capita 2011)⁵, and similar *population figures* (Leipzig: 535,000 inh. 2014⁶; Lisbon: 548,000 inh. 2011⁷) and have to cope with high unemployment rates (Leipzig: 10.8%, Lisbon: 19.3% in 2013). The

⁵ European Commission and part of Europe: <http://www.ec.europa.eu/>

⁶ Leipzig Municipality: <http://www.leipzig.de/>

⁷ Lisbon Municipality: <http://www.cm-lisboa.pt/>

two cities have been affected by *shrinkage*, but at different times. Since 1930 until 2010, the city of Leipzig lost almost one third of its inhabitants due to economic change (Haase *et al.* 2014), but after 2010, the city started to grow again. Lisbon started shrinking only in 1980, due to a migration to the suburbs (INE 2009), and still has not reversed this process. Shrinkage has resulted in urban voids in the two cities.

Due to the differing *green space availability* (Leipzig: almost 120m² per capita, c.f. Greenkeys 2008; Lisbon: 27.8m² per capita, c.f. D'Araujo Mata 2014) different *approaches to green space management* emerged. Leipzig has several large green spaces preserved from former times, especially the inner urban flood plain forest. In addition, the municipality has been dealing with the city's shrinkage by converting its urban voids into public green spaces, including leasing vacant plots for community gardens.

Lisbon's municipality Green Plan from 2010 aims at linking most green spaces through ecological corridors or greenways (Telles 2010). The Urban Garden Strategy from 2011 initiated the construction of several allotments in poorly maintained municipal green areas, thus assuring its maintenance at low cost for the city. Furthermore, former illegal gardens on void spaces have become organized allotments after severe infrastructure and landscape additions.

In Leipzig, the area of the city used for gardening is 843ha (c.f. Table 1), resulting in 16m² per capita and thus becoming one of the highest ratio in Europe. Lisbon's gardening area accounts for 84ha and represents 1.5m² per capita (D'Araujo Mata 2014); this is almost ten times smaller than Leipzig. By looking at the *ratio of urban gardening area* in each of both cities, Leipzig is the leader with 2.8%, followed by 1% in Lisbon.

	Leipzig		Lisbon	
	AG ⁸	CG ⁹	HP ¹⁰	CG
UG Area (ha)	843	6,1	84; (of each 12 is organized as HP)	<0.1
UG/city area (%)	2.8		1	
Gardening area (m ² / capita)	16		1.5	

⁸ Haberkern 2014

⁹ Garten Leipzig 2014

¹⁰ D'Araujo Mata 2014

No. of units	278	8	10 HP in 2014; 10 more AP until 2017	2
Function	Recreation, food produc- tion ¹¹	Recreation, social, peda- gogic	Social (food produc- tion), recreation, pedagogic	Recreation ¹¹
Lot Size (m ²)	150-400 ¹²	nA	Min. 100(social); Min. 50(recreational and pedagogic) ¹³	nA
Annual rent (€/m ²)	0.12 plus maintenance	Interim occu- pancy or leas- ing	1.60 plus maintenance ⁹	Private or ille- gal occupation

Table 1: Leipzig, Lisbon: urban gardening approaches in AG and CG. Note: **AG**-allotment gardens (*Kleingärten*), **CG**-community gardens, **HP**-Horticultural Park, **na**-not applicable, **nA**-not available, **UG**-Urban garden

The two urban gardening approaches

Leipzig allotments and community gardens

Kleingärten (allotments) have been part of the social culture for a long time, so much that the only European Kleingärtner museum is located in Leipzig. Today, 278 allotments are spread across the city of Leipzig (Fig. 1), representing more than 39,000 plots; this equals approx. 30% of the whole urban green spaces of the city. Taking into account that every garden plot usually is used by four persons, nearly one third of the urban population of Leipzig has access to gardening activities (Stadt Leipzig 2015).

¹¹ Plus 10% food bank supplier until 2009

¹² Cabral *et al.* 2015

¹³ CML 2013



Figure 1: Leipzig allotment gardens and community gardens: AGs are represented by darker grey; CG are located by numbers and also listed (source: Krämer)

AG are mostly used for recreation, but from 2009 until 2012 the city funded a food bank initiative, and 10% of the allotments contributed to it with its products. In most AG the average single plot size is not bigger than 400m² (Cabral & Weiland 2014) and the annual rent is low (0.12€/m²) since it is considered agricultural land (Table 1).

In Leipzig the AG are associated at federal, state, and local level. AGs usually do not receive financial support. In order to maintain low rents according to the classification as agricultural land, each lot has to provide at least 1/3 of the space for food production, and maximally 1/3 for flowers and 1/3 for infrastructure (SLK 2013). Detailed rules for gardening practice exist to maintain some homogeneity among the colony, and a pleasant view of flowers, but its enforcement can vary significantly among different allotments depending on how the chairman and the committee is engaged in doing so (Cabral *et al.* 2015).

In addition to the formal allotments, the shrinking city has resulted in urban brownfields and spontaneous greenery that in part are used as community gardens (Fig. 1; cf. Weiland 2015) or Gemeinschaftsgärten

(Garten Leipzig 2014). The oldest is Stadtgarten Connewitz, dating from 1993.

Most of these community gardens have become meeting points for students, artists and immigrants, such as the Offener Garten Annalinde (Annalinde 2014). These gardens are used mainly for recreational and pedagogic purposes. In order to protect the crops from soil pollutants, most of the community gardens use mobile raised beds and greenhouses (Fig. 2).



Figure 2. The Offener Garten Annalinde uses mainly raised beds and provides organic gardening training (source: Cabral)

The number and size of CG is still very small (Table 1) but its growth is steady for the last 10 years, due to a large number of young people and families with children but with low to medium incomes. In order to support CG, the city provides water in several gardens, and some of the initiatives were successful in getting European funding.

Lisbon allotments and community gardens

In 2014 there was officially a gardening area of 84ha (both private and public). Only 12ha of this area was integrated in 11 Horticultural Parks (D'Araujo Mata 2014) (Table 1). The main goal of these horticultural parks is to create mixed used areas connecting allotments to urban parks (Fig. 3). These new allotment parks are owned by the city and supervised by the municipality. The plot size varies with the allotment function: the plot located in a social allotment park has around 100-150m² and is meant for subsistence, whereas a recreational or pedagogic allotment park holds in average 100m² plots. The annual rent of a plot is 1.60€/m² plus maintenance, but low income families get discounts that can reach 80% (Table 1).



Figure 3: Lisbon allotment gardens (2013–2017). Existing Allotment Parks (AP) are shown in dark grey and listed. Community gardens (CG) are shown as point A and B. Light grey represents green spaces. (Source: adapted from CML 2013)

The first allotment park was *Quinta da Granja*, dating from 2011. *Vale de Chelas* (Fig. 4), the largest cultivated allotment park in Lisbon with roughly 15ha, is an example for a social horticultural park (c.f. Luz & Pires 2015). Lisbon had to cope with segregation problems and did it by intervening in some recent social allotment parks located in poor areas like Vale de Chelas. The most recent park from 2015 is called *PAAL* (Alta de Lisboa Allotment Park) with 1.7ha (Cancela 2014), and was commissioned to a neighbourhood association called *AVAAL*, which developed the layout thru a participatory design approach (*AVAAL* 2014).

Simultaneously, environmental groups inspired by the Transition Towns Movement have illegally occupied some spaces for urban gardening, considering them “spaces of resistance” (Cabannes & Raposo 2013) which meanwhile have been integrated in the cities gardening policy. *Horta do Monte* e.g. was turned into a horticultural park managed by the Municipality and integrated in the Green Infrastructure; *Horta Biológica do CNN* (Fig. 5), which was founded in 2012 on a derelict land owned by a private swimming club, now is the most active community garden in Lisbon (*Horta do Mundo* 2014).



Figure 4: Vale de Chelas is the biggest social horticultural park in Lisbon, with 15ha (source: Cabral)



Figure 5: Horta Biológica do CNN is located on private land. It is presently transitioning from organic to permaculture gardening (source: Cabral)

In Lisbon, the municipal city gardening program privileges low income gardeners, which can rent a standard plot with a minimum of 100m², equipped with a composter, a common shelter, water access and a fence or hedge. The regulation enforced by the city recommends organic procedures (after technical training by a city official). The community gardens on the other hand have no legal representation, are managed by volunteers, but usually adopt organic procedures and provide pedagogic activities to the public.

Comparison of governance approaches

Comparing urban gardening governance in allotments and community gardens demonstrates different levels of regulation and enforcement. Governance in general is considered a structured but flexible form of

control which integrates public and societal actors, and formal as well as informal instruments. Governance is characterized by cooperative, competitive as well as hierarchical relations between the actors (Mayntz 2006). Local urban governance (Jessop 2002) is embedded in the framework of multilevel governance (Benz & Dose 2010). In the following, we compare both governance approaches along several criteria such as impulse/motivation, policy level, legal framework, and governance mode (Table 2).

Leipzig governance approach

Today's wide dispersal of AGs (not only) in Leipzig is a result of a private initiative in the Industrial age that aimed to improve the living conditions of the working poor. This was a bottom-up initiative, but became later a top-down initiative. CGs, in contrast, were founded only recently by groups of environmentally aware young people, with mainly personal motives: they want to improve their own living conditions. Several of these people are related to the transition town movement. Regarding the policy level, AG is public and private, while CG is mainly private.

The most relevant regulations for the use of AG are the Federal law on allotment Gardens (Bundes-Kleingarten-Gesetz BKgG), state laws, and statutes at local level. Two associations manage the allotment gardens, being responsible for urban respectively suburban gardens (the "City Federation of *Kleingärten* Leipzig" and the "District Federation of *Kleingärten*"). Most AG land is owned by the municipality, some is private, and very few belongs to local parishes.

Between CGs, management can differ greatly. Some of them agree upon a contract with the municipality while determining their own rules with respect to gardening. Renting or leasing these areas requires only a symbolic payment to the city or to the private landowner. But the right to use these areas as gardens is time limited, because the municipality or the private owner may reclaim the lot for development.

While the AGs are tightly organized in federal, state and local associations, CG belong to several (more or less) informal networks. So the governance mode of AGs can be addressed as multilevel governance with regulatory background, while in the case of CGs a collaborative approach dominates (Table 2).

Table 2:
governance
Lisbon
AG-
Garden,
Community
HP-

	Leipzig		Lisbon	
	AG	CG	HP	CG
Impulse	Local, private initiative to improve living conditions of the working poor	Local, private initiatives of young, environmentally conscious groups	Municipal initiative to improve urban living conditions, to create job opportunities, etc.	Local, private initiatives of young, environmentally conscious groups with political motives
Policy level	Public and private	mainly private	Public	Public and private
Legal framework	Federal law, State regulations, local statutes	Contract with the municipality, +/- self-determined	Municipal code	+/- self-determined
Governance mode	multilevel governance, regulatory	collaborative	regulatory	collaborative

Leipzig
versus
governance
Allotment
CG-
Garden,

Horticultural Park

Lisbon governance approach

The impulse to construct urban horticultural parks (HP) started by the municipality, aiming the improvement of living conditions of poor urban dwellers, creating additional job opportunities in deprived areas, and simultaneously saving costs in green space management. Also in Lisbon the CGs initiatives are mainly local, private driven by young citizens with environmentally consciousness. But seemingly, they are more politically motivated then Leipzig's gardeners, because they practice also guerrilla gardening and explicitly want to contribute to their city's urban transition (Table 2). HPs in Lisbon are attributed to public level, while it varies with respect to CG. The legal framework is on municipal level, while CG act more or less self-determined. Thus, the governance mode of HP is regulatory, while CG's operate in a collaborative way.

Looking at the three listed criteria, one main theory emerges: each city gardening impulse depends on its present economic context, which also influences the policy level (the poorer the city the more public the policy level is). Furthermore, in both cities, the legal framework involves the municipalities, but the existing CGs are still more or less self-determined.

Future challenges – Lessons to share

Due to Leipzig medium GDP and the high green space availability, the need for increasing socio-ecological resilience is not as urgent as in Lisbon. Leipzig's challenges rely on managing its long time associations and traditional allotments, adjusting to emerging social and ecological trends. Because the gardener's average age is very high (60 years) (Gerth et al. 2013), a new policy is needed in order to attract younger people which usually do not accept the strict AG codes. If the city is able to attract young people to AG who will contribute to their livelihood by producing their own food using organic farming techniques, Leipzig is in the good way to maintain or slightly increase socio-ecological resilience. Within community gardens the challenge is towards intercultural learning and interaction with other gardeners, as well as involving recently arrived refugee groups.

In Lisbon with its mostly centralized governance approach, no neighbourhood associations arose except of PAAL, which represents what lacks most in local governance in Lisbon. Only two community gardens initiatives were accounted for in 2015, none of which had legal representation, but its role was still socially important since they involve immigrants (like CNN) and foreign students, and therefore contribute to their integration.

Regarding the unemployment rate, the low available share of green spaces and gardening area per person, and the still few gardening projects, Lisbon's socio-ecological resilience could be improved by initiating more gardening initiatives, namely on rooftops. Moreover, for allotments to play an even more important role in food security and solidarity, Lisbon could learn from some *Kleingärten* that in the past donated surplus produce to food banks.

As history has shown, allotments can relieve hunger among the population under distressful conditions such as war or economic crisis but also mitigating migratory flows and natural disasters, contributing to higher urban resilience. Lisbon lies on a seismic area, attracts a large number of migrants and is still under economic struggle, so investing in larger number of allotments is a good step towards its future. Overall the transition momentum for Leipzig is good but Lisbon needs to take further steps on community engagement.

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C1 - Quantifying the sustainability of urban agriculture.

Integrating Geographic, Social and Environmental Tools for Urban Agriculture Sustainability in Barcelona

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Abstract

Urban agriculture (UA) is generally appealing from a self-sufficiency standpoint. However, its implementation at a city scale depends on the space availability and social motivations, and tools are needed for assessing its feasibility. This study aims to present an interrelation of Geographic Information Systems (GIS), social perception and environmental benefits of UA for determining the areas with the highest implementation potential in Barcelona (Catalonia, Spain). Given the social and spatial variability of Barcelona, two neighbourhoods with different income and urban density were selected. The available urban spaces (i.e. unoccupied areas and rooftops) with a potential for hosting UA were identified using GIS, housing census and specific UA guidelines. Based on literature, the potential multi-crop and tomato production was estimated considering different production

systems (e.g. hydroponics vs soil cultivation, permaculture vs greenhouse). Because agricultural products are generally imported, the avoided CO₂eq. emissions related to their transportation were estimated. Finally, the social motivations of the population towards UA were assessed through surveys. Results show that the theoretical potential area for implementing UA is greater in low-density (LD; 47m²/inhabitant) than in high-density neighbourhoods (HD; 10m²/inhabitant). LD has the potential to meet 100% of the demand for multi-crop and tomatoes through most of the cultivation techniques under assessment. In HD, the production might be reduced due to the area availability and increased product demand. The avoided transportation impacts might reach a maximum of 92 tons of CO₂eq./year for tomatoes with a 100% demand coverage in HD. In social terms, 75-80% of the UA users were schools and the main motivations highlighted in both neighbourhoods were the environmental and educational benefits of UA. These tools will help the administration to implement UA through actions and policies in urban areas considering the environment, society and geography. Future studies should provide experimental data that validate this methodological framework.

Introduction

One of the consequences of vertical and horizontal urban growth is the reduction in available agricultural land. In this sense, implementing urban agriculture (UA) is not only appealing from a self-sufficiency standpoint, but also because of other potential environmental, economic and social benefits. While this alternative becomes popular, studies on the effects of UA arise. Recently, some authors assessed rooftop gardens from different perspectives. Given the variability in cultivation techniques, the productivity of different types of crops was analyzed under different climatic conditions (Orsini *et al.* 2014; Whittinghill *et al.* 2013). From an environmental viewpoint, the potential benefits of rooftop gardens were assessed considering the implementation potential and avoided food transportation (Astee & Kishnani 2010; Sanyé-Mengual *et al.* 2013; Sanyé-Mengual *et al.* 2015), as well as different cultivation techniques (Sanyé-Mengual, Orsini, *et al.* 2015). Social studies also exist and they mainly focus on determining the barriers and opportunities of UA and stakeholder

perceptions (Cerón-Palma *et al.* 2012; Sanyé-Mengual, Angeulovski, *et al.* 2015; Specht *et al.* 2013).

The combination of different UA dimensions is essential to determine the potential feasibility of this system in urban areas. In this context, this paper seeks to analyze the potential implementation of UA through the interrelation of Geographic Information Systems (GIS), social perception and environmental benefits of UA for determining the areas with the highest implementation potential in Barcelona (Catalonia, Spain). We present the current implementation of UA alternatives in two case study neighbourhoods in order to identify variations in UA trends and potential available areas, together with their potential food production, social motivations and avoided transportation impacts.

Methodology

Case study definition

Given the social and spatial variability of Barcelona, two neighbourhoods with different income and urban density were selected. On the one hand, Sarrià (LD) is a high-income neighbourhood with 24,641 residents and a population density of 80 inhabitants/ha (Barcelona City Council 2013). On the other hand, Verdun-La Prosperitat (HD) hosts 38,204 residents and a population density of 466 inhabitants/ha, being a neighbourhood that resulted from mid-nineteenth century migrations. HD has one of the highest unemployment rates in the city and a low average income (Barcelona City Council 2014b).

Social assessment

Drivers towards the application of UA in LD and HD were identified through surveys. Three different stakeholder groups were included in this approach, i.e. schools, residents and community centers. A sample of 22 people was included in the analysis, representing different ages, gender and education levels. All of them were asked about their motivations towards UA and the potential benefits it might entail. These surveys also helped to identify the degree of implementation in each neighbourhood and depending on the stakeholder.

Geographic assessment

Based on aerial imagery (ICGC 2016) and housing census (Barcelona City Council 2014a), potential areas for implementing UA were identified. The GIS software Miramon (Pons 2000) was used for classifying different types of areas, i.e., rooftops and unoccupied areas. Other types of surfaces were excluded, such as rooftops with restricted accessibility and/or structural limitations and open areas with a slope greater than 30%. The guidelines for rooftop selection proposed by Sanyé-Mengual *et al.* (2015) were also applied. In the case of rooftops, the space requirements were determined based on the cultivation technique. In this sense, soil cultivation was assigned a maximum of 40% of the roof area, whereas 80% was the maximum for hydroponics given the structural limitations of the buildings (Vila 2015). The areas where UA might be possible were classified according to their surface, e.g. $<100\text{m}^2$, $100\text{--}500\text{m}^2$ and $> 500\text{m}^2$.

Multi-crop and tomato self-sufficiency and environmental assessment

Fig. 1 shows a set of scenarios for estimating the hypothetical food production in each neighbourhood based on the potential areas of implementation (section geographic assessment). These scenarios include varying degrees of implementation, i.e. rooftop, unoccupied areas or a combination of both. The potential of each system was assessed considering different cultivation techniques, i.e. soil or hydroponics. Because of structural limitations of some buildings, hydroponics would be a solution for the implementation of UA in rooftops.

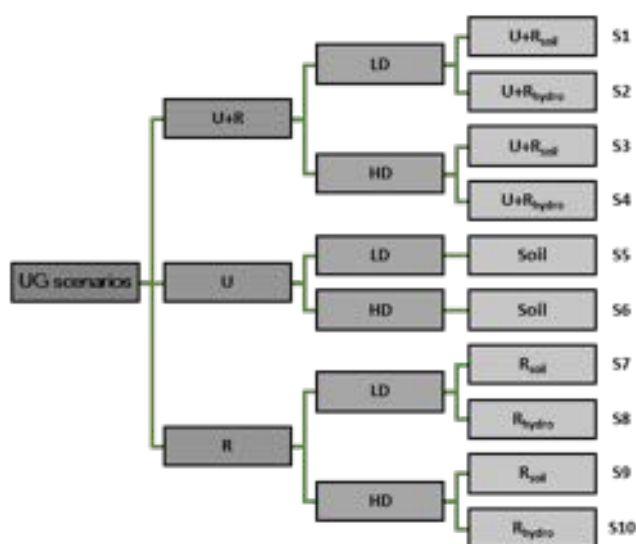


Figure 1: Diagram of the proposed UA scenarios; HD: Verdun-La Prosperitat; LD: Sarrià; U+R: Unoccupied areas + Rooftops; U: Unoccupied areas; R: Rooftops; U+Rsoil: Unoccupied areas + Rooftops with soil cultivation; U+Rhydro: Unoccupied areas +

Rooftops with hydroponics; Rsoil: Rooftops with soil cultivation; Rhydro: Rooftops with hydroponics.

The potential food production was estimated for two different types of crops. On the one hand, we assessed multi-crop systems for a more realistic approach. Based on the Mediterranean diet, potatoes, lettuce, tomatoes, pepper and onions were assigned an equitable portion of the plot. On the other hand, we studied the implementation of tomato crops because they are the main vegetables consumed in Barcelona and Catalonia (GENCAT 2014). In this case, we also provide estimations for permaculture and greenhouse production to show potential variations among systems.

Data from literature was applied for calculating the crop productivity in each scenario (Fazio 1997; Lorente Herrera & Yuste Pérez 1997; Sanyé-Mengual *et al.* 2013; Sanyé-Mengual *et al.* 2015). The effects of permaculture and greenhouse production on the environmental performance of the system were assessed applying data by Sanyé-Mengual *et al.* (2013). In the case of the multi-crop systems, the rooftop hydroponics scenario only included three vegetables, as the productions of onions and potatoes are not feasible. The environmental performance of these scenarios was assessed in terms of avoided transportation from main production areas, which are mostly located in the south of Spain. The CO₂eq. emissions were calculated using the Simapro 8 software (PRé Consultants 2014), ecoinvent 3 database (Weidema *et al.* 2013) and the ReCiPe (H) method (Goedkoop *et al.* 2009).

Findings and Discussion

Social motivations towards UA

The social picture of neighbourhoods HD and LD highlighted that schools are key actors in the current implementation of UA, as they represented 75-80% of the total UA initiatives recorded in each neighbourhood. Thanks to the environmental programs fostered by the City Council, the number of schools that included UA in their programs increased by 100% and 133% between 2010 and 2013 in HD and LD, respectively. Private users only accounted for 5-10% of the number of UA initiatives, but it must be noted that data on the actual number of private users does not exist and we could not validate this result.

In terms of motivations, results differed when comparing HD and LD (Fig. 2). Educational aspects were key drivers in LD in 81% of the cases. In contrast, in HD the environmental dimension was more important for 83% of the users. In general, schools agreed on the environmental and educational benefits provided by UA activities. Community centers made particular emphasis on the social relevance of UA because they implement UA initiatives as an inclusive activity for the neighbourhoods' residents. These community centers presented a good understanding of UA and detected some limitations in the neighbourhoods. Some of them include the lack of interest among young residents and need for support in terms of available areas, dissemination and tools for creating synergies. Perceptions among private users were different, as they pointed to the lack of knowledge and infrastructure as limiting factors for implementing UA at the household level.

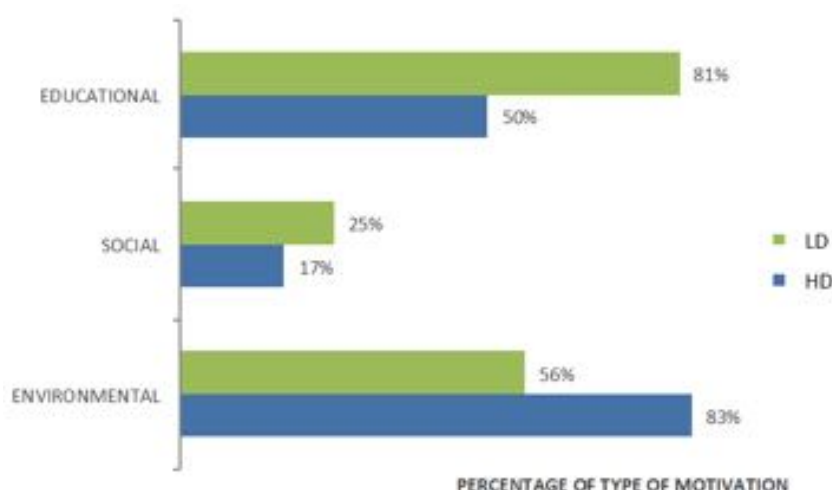


Figure 2: Distribution of the motivations towards UA in neighbourhoods HD and LD. Total sample HD: 6 / Total sample LD: 16

Identification of potential gardening areas

There was a remarkable difference between neighbourhoods HD and LD in terms of total available area. While LD had $1.2\text{E}+06\text{m}^2$ of potential area, the implementation of UA in HD would be 69% lower ($3.6\text{E}+05\text{m}^2$). In terms of per capita distribution, each resident had 47m^2 and 10m^2 of area in LD and HD, respectively. This variation was a result of the unoccupied areas identified in LD (Fig. 3), which represented more than 50% of the available locations. Sections of LD are located in

Collserola's natural park and some spots are not available for agriculture either because they are protected or too steep. However, this estimation accounted for the areas that could be potentially used according to the protection limits defined by GENCAT (2014b).

With regard to available roof areas, the same order of magnitude was identified in both neighbourhoods, albeit LD had 21% more space ($2.9\text{E}+05\text{m}^2$) than HD ($2.3\text{E}+05\text{m}^2$). This might be the result of urban form, as LD has a lower population density (Section 2.1) and the largest apartments in the city (100.7m^2 versus a city average of 77.3m^2) (Barcelona City Council 2015). Consequently, LD has 38% more rooftop areas larger than 100m^2 and an increased UA implementation potential.

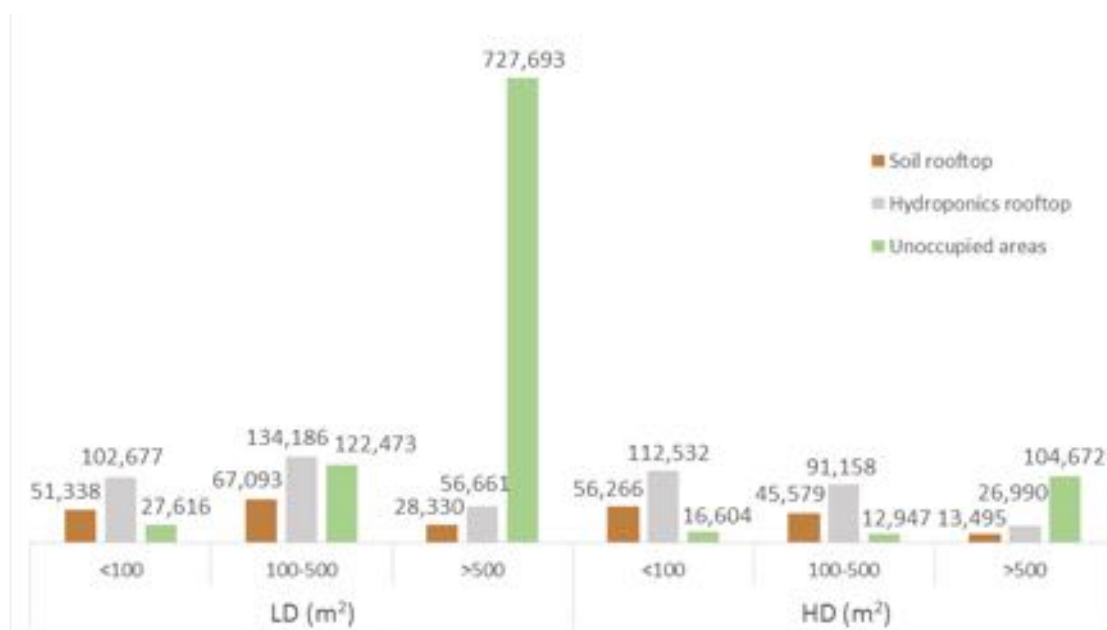


Figure 3: Potential rooftop and unoccupied areas for implementing UA in each neighbourhood

Multi-crop and tomato self-sufficiency and environmental burdens of the system

Table 1 shows the multi-crop and tomato production potential of each neighbourhood depending on the cultivation technique (i.e. soil/hydroponics, permaculture/greenhouse) and the environmental impacts resulting from transportation. According to the estimates, LD would be able to provide fresh produce to the residents in most scenarios (self-sufficiency ratio $\geq 100\%$) and even export the excess to other neighbourhoods. In contrast, HD would only result in an excess of production when implementing a greenhouse, as shown for the

case of tomato production based on productivity literature. In this neighbourhood, the limiting factors are space availability (i.e. a maximum of 10m² per capita) and increased demand – 35% greater than in LD. As a result, 15-20% of demand coverage in multi-crop and tomato production was the minimum in HD when applying soil crops.

With regard to the environmental burdens, LD might reduce its transportation impacts to zero because of the demand coverage. However, exporting the excess of production to other areas might increase the transportation impacts. In the case of HD, the absolute avoided emissions are often higher than in LD, with a

Scenarios			Annual demand (D)		Potential production (P)		Self-sufficiency ratio (P/D)	Environmental impacts of transportation (tons CO ₂ eq./year)		
			Per capita (kg)	Total (tons)	Productivity (kg/m ²)	Total production (tons/year)		Without UA	With UA	Avoided
			Multi-crop							
LD	Permaculture	S1	58.0	1,430	1.5–5	3,514	233%	186	0	–186
		S2				3,514*	233%		0	–186
		S5				2,633	175%		0	–186
		S7				440	29%		132	–54
		S8				881*	126%		0	–186
HD	Permaculture	S3	58.0	2,217	1.5–5	1,096	47%	290	148	–142
		S4				1,093*	47%		148	–142
		S6				402	17%		241	–49
		S9				346	15%		245	–45
		S10				691*	64%		104	–186
			Tomato							
LD	Permaculture	S1	17.4	429	5	1,171	273%	59	0	–59
		S2				1,952	455%		0	–59
		S5				878	205%		0	–59
		S7				147	34%		39	–20
		S8				489	114%		0	–59
	Greenhouse	S1			15	3,514	819%		0	–59
		S2			25	9,761	2,28%		0	–59
		S5			15	2,633	615%		0	–59
		S7			15	440	102%		0	–59
		S8			25	2,446	570%		0	–59
HD	Permaculture	S3	668	5	365	55%	92	41	–51	
		S4			609	91%		8	–84	

		S6			134	20%		73	-19
		S9			115	17%		76	-16
		S10			384	58%		38	-54
	Greenhouse	S3		15	1,095	165%		0	-92
		S4		25	3,043	455%		0	-92
		S6		15	403	60%		36	-56
		S9		15	346	51%		45	-47
		S10		25	1,922	290%		0	-92

Table 1: Multi-crop and tomato production estimates and transportation impacts for HD and LD based on different cultivation techniques and areas of application

* Only three types of vegetables (lettuce, tomato and pepper) for hydroponics

maximum in 290 tons CO₂eq./year for multi-crop and 92 tons CO₂eq./year for tomato. Because of the increased food demand, when a system covers around 60-65% of the demand in HD, the avoided CO₂eq. emissions are equivalent to those in LD. In this sense, the global environmental performance of the neighbourhood would be improved in terms of transportation, although 100% self-sufficiency might not be achieved.

Besides these production systems, enhancing the consumption of local products might also improve the environmental performance of the food supply chain. In the case of Barcelona, preserving Baix Llobregat's Agricultural Park is an alternative to importing fresh produce from other areas.

Integrated assessment of the neighbourhoods

The ultimate goal of this study was to integrate the social, geographic and environmental dimensions of UA for supporting decision-making processes. Table 2 provides a qualitative evaluation of these three dimensions for the case study neighbourhoods. Based on this first approach, the implementation of UA initiatives appears to be more feasible in LD.

Dimension	Issues		Neighborhoods	
			LD	HD
Social	Implementation	Schools and community centers	++	++
		Private users	-	-
	Motivations	Social	-	-
		Environmental	+	++
		Educational	++	+
Urban/Geographic	Total potential areas		++	+/-
	Rooftops	Area >500 m ²	+	-
		Area 100-500 m ²	++	+
		Area <100 m ²	++	-

	Unoccupied areas	Area >500 m ²	++	+-
		Area 100-500 m ²	+	-
		Area <100 m ²	-	-
Environmental	Potential multi-crop and to-mato production	++	+	
	Avoided transportation im-pacts	++	++	

Table 2: Qualitative integration of the social, geographic and environmental dimensions for determining the feasibility of UA (++ excellent; + good; +- sufficient; - insufficient)

In this neighbourhood, 57% of the issues displayed an excellent potential, which is mostly related to the educational value of UA, the potential area availability and resulting estimated tomato production. HD was penalized due to the reduced available area, but the social predisposition and motivations are comparable to those in LD.

Conclusions

This study was a first attempt at integrating social, geographic and environmental tools in the environmental assessment of UA strategies. When comparing two distinctive neighbourhoods in Barcelona, this approach highlighted differences in area availability and potential multi-crop and tomato production. LD has a potential cultivation area of 47m²/inhabitant, whereas 10m²/inhabitant pose a challenge in HD due to a higher population density. This ratio resulted in varying multi-crop and tomato production, with LD being self-sufficient through most cultivation techniques, and HD benefiting from greenhouses for obtaining greater yields. However, the avoided environmental impacts associated with reduced transportation needs might be greater for some HD scenarios given a higher multi-crop and tomato demand in this area (up to 290 tons CO₂eq./year for multi-crop and 92 tons CO₂eq./year for only tomato production).

The implementation of UA in schools was an outstanding feature in both neighbourhoods, as they represented 75-80% of the UA initiatives identified in these neighbourhoods. In this sense, the environmental and educational values that result from UA were recognized in HD and LD, but there was still a lack of social motivations. Nevertheless, more studies are needed in this field in order to provide with more insightful data related to UA perceptions in Barcelona.

Additionally, this integrated approach should be validated with experimental data from real crops. In the field of decision-making,

the social, geographic and environmental dimensions were evaluated independently, but a multi-criteria assessment that weights each of the issues might be beneficial for ranking the relative importance of each dimension.

Acknowledgments

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A methodological approach to evaluate the links between access to a garden plot and household food insecurity in deprived neighbourhoods of Paris and Sevilla

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Keywords: Collective Gardens, Food Insecurity, Self-Production, Food Function, Sevilla, Paris

Abstract

In France, a national survey undertaken in 2007 showed that one out of 10 adults lived in a household suffering food insecurity (FI) for financial reasons. Meanwhile, in southern European countries, converging signs show an alteration of access to quality food and food patterns of households as an indirect consequence of the economic crisis that hit Europe in 2008. Literature has shown different ways in which collective gardens (CGs) might contribute to address some aspects of FI. However, many authors express doubts on whether CGs reach people most in need. In this paper, we describe the methodological framework used in AUPA, a 3-years research program aiming at investigating the role of gardens in household food supply and the links between access to a garden plot and household FI in deprived neighbourhoods. We provide critical feedback on the implementation of this methodology and identify success and failure factors. We conclude on the interest of the proposed methodology and we evoke the way further for the next part of the project.

Introduction

In France, a national survey undertaken in 2007 showed that one out of 10 adults lived in a household suffering food insecurity (FI) for financial reasons (Darmon *et al.* 2010). Meanwhile, in southern European countries, converging signs have shown an alteration of access to quality food and food patterns of households as an indirect consequence of the economic crisis that hit Europe in 2008 (Kirby 2013; Prudhomme 2013). FI is the situation where people do not have, at all times, access to sufficient, safe and nutritious food that meets their dietary needs and preferences for an active and healthy life (FAO 1996). In France, an increasing body of literature in nutrition and public health have sought at investigating the prevalence of food insecurity (FI) and characterizing people in situation of FI (Bocquier *et al.* 2015; Darmon *et al.* 2010; Martin-Fernandez *et al.* 2013). These studies show that specific socio-economic situation and traits of living environment are associated with FI. In particular, Martin-Fernandez (2013) shows that in the region of Paris, household FI prevalence depends on neighbourhood socioeconomic status: higher rates of food insecure households are found in most underprivileged neighbourhoods. In terms of diet, food insecure individuals eat less fruits, vegetables and fish but more sugar than food secure individuals (Darmon *et al.* 2010). Whereas in France the evaluation of the prevalence of FI was until now mostly limited to the monitoring of food banks beneficiaries, these researches show that food aid concern only a limited number of food insecure individuals or households and that many people in situation of FI do not call on food banks for their food supply. Therefore, these studies calls for the promotion of "research [...] to identify effective strategies to reduce nutrition inequalities in France" (Bocquier *et al.* 2015).

Literature has shown different ways in which collective gardens (CGs)¹⁴ might contribute to address some aspects of FI. Various studies have sought to qualify and quantify food production from CGs (Algert *et al.* 2014; Gittleman *et al.* 2012; Pourias *et al.* 2015; Smith & Harrington 2014). They show that CGs are mostly sources of fruits and vegetables

¹⁴ Collective gardens include cultivated spaces managed collectively by groups of gardeners, most often for food-production purposes and for gardener's own consumption, located at a distant place from gardener's home. They include both historical forms of gardens, whose origins go back in the late 19th century, for example French family gardens, allotment plots in the UK, and more recent forms of urban gardening such as shared gardens (in France), community gardens.

(more rarely of other products) and that levels of production vary greatly between gardens and between gardeners. Consequently, levels of self-provisioning attained through gardening are also very variable but garden products can represent an important share of fruit and vegetable supply of a household, at least during the growing season (Mienne *et al.* 2014; Pourias *et al.* 2015). With respect to the destination of products, garden harvests are often frequently exchanged or given, thus beneficiating to broader relatives of the gardener. Furthermore, gardens can allow to grow products that are difficult to find in shops (Pourias *et al.* 2016). However, little evidence exists in literature to assess if and how CGs have a positive impact on the food security status of household experiencing FI. Instead, many authors express doubts on whether CGs reach people most in need (Opitz *et al.* 2015; PADES 2005).

AUPA project is a 3-year research program (2016-2019) aiming at investigating the role of gardens in household food supply and the links between access to a garden plot and household FI in deprived neighbourhood equipped with CGs. In the first part of this paper, we describe the methodological framework used in AUPA, which was designed more specifically to contribute to address the following research questions:

- What is the status of gardeners with respect to FI?
- What proportion of fruits and vegetables consumed by gardeners come from the garden (vs. proportion that is bought)?
- Are there differentiated strategies with respect to gardening practices between FI and FS gardeners?
- Does access to a garden allow improving food security status?
- How important is food production in the benefits obtained by gardeners from the gardens?
- Does having access to a garden plot change certain food habits (cooking habits, shopping behaviours...)?

In the second part of the paper, we provide critical feedback on the implementation of this methodology and identify success and failure factors. In the conclusion, we argue the interest of the proposed methodology and we evoke the way further for the next part of the project.

Methodological framework

Meeting – presentation of the project

At the beginning of the growing season, a meeting was organized in each selected garden, to inform gardeners about the project. Whenever possible, this meeting was organized with the help of a reference person of the garden (president of the association for example) and advertised a week before through posters at the entrance of the garden and/or mailing and/or texting gardeners. During this meeting, we introduced gardeners with the broad aim of the project, i.e. studying links between gardening, food access and food habits. We presented the main steps of the project and the harvest and purchase booklets. We then collected contact details of gardeners interested to join the project.

Interviews

Shortly after these meetings, we held semi-structured and private interviews with gardeners identified during the meetings. Four themes were approached: (1) the gardener's relation to the garden (personal history with respect to gardening, objectives and motivations to garden, time spent in the garden, etc.); (2) products of the garden (choice of crops, destination and use of harvests, appreciation on the quantity and quality of fruits and vegetables harvested in the garden, appreciation of the contribution of garden products to household food supply throughout the year), (3) relation to food and fresh products (memories from childhood, appreciation on the consumption of fresh products before and after entering the garden, food purchase habits), (4) evaluation of food security status (based on the adapted version of the US Department of Agriculture's Food Insufficiency Indicator proposed by Bocquier *et al.* 2015). At the end of this interview, if the gardener was willing to continue the study we gave him or her access to a kitchen scale (most of the time left available in a collective place of the garden – toolbox or garden shed) and harvest and purchase booklets.

Harvest and purchase booklets

A previous work (Pourias *et al.* 2015) designed and tested a participatory method, based on a harvest booklet which allows keeping record of the amount of food produced in garden plots, their use and their destination. This harvest booklet includes tables with the

following headings: (a) type of products; (b) date of harvest; (c) quantity harvested (in grams or units); (d) use of the crop (with two options: (i) consumed by gardener's family – those living in the same household or (ii) given, exchanged or thrown; (e) notes. In 2016, we enriched our set of tools by implementing a "purchase booklet", based on previous research in nutrition (Marty *et al.* 2015), in order to estimate the proportion of fruit and vegetables consumed by gardeners that were sourced from the gardens.

The purchase booklet aims at keeping record of the amount and price of fruits and vegetables bought outside the garden. It includes tables with the following headings: (a) type of products; (b) date of purchase; (c) quantity bought or obtained; (d) source (with two options: (i) bought, (ii) received as a gift/exchange); (d) price.

Discussion guides for monitoring

Every 10 days approximately, we monitor the filling of booklets with gardeners, to check if they encounter problems, fill with them the missing information (including the "note" section of the harvest booklet where we write down with the gardener any useful information on how the garden products were used: special events, cooking recipes etc.) and arouse discussion around the topic of garden products and food behaviours. During these monitoring discussions, we interview openly gardeners on the recipes he/she uses to cook garden products, any problem they might have with crops, the places where they have purchased fresh food products since last monitoring and any new behaviours that may arouse from the garden (like tasting new products, testing new recipes, etc.). We also note when gardeners were out of the garden (for holidays or other reasons), to avoid misinterpretation of a lack of data in the booklet during a certain period.

Discussion and Findings on the implementation of the methodology

Case studies: selection and description

Gardens were selected according to two criteria: (1) in order to facilitate the first contact with gardeners and to shorten the preparation time before beginning the collect of data, we decided to select only gardens that were formally organized in associations. (2) Based on the results of Martin-Fernandez (2013) showing that higher rates of food insecure households are found in most underprivileged neighbourhoods, we selected gardens located in deprived areas, based on the double hypothesis that gardeners came from the close

neighbourhood of the garden and that they were representative of the average socio-economic situation of the neighbourhood.

In Paris, all selected gardens are located either within Paris or in cities of the close suburbs (*Petite Couronne*) in "*quartiers prioritaires politique de la ville*", which are neighbourhoods identified by the French government in urban policy plans as showing in average higher rates of low income households, single-parent households, unemployment and social aid beneficiaries than in the rest of the city, and therefore requiring specific support in terms of public subsidies and actions.

In Sevilla, the gardens selected were located in peripheral neighbourhoods of the city, which showed high rates of poverty and unemployment. According to the Public Service of State Employment (SEPE), in 2015 unemployment rates in the 4 districts were of 24% (Miraflores), 27% (Bellavista), 30% (Torreblanca) and 37% (Polígono Sur), with respect to 23% in average in Sevilla. Furthermore, to take into account the variability of internal organization that exists between CGs and the possible influence on gardeners behaviors, expectations and levels of food production (Pourias *et al.* 2015) , we selected gardens offering diverse sizes and types of plots (Table 1).

City	Garden	Year opened	Type of plots	Number of plots	Size of the plots
Sevilla	Miraflores	1991	Individual (+collective)	175	100-150m ²
	Torreblanca	2007	Individual	80	100m ²
	Bellavista	2012	Individual	60	60m ²
	Poligono Sur	2013	Individual	20	20m ²
Paris	Paris 19ème	2008	Individual	20	5-10 ² m ²
	Antony	2011	Individual	65	20m ²
	Stains	2014	Individual	15	90-135m ²
	Montreuil	2014	Collective	1	300m ²

Table 1: Characteristics of the selected gardens

In Sevilla, the gardens of Miraflores and Torreblanca opened in 1991 and 2007 respectively, when the rates of unemployment were relatively low, therefore their creation is not associated with a context of economic crisis. They were created with a purpose of leisure for free-time and contact with nature. In contrast, the gardens Bellavista and Polígono Sur opened in 2012 and 2013 respectively, as an initiative of families impacted by the economic crisis of 2008, in search for social and economic alternatives to improve their situation. Today, the

objectives shown by these gardens have changed little by little, including in the gardens of Miraflores and Torreblanca, as they are now more oriented towards food production for families rather than for leisure.

In Paris, 3 out of 4 gardens selected were created by social housing landlords, following the demand of inhabitants (in the case of Paris 19ème) or after an incentive coming from the social housing landlord with the support of the city council (in the case of Antony). The objective was to create a collective place of leisure for inhabitants of social housing and to give higher value to green spaces at the footstep of buildings, which suffered disinterest of inhabitants and “inappropriate” uses (drug dealing in particular). The garden of Stains is located in a garden city, and exists since its creation in the 1920s. It was originally designed to allow workers to access to a garden and produce their own vegetables. This function, which had disappeared through time, was revived after the renovation of the neighbourhood in 2010. In all three cases, social housing landlords relied on local associations to create the gardens and launch gardening activities. In Stains and Antony, only dwellers living in the social housing can access the gardens. The garden of Montreuil is a collective plot which was created by an organization called “Régie de Quartier”. This organization launched a national program in order to encourage the creation of CGs in the neighbourhoods they work in, which led to the creation of several CGs, including the garden of Montreuil.

Meetings – presentation of the project

In Paris, the meetings of presentation of the project were diversely successful: in Stains, around 10 gardeners showed up; in Montreuil, as there is not local referent in the garden, we could not reach gardeners and therefore we had to skip the meeting step and meet gardeners randomly during our visits to the garden; in Paris 19ème, we took profit of a party organized by gardeners to present the project, which allowed us to reach a relatively important audience; in Antony, the first meeting we organized had to be cancelled due to heavy rain, and the second one reached only 3 persons.

In Sevilla, researchers were already known by gardeners, which facilitated a lot the organization of the meetings. The presentation of the project has been greeted very differently in each garden: in

Torreblanca, more than 50 persons showed up and a discussion was engaged on the objectives and possible conclusion of the research. In Miraflores, 5 gardeners informed by the person in charge of the coordination of activities on the garden attended the meeting. In Polígono Sur, 20 gardeners approximately attended the meeting, informed by the president of the association, while in Bellavista it has not been possible to present the project in public, and the president of the garden has been put in charge of transmitting the information to gardeners.

All in all, we observed that attendance to the meetings and interest for the project in general varied a lot depending on various factors, the more important being the previous acquaintance of gardeners and researchers and the mutual trust developed through previous exchanges. Other factors have to be taken into account: the weather, when meetings had to be organized outdoor, which was frequently the case; the age of the garden, which we think might have an influence on the existence of stronger or weaker social links between gardeners that allow to pass on the information; the presence of a reference person to facilitate the contact and the opportunity to organize the meeting jointly with another event.

Interviews with gardeners and adoption of booklets by gardeners

In general, both in Paris and in Sevilla, gardeners who attended the meeting were enthusiastic about the project. After each meeting, we collected names and contact details of 3 to 6 gardeners who were willing to join and to participate in the collection of data. These gardeners were contacted a few days to one week after the week, to plan an interview at the garden. Each of them received a pair of booklets, which they are now filling until the end of the growing season 2016.

General interest for the topic

In Sevilla, gardeners understood well and enrolled in the project, even though they see it as something "coming from the university". In general, they showed more interest for agronomic issues (how to grow, how to solve pest problems, how to evaluate the quality of the soil etc.) than for the issue of food and nutritional impact of the gardens. Some of them expressed the wish to receive technical advices in turn of their participation of the project.

Even though these are informal topics of discussion with gardeners, AUPA was not orientated towards assessing or monitoring cropping practices of gardeners, furthermore, some associations of gardeners already provided, at least theoretically, such advices and training. Therefore, both due to the fact that it was not the focus of the project and because we did not want to substitute to associations, we decided not to organize a more formal training on gardening practices. However, in the future, this is a path to explore together with garden associations, as a potential strong incentive for gardeners to enroll in the project.

Conclusion

Within the AUPA project, we tried to design and implement a comprehensive method to understand the links between food security status, fruit and vegetable consumption and purchasing patterns and access to a garden. This methodology combines the collection of quantitative data, on the basis of booklets, and qualitative data, collected through interviews with gardeners and weekly visits on site and guided discussion with gardeners.

On the field, it appears that these two sides of data collection well complete each other, as booklets appear to be very powerful way to easily engage discussion both on issues related to garden products and to food habits. However, completing these booklets is a tedious task for gardeners and requires a tight monitoring in order to collect consistent data. In order to maintain gardener's cooperation throughout the season, we plan to organize focus groups once or twice during the growing season in each garden. These focus group will take the form of a festive event that aims at bringing together gardeners participating into the project and those not participating, and to provoke a discussion between them, also anticipating next year campaign as we have seen that gardeners that had already been in touch with research activities were more willing to enroll.

Applied on the gardens we selected, we expect this methodology will provide a detailed picture of the relation between food security and access to a garden, while giving an overview of the similarities and differences of gardens in Paris and Sevilla, in varying cultural, urbanistic and food environment contexts. The data collected during this first year of the project will be the subject of a next paper, which will detail the indicators selected to evaluate this relation

between food security and access to a garden: food security status of gardeners, existence or not of different strategies regarding cropping practices according to the food security status of gardeners, share of garden products in total fruit and vegetable consumption and in household budget, use of garden products vs products bought. This next paper shall also provide insights on the mechanisms behind these observations: modification of food habits due to the frequentation of the garden, existence of solidarity or gift/counter gift networks.

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D1 - From theory to practice (I). Exploring innovative initiatives all over Europe.

Community Gardens in Poland – Impulse, Assistance, Expansion

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Abstract

Community Gardens are a new phenomenon in Poland. Nevertheless, the traditional Allotment Gardens already have a history of over one hundred years. Appreciating social and ecological premises of local cooperation in urban gardening the Green Cross Poland Foundation (GC PL) initiated the project on development this social activity in Poland. The innovative approach implemented combines stimulation of the media's interest, stimulation of municipal authorities' positive attitude, choosing local group leaders who would like to establish CGs, elaborating the manual describing the sequence of practical steps from the idea to its fulfilling, providing professional help in garden designing and funding equipment necessary to establish and maintain a garden. The project started at the end of 2014 with inviting experts to participate in our workshops, during which the strategy and sequence of operational tasks were developed. What was very helpful in the development of the project was the creation of a pioneer website on community gardens, which provides information about our activities and promotes them effectively. Since the beginning, the representatives of GCPL communicated with municipal authorities and promoted the idea of CGs, paying special attention to cities that face substantial social and economic problems. At the same time, we were looking for potentially interested local leaders and groups located in those cities. Till the middle of 2016 the campaign succeeded in creating 10 gardens and another 16 are currently being created. Green Cross Poland is also in touch with the next 7 potential leaders, which are interested in building CGs. Green Cross Poland can conclude that in a short period of time organization has been able to create a

social movement, which is becoming more and more dynamic. This is proven by the increasing number of cities applying to take part in this social activity. Presently the challenge is to ensure the durability of established gardens. GCPL recognizes it and keeps an attention on regular contact with the local groups as well as with authorities.

Introduction

Poland has a long tradition of AGs, which has survived the period of political transformation. However, there is a new phenomenon, namely: community gardens, whose establishment and maintenance require availability of appropriate grounds, in addition to a high level of systematic cooperation of interested parties and a non-conventional approach of local authorities.

The well-established position of AGs is supported by the state since the post-war period at least. Users of AGs in Poland play an important political role as the largest collective land manager group (Bellows 2004). Drilling, Giedych and Poniży (2016) notice that in 1982 the governmental programme of allotment gardens expansion was developed and led to an increase of about 30,000 ha of allotment sites. Regional and local authorities were obliged to provide free land for the allotment garden development. Social, economic and ecological function are attributed to AGs, however, due to the individual plots usage and the fencing of gardens the access is limited for a large number of city residents (Speak *et al.* 2015).

During the last few years, another form of common gardening, known as Community Gardens (CGs), has been developing. In case of AGs every gardener cultivates his plot individually, while at CGs a local group of people works together. Presently AGs successively change their function into a recreational one, whereas CGs are mostly used for food production. The next difference is that in case of AGs the accepted distance to the garden from the place of residence can be bigger than for CGs, which are created in the vicinity of residential areas. It should also be mentioned that the place of AGs is more stable. For this reason more investments are made into AGs, while CGs can be used temporary. Due to these differences as well as the well-founded legal position of AGs the possibility to establish CGs was not considered.

Taking under consideration the boom on CGs in many countries, inspired by the experiences collected within the COST Action TU 1201 Urban Allotment Gardens in European Cities – Future, Challenges and Lessons Learned, Green Cross Poland prepared a project of common gardening in Poland.

Green Cross Poland is a foundation and began its operation in February 2010 (www.greencrosspoland.org), implementing several projects, which intend to develop and disseminate new solutions regarding environmental protection and sustainable development. The organisation understands its role as the platform of dialog between the business, administration, non-government organisations and science in the three main directions of activity: green economy, water management and green cities. It is the last area that has become the main field of Green Cross Poland activities, especially the improvement of green infrastructure. In this framework emerged the project, linking support for local communities at social capital building with the improvement of green space in urban areas through establishing and maintaining community gardens.

In cities there are neglected areas within housing districts, in which the managing institutions are not interested. This is especially the case in cities facing substantial socio-economic challenges. Numerous examples from Europe and the World show that there exists potential for developing these areas using social forces to create community gardens where vegetables are grown and ornamental plants are arranged, thus strengthening the bond between members of local communities. An interesting example of the popularity and development of CGs is in Paris (Aubry *et al.* 2015). Over the past 20 years, the number of the allotment gardens in Paris has multiplied. The chance to resist against global corporations producing food is the argument that convinces the French to work in their gardens. For that same reason, the majority of the CGs areas are planted with edible plants. The authors state that 40% to 100% of the total surface area of the individual plots is used for food production.

The need of strengthening of social relationships in the society demonstrates the study about the state of issue in Poland. Less than one fifth of Poles think they can trust other people: as many as 80% of Poles think that “you can never be too careful” (Przewłocka 2010). The potential for urban farming development in Poland show the

research results, which indicate that nearly 60% of people demand having influence on the use of area surrounding their place of residence (Sopot 2013).

While building the concept of the project, GCPL has set the following main goals:

- Support for local social capital building in cities,
- Increasing the aesthetic quality of urban public space,
- Spreading knowledge on biological processes in the soil and on gardening,
- Supporting self-supply of food,
- Providing tools for gardening and advisory support for local groups.

However, the fundamental question was how to operationalize the idea and how to implement the project in selected cities. The key challenge was the appropriate project preparation, considering lack of experience and complicated social, organizational, legal and administrative, spatial and professional conditions connected with this form of urban gardening. Thus, the use of the gained experience in subsequent locations was of crucial importance.

Project preparation

GC PL started its actions by inviting various experts to take part in workshops during which a strategy was developed and a sequence of further actions was prepared. The group consisting of lawyers, landscape architects, planners, gardeners and sociologists defined the main project assumptions at the beginning. Showing to the residents how they can use the public space, building awareness of the impact of public space on the residents quality of life, stimulating dialogue of all interested parties in the shaping of a common public space as well as promoting bottom-up initiatives were the priorities at the beginning of the project. Analysis using design thinking principles allowed an efficient operation of the group of experts. It is worth emphasising that the experts agreed to provide advice during the project. Thus, a Board of Experts has been created that supports the project's implementation.

In spring 2015, a meeting with the media took place in which representatives of GC PL as well as members of the Board of Experts took part. The meeting resulted in significant media coverage as well

as in applications of other groups and cities willing to create more CGs. The website, that we established in spring 2015 and that we then extended further, has become an important tool to communicate with the project's participants. In its current shape it contains a wide range of information, including inspirations from the world, spatial design, lists of plants, social activities, documents and administrative procedures necessary to create a garden.

At the preparatory stage, GCPL representatives visited the selected cities and discussed the concept with cities' authorities and with people who regularly deal with diverse local communities (e.g. members of NGOs). Observations and consultations allowed the identification of a range of preconditions and the scope of necessary support. As a result, together with experts, a practical manual for groups interested in creating a community garden has been developed and published on the web page.

After identifying occurring problems and a method to overcome them, GCPL selected cities for the implementation stage. The project was then presented in a series of meetings with municipal authorities that face social and economic problems. At the same time, GCPL developed contacts with potentially interested NGOs. Already at the preparatory stage our project received support from the Ministry of Environment and Minister of Development who took honorary patronage of it.

Assistance – the project's key principle

The basic support for groups which want to establish a CG is provided in the form of a pioneering website with information on urban gardening with a special emphasis on practical information on establishing and keeping community gardens; www.naszogrodspoleczny.pl/en/ is a collection of a wide range of data. The Operational Manual for Local Groups instructs "what to do" and "how to manage" step by step, from the idea to its implementation. The incubation of local ideas involves encouraging local authorities to choose CG as a form of developing social capital. At the same time, GCPL tries to identify local groups which want to create CGs. The main material components of the project "Our community garden" include sets of tools and equipment for creating and maintaining a garden.

Within the project, GCPL has launched the first Polish website devoted to community gardens www.naszogrodspoleczny.pl/en/, which provides a lot of practical information concerning the establishment and keeping of community gardens, including legal, administrative and organizational conditions for establishing gardens, the problems of designing a garden in the space and practical gardening advice. Those interested will find here, amongst other things, advice on how to start, how to get funds, as well as the possibility of asking an expert a question or having access to a library of inspiring examples of urban gardening from Poland and from the world. Local groups can apply for various forms of support as regards to the creation and further keeping of a common garden, including ones related to the building and development of local bonds. Green Cross Poland, together with partners, sponsors urban gardener packages, i.e. material grants including tools, small architecture elements, seeds, bulbs, vouchers for the purchase of plants and soil etc. They are granted after documenting the establishment of a group, including signatures of 15 people willing to establish a garden, organising a neighbourhood picnic and documenting that consent has been reached to use the land and to access water. GCPL is involved in the dialogue with the local administration and other bodies holding rights to land, thus making the actions of initiator groups more reliable. Our project also involves providing support for community garden leaders who are invited to take part in gardening or joinery workshops, which, at the same time, are an opportunity to share experience.

A starter kit includes, among others, basic gardening tools, watering cans, wheel barrows, seeds, bulbs, soil and nonwoven crop cover. The extended kit includes, among other things, seeding vegetables, a hammock, a feeder and a bicycle stand, while the advanced kit contains elements of small architecture, such as a bench, a swing, a sandbox and a barbecue grill. Local groups receive each subsequent kit after they fulfil the standard conditions, which are: a declaration of participation in creation of a garden made by 15 persons, designing the space and submitting a permit for using the land for community gardening purposes in the municipal/commune office. The significant challenge for GC PL is to find partners who provide in-kind and logistic support in assembling and handing over the kits. Material grants are transferred from the Green Cross Poland resources and thanks to the business partners. Local companies often declare the

willingness to equip the community garden in order to promote a socially responsible business model.

Community gardens in progress

The implementation stage of this project started in spring 2015 with a press conference which received a great deal of publicity in the media, including social media. The project engaged the national and local media connected with business, environmental protection and popular trends concerning a healthy and active life style. The first symbolic ground-breaking step took place in Ruda Śląska where a garden was established by the first group of people under the guardianship of social services and a favourable support of the authorities of this city facing high levels of unemployment and related social problems. Another five gardens (from 60 to 250m²) have already been established in: Gdańsk, Wrocław, Częstochowa, Gorzów Wlkp., Będzin, Warszawa, Ostrów Mazowiecka, Żary and in Bydgoszcz after one year of the project implementation.

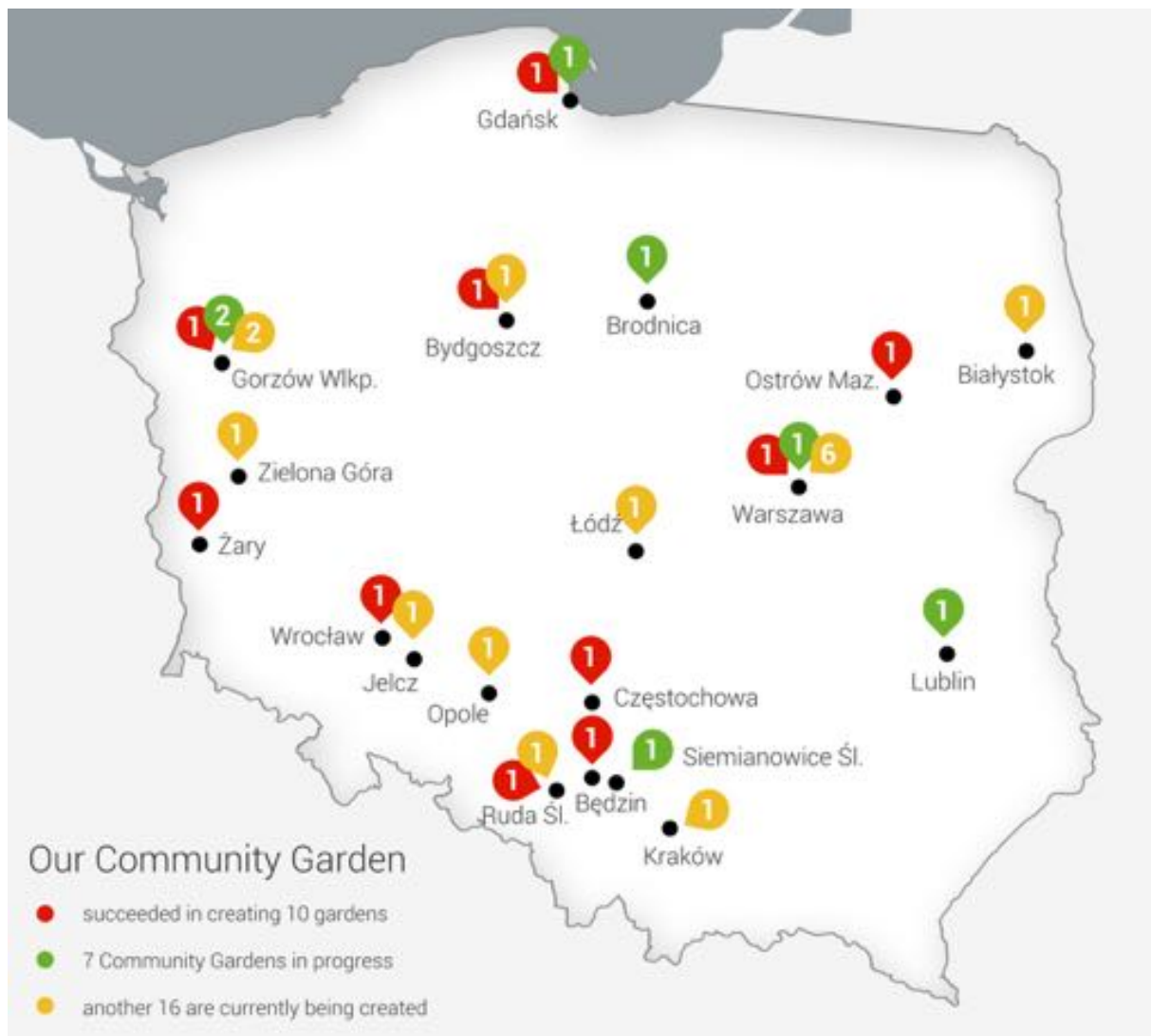


Figure 1: Map of community gardens in Poland (as “Our community garden” campaign; source: Green Cross Poland)

The neighbour groups found to this day are different. For instance, the Zakanale district in Gorzów Wielkopolski has a reputation of being a poor and neglected place. The residents of this district found out about the Green Cross Poland project from employees of the City Council. Since April 2016, neighbours from the Zakanale district have proven to the rest of the city residents that their work can create a green and friendly space for their children. The courtyard is now made more attractive with flowerpots of colourful plants and the elements of small structures such as benches and tables that were made by the residents. The local shrub supplier decided to offer this community over 100 *berberis* plants in order to naturally enclose the area against animals. One of the participants said during the garden opening that, as a community of such a forgotten district, they needed

support from the outside, not only in the form of material grants, but also in terms of knowledge. Another dweller of the district gathered up the courage to apply for funding for the children's playground. The local media presented this community as trustworthy, so the chances of building the playground are really high.



Figure 2: community garden in Gdańsk (source: Unterschuetz)

Another gratifying fact is that the project was positively received by foundations around the country. Thanks to creating community gardens with the foundations, the idea spreads even faster. Different representatives of the NGOs meet at conferences and workshops, where they exchange their ideas for building creative community gardens. The Green Cross Poland community garden, founded in Gdańsk in 2015, was initiated by the members of the "Mrowisko" community day centre. It is here that workshops on dancing, physical activities for people of all ages or picnics and festivals are held. Recently, the "Mrowisko" community day centre charges went to the neighbouring streets to plant flowers together with passers-by. The community garden is a space that motivates residents to be active as well as a bridge between different communities. In September of this year, a new community garden is planned to be open at the "Centrum" Caritas homeless centre in

Brodnica. The garden will be created with the participation of the charges of this organisation and the residents of the neighbouring streets.



Figure 3: community garden in Gorzów Wielkopolski (source: Nowak)

Another 7 are at their final preparatory stage (Siemianowice Śl., Bydgoszcz, Ostrów Mazowiecka, Lublin, Gdańsk, Gorzów Wlkp., Warszawa). Approximately 20 other groups are taking action according to our plan to open a garden and receive the urban gardener package. The dynamics of our project is illustrated by the fact that projects at various stages of advancement are being implemented in 20 cities in 13 provinces (out of 16). It is already gaining its own dynamics and developing characteristics of a social movement, which is confirmed by further applications received from cities, organizations and initiative groups for building this type of social activity. Among groups establishing gardens, neighbourhood teams from areas with little green spaces and newly established housing estates prevail, as they want to build local social capital and get to know inhabitants. There are also groups of people under the guardianship of social organizations.

Gardens are situated on municipal land or on land which is made available by housing companies. The key issue for the success of the gardens is by ensuring access to water for watering plants which

garden users receive through various institutions. Green Cross Poland also knows about examples where inhabitants have established a monthly payment to cover water bills and to buy the necessary gardening materials such as plant protection products or fertilizers. A very positive surprise is the involvement of municipal authorities in many cities, including mayors themselves. Municipal officers, who especially appreciate the social role of the activity within community gardens, often support our project in a non-routine manner. High social resonance of the project has resulted in a growing interest of companies which are already supporting it or are engaged in talks with us concerning potential material or financial support for our initiative.

It is understandable that our undertaking is a considerable organizational challenge for as due to labour consumption, mostly connected with the necessity of travelling to places where community gardens are being prepared or have already been established, logistics preparation of urban gardener packages and necessity of keeping correspondence with many parties. Further dynamic development may also cause difficulties in ensuring material grants for all. GCPL is already thinking about the next seasons so as to keep participants' involvement and ensure the durability of undertaken actions. Cooperation with local groups establishing gardens is also a very positive and optimistic experience, as they provide plenty of evidence that they appreciate our efforts. Therefore, this project is on-going and the benefits will be carried out until they are depleted. Ultimately, the responsibility connected with the development of the already-existing gardens is planned on being transferred to public institutions. The community garden that has been created under the Green Cross Poland umbrella becomes the flagship of the street, district, or with the greater number of gardens, the whole city. A public institution that takes over the community garden from the Green Cross Poland, which is successfully operating for a year or two, will certainly have a local community that is a responsible and engaged group of neighbours who will continue to care for the green areas around their place of residence. An additional benefit for the institution will be the possibility of cooperation with local companies, which, as the project partners, would continue to support the gardens with material grants. In autumn, GCPL will create a publication with the partners (lawyers), which will be a handbook for

the community. It will contain information regarding such issues as the principles of cooperation between the local communities, the legal basis for disposal of the land allotted for the community garden, differentiating between the municipal land and private land, general principles towards the third parties and templates of documents (e.g. the land lending agreement, real estate leasing agreement and the memorandum of association templates).

Conclusions

The "Our community garden" project implemented by Green Cross Poland has met the needs of a large number of groups of Polish urban dwellers who obtain satisfaction from growing plants on their own, cooperating during establishing the garden and keeping it as well as from increasing the quality of natural areas in close vicinity. At the same time, local authorities, after handling the most important infrastructure projects, notice the importance of social capital more clearly, as it is a factor contributing to sustainable development and improvement in the quality of public space.

The measure of success of the implemented project is its own dynamics and establishment of gardens in various regions of Poland, which should accelerate the spreading of good experience. Ensuring the durability of established gardens is considered to be of vital importance for the future. On the one hand, it requires monitoring and stimulating local communities and, on the other hand, making efforts to ensure that the groups maintaining the gardens include members of various generations and are as uniform as possible in their approach to the garden treated as a common value.

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Urban Gardens in Istanbul, Turkey: Forms, Uses and Challenges

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Keywords: Istanbul, Urban Gardens, Forms, Uses, Challenges

Abstract

Urban gardens, taking different forms, have become an important part of cities across the world (Bell & Keshavarz 2016; Certomà 2015). They are also a very old source for the provision of food and livelihood in Istanbul, the largest city of Turkey (Baser & Tuncay 2010, Kaldjian 2004). Although there has been an increasing interest in the subject, there is not sufficient analysis on the variety of urban gardens and their impact on cities in Turkey. The paper argues that urban gardens in Istanbul are different from each other in terms of ownership and use of land, users, designs, management of space and impact on the city. By adopting an ethnographic approach and the right to the city position, the paper explores three urban gardens in Istanbul. The paper uses the data collected through desk search, site visits and interviews with activists and users of gardens between 2015 September and 2016 May. The paper divides gardens according to their purposes (for livelihood or hobby) and the land use practice (legally or illegally). The first case study is a garden used legally for livelihood, Yedikule Gardens, located near the historic city walls. The second is a garden illegally used for hobby, Imrahor Garden, without the permission of land owners located in Uskudar, a densely-populated inner-city district and the third is a plot of land where local people deal with beekeeping in Kupluce, another inner-city neighbourhood close to Uskudar. Based on the data collected during site visits, the paper demonstrates that these gardens protect urban green sites and heritage, ensure people's livelihood, contribute to the well-being of local communities and educate the youth. They also redefine the relationship between urban and rural realms and raise questions on food quality, create danger as well as tensions between local political actors, land owners and users.

Introduction

Urban Gardens of Istanbul – An Ancient Tradition and a New Practice

Urban gardens, taking different forms, have become an important subject across the world (Bell & Keshavarz 2016; Certomà 2015). They are also an old source of livelihood and provision of food in Istanbul, the largest city of Turkey (Baser & Tuncay 2010; Kaldjian 2004). The lands used to grow produce, particularly vegetables, are called “bostan” in Turkey. Istanbul was once full of urban “bostans” scattered all over the city, which were an important part of food production before the industrialisation of agriculture and change in urban landscape as a result of rural to urban migration, increasing density of population leading to an overall decline in the urban green fields including parks, gardens and orchards. This form of urban gardening is usually practiced by the urban lower and/or lower-middle classes for livelihood or as a continuation of rural tradition, going back to millennia, as the famous Yedikule Gardens. In addition, in Istanbul there are also lands which are used without the permission of land owners, for food (fruits, vegetable) production as well as animal husbandry and beekeeping. There is not sufficient quantitative data on the numbers of people who deal with urban food production or gardening (legally or illegally) in Istanbul.

There are also new forms of urban gardening and farming, initiated as a consequence of Gezi Protests which took place in the summer of 2013 in Istanbul and created an awareness about the protection of green fields and public spaces (Durusoy & Cihanger 2016; Doyduk, Orbey & Gurel 2015). These protests aimed at protecting an urban public park from conversion into a mixed-use commercial complex. The protesters established a camp inside the park and later occupied it. This occupied park, containing also a vegetable garden, was regarded as an urban utopia in the middle of neoliberal Istanbul (Tanulku 2013). This kind of gardening is practiced by the urban middle classes who have environmental concerns and aim at a healthy and slower way of life, based on collective values. Among examples are a couple of guerrilla gardens and community gardens, home/roof gardening, and gardens in higher education institutes used for hobby or educational purposes. There are also urban gardens supported or established by the initiatives of several municipalities, such as the Besiktas

Municipality, which supports the team of "Ek Bic Ye Ic", a group of activists, in establishing aquaponics in a public park to promote the system to the locals.

Methodology

Although there has been an increasing interest in the subject, there is not sufficient analysis on the variety of urban gardens and their role in the provision of food security, health and sustainable growth. The paper argues that urban gardens in Istanbul are different from each other in terms of ownership and use of land, users, designs, management of space and impact on the city. The paper categorises urban gardens into two categories: according to their purposes (for livelihood or hobby) and the land use practice (legally or illegally). By adopting an ethnographic approach and right to the city position, the paper explores three urban gardens in Istanbul which reflect different purposes and land use practices. The paper uses the data collected through desk search, site visits and interviews with activists and users of gardens between 2015 September and 2016 May. The first case study is a garden used legally for livelihood, the Yedikule Gardens, located near the city walls in the historic peninsula of Istanbul. The second is Imrahor Garden used for hobby, occupied without the permission of land owners located in an old inner-city neighbourhood in Uskudar district. The third is a piece of land used by beekeepers, in Kupluce, another highly populated neighbourhood in Uskudar. The paper uses qualitative data, which was found to be more relevant in learning about urban gardening in Istanbul. Semi-structured interviews were conducted during site visits with the farmers, activists, and several gatekeepers such as the Head of Yedikule Farmers' Association, local tradesmen and people. In the interviews, the participants were asked for how long they were involved in gardening, by whom and for what the land is used (hobby or professional), the ownership status of the land, who manages the land, how the land is divided between users, whether they experienced any problems (with the locals, officials or with each other), whether there is any solidarity (association, volunteerism, etc.) established between the users or between different urban gardens.



Figure 1: The locations of three case studies in Istanbul (source: Tanulku; Google maps)

Findings

Yedikule Gardens

Yedikule Gardens are located in the historic peninsula, adjacent to Istanbul's old city walls, known as the Theodosian Walls, a UNESCO site. They are among the oldest in the city, which have been cultivated since the Byzantium Empire. The area is not only valuable for its historic heritage but also cultural one, due to its traditional way of doing agriculture in an urban area (Durusoy & Cihanger 2016). The gardens are approximately 200 acres and divided in plots of varying sizes and used by farmers who rent the lands from the Istanbul municipality by paying monthly fees in return of using these lands to grow vegetables and flowers. Four interviews were conducted in the field, three farmers and the head of Yedikule Farmers' Association. According to the head of the Yedikule Farmers' Association, although this cannot be considered as organic farming, it is traditional agriculture and the farmers use local seeds while the soil and irrigation water are not toxic. There are 27 farmers registered in the "Yedikule Farmers' Association", who work as families (or relatives) on their allotments. They cultivate these allotments both for personal consumption and to earn a livelihood. They sell them either on site to personal buyers or in the weekly local markets in Istanbul.

Despite the fact that Yedikule Gardens are busy all the time (daily and all year), they are regarded as dangerous due to criminals who take shelter in historic city walls (such as drug users). According to interviews with the farmers, they can also be regarded as guardians of these historic places, preventing crime which would otherwise take over. The farmers make their own spaces through a DIY approach: on a site visit, they showed their sheds built by themselves, which were used to protect their gardening equipment, gloves, clothes, etc. However, during the last years, there have been attempts to regenerate the area against their wishes. Some farmers added that the municipality wanted to remove these sheds; they moved their sheds to different locations continuously in order to prevent the removal by the municipality. They also explained that as a result of pressure by the municipality, they could not grow produce since they could not spend time in their gardens. The removal of some of the sheds by the police in January 2016 received attention in the media. Yedikule Gardens still survive, despite state's pressure on farmers. There are various associations or activist groups which were established to protect the Gardens: while "Yedikule Bostancılar Dernegi" (Yedikule Farmers' Association) has recently been established by the farmers' initiatives, other groups such as "Yedikule Bostanları Girisimi" (Initiative for Preserving the Historical Yedikule Gardens) were established by urban middle classes or activists. Despite the differences among their founders, these groups can come together to protect Yedikule Gardens. In the beginning of May 2016, the "Yedikule Marul Festival" (Yedikule Lettuce Festival) was held which aimed at bringing people together inside these gardens to promote them and their produce to the consumers.



Figures 2: Yedikule Gardens, the historic Theodosian Walls can be seen at the back (source: Tanulku)

Imrahor Garden

This garden is a small parcel of land in an old and traditional neighbourhood of Istanbul, mainly residential and close to an old mosque and a cemetery, in the Uskudar district. The land belongs to a charitable foundation, rented by the Municipality and planned to be a park. However, later it was rented by various commercial enterprises, the last one being a timber company. It became vacant in 2012 when the company ended its work there. The land was unused until 2014 autumn when it attracted the attention of a group of urban activists already active in the "Uskudar Dogancilar Platformu" (Uskudar Dogancilar Platform) a neighbourhood association aiming at protecting the Uskudar district. The Platform took possession of the land and cleaned it to create an urban garden and planted produce. This kind of gardening is a consequence of Gezi protests in 2013, which led to a general awareness among the urban educated middle classes towards urban commons (green spaces, gardens, public parks). After the protests, the Platform organised open air forums in another park in Uskudar which brought together the locals to discuss local issues. They decided to transform this vacant land into a garden, which reflects their wish to protect urban green spaces, public parks and heritage from being transformed into closed and privatised spaces, such as shopping malls,

housing and business developments. This is similar to the opening of a community garden in the province of Küçük Armutlu, by the initiatives of a leftist organisation which aimed at protecting the neighbourhood against damage by state authorities (Doyduk, Orbey & Gurel 2015). Even if the two gardens are established by different groups, both can be regarded as ideological initiatives (right to the city) in order to preserve green spaces and create something positive for the local people. Particularly in the current context of the retreat of leftist urban activism after the Gezi protests, this gardening is an ideological attempt to demonstrate a successful example of radical urban activism. The Imrahor Garden is closed off by barriers erected by the local municipality. There is a small shed reserved as a public toilet. The space is made through DIY approach: There are some furniture (tables, chairs) which are used by the people when spending time there. As of May 2016, the garden is actively used by the locals and was planted with few vegetables. The garden looks like an experimental or hobby place rather than a professional urban garden.

During two site visits, four interviews were conducted by local tradesmen and people. According to the interviews with them, there had been disputes between the activists and the locals as a result of political dissent between them. While the locals of Imrahor have a more conservative way of life, the activists have a more leftist and/or liberal one. According to a local person, this difference ended up in the removal of activists from the garden. Despite the fact that the garden was first initiated by the activists who were active in the Gezi protests, it is now used by the locals, without a political organisation's intervention. It seems that while the local people did not want to cooperate with the activists as a result of political differences between the two sides, they embraced the garden. According to a local person who also runs a small shop there, the people who use the garden are generally the retired, the elderly or the unemployed.



Figure 3: Imrahor Garden, in the middle of a neighbourhood (source: Tanulku)

Kupluce Beekeeping

The beekeeping activity has been practiced for several years, on a privately owned land in Kupluce, a neighbourhood which is mainly residential with many amenities. It is close to Bosphorus, the most valuable area of Istanbul in terms of land rent. The land is covered by trees and shrubs which is within the priority-protected zone in Bosphorus, which prevents construction or damage to its natural landscape. It was owned by an Ottoman bureaucrat who built four detached villas during the 19th century to be used by his family. However, it changed ownership through time and it is now owned by one single family. The space of beekeeping activity reflects a DIY approach, with the beehives, tools and small platforms to put the beehives on. There are approximately twenty beehives on the land. The land is not fenced or protected, which allows the locals to continue to keep their bees. The land is not used for any other activity such as growing vegetables or fruits. However, several people use the land to consume alcohol in a separate part. This creates a different approach of sharing a private land by locals independently from regulation by a legal authority.

During two site visits, three interviews were conducted with local tradesmen and people. This case is totally different from the previous two cases, since beekeeping is practiced by local people being the continuation of their traditional way of life. As expressed by a local tradesman, the beekeepers cannot live without beekeeping, because they are from the Black Sea region, indicating the importance of the practice for the locals as a tradition, rather than for livelihood or economic activity as in the case of Yedikule farmers. They have lived

in Kupluce for a long time, settling there from particularly the Black Sea region. They can be regarded as having adopted a more conservative lifestyle than the urban middle classes. Beekeeping can be regarded as a traditional and intentional practice, rather than an (leftist) ideological practice seen in the Imrahor Garden squatted by urban activists. As a result, Kupluce beekeeping is not under pressure by state authorities. The lack of tension between the Kupluce beekeepers and the authorities is also due to the fact that both actors are of the same political conviction. Problems might rather emerge with the owners of the land, if and when they decide to transform this land into something else (housing or other facility). In addition, according to interviews with local tradesmen, the beekeepers protect this land against crime (such as drinking and drugs) or other damage, such as fire and waste disposal.



Figure 4: The beehives in Kupluce (source: Tanulku)

Conclusion

The challenges of the urban gardens of Istanbul

The paper categorised urban gardens according to their purposes (for livelihood or hobby), and the land use practice (legally or illegally) and explored three of them: Yedikule Gardens are legally cultivated by farmers for livelihood. On the other hand, Imrahor and Kupluce are two gardens used illegally and as hobby by activists and local people. The data collected during site visits demonstrate that these gardens have positive outcomes for cities and people who use them. First, the case studies question the relationship between the urban and the rural realms. At the moment, the majority of the world population lives in cities. The same is true for Turkey: According to TUIK's recent data,

92.1 % of the total population in Turkey live in urban and town centres, while only 7.9% of the total population live in rural areas.¹⁵ However, at the same time, rural realm, both as culture and life, has gained symbolic value as a result of an urban lifestyle established around speed, temporariness, unnaturalness, density, crowds and toxicity (Oncu 1997). This has led to counter-urban trends such as second homes built far from large city centres, starting from 1970s and accelerating since 1980s. For Istanbul, there has been a growing interest in urban sustainability, green spaces and a slower way of life, which contradicts with the city's continuous sprawl and population growth. Popularity of current urban gardens reflects the desire to balance the damaged relationship between the urban and the rural realms, which provide green spaces, opportunity to establish physical relations with animals and plants. In this context, urban gardens symbolise a slower and healthier way of life achieved through tactile relations with the earth itself, beyond the fruits and vegetables grown. Urban gardens also help in protecting biodiversity while local seeds are exchanged among users. They also have a positive impact on the people's well-being and health. Urban gardens also protect green sites and urban heritage (historic, cultural and natural) and the neighbourhoods against crime and potential decline as seen in the case of Yedikule Gardens.

Second, people who cultivate these gardens also establish physical relations with each other and can come together inside the same garden. They share their knowledge on how to grow food and how to tackle problems (pests, watering, political pressures etc.). This can create better relationships between people from different backgrounds, provide well-being and opportunity to working in open air, achieve social cohesion among communities, teach the youth how to grow produce and learn general social skills. All three case studies are good examples of DIY urbanism in varying degrees created by people from different backgrounds with their knowledge and tools. While the urban lower classes are regarded as "the lower social other" by the urban educated middle and upper classes (in terms of income and educational level and social origin), in these gardens they can also raise their voices and share their knowledge about gardening, animal raising and other related practices. During this process, both lower and upper

15 <http://www.tuik.gov.tr/PreHaberBultenleri.do?id=21507>

classes and/or educated and uneducated people can learn from each other. This would create a more equal relationship between them rather than a dependent and unequal relationship in which the upper classes would “teach” the lower classes how to do things.

However, urban gardens also create several challenges. The first is health issues, related to the toxicity of lands, irrigation waters or quality of seeds. While Yedikule Gardens are exempted from this negative aspect, other gardens such as Imrahor may result in harmful products as they might have been founded on or close to toxic and/or industrial land (Certomà 2015). The second issue is the safety of people who use them. As example, Yedikule Gardens are located near the historic city walls which are regarded as unsafe during evenings and nights. The third is the problems and conflicts which might emerge between the political actors (government and local municipalities) and the land owners and the users of these lands: As seen in the case of Yedikule Gardens, the municipality wants to remove the gardens in order to convert the area into a recreational site. However, the farmers who use these gardens defended them against further damage and removal. They also cooperated with activists to exchange ideas, establish solidarity and protect their gardens. These kinds of collective action to defend green spaces, public parks and gardens also demonstrate how people can act together for the same cause. This cooperation and network established by the help of various forms of online and offline initiatives can be called as “network of (political) activism”. This struggle ended in success in Yedikule Gardens which are still cultivated by the farmers. However, in the case of Imrahor Garden, the tension emerges from political differences between the locals and the activists. The Imrahor Garden is now used by the local people instead of activists, representing political dissent among different groups.

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Parallel Sessions 2

* = full paper

A2 Understanding the gardeners: motivations of the Homo Hortensis

Chair: Susan Noori

Urban agriculture in Barcelona: Meanings for transformation

Authors: Laura Calvet-Mir and Hug March, Universitat Oberta de Catalunya, Spain

From Homo Faber to Homo Hortensis: Gardening Practices in the Anthropocene

Author: Astrid Schwarz, ETH Zurich, Switzerland

*** Informal Allotment gardens in Lisbon: the gardener's perspective**

Authors: Filipa Grilo / Paula Gonçalves / Ana Catarina Luz / Cristina Branquinho / Margarida Santos-Reis, all: University of Lisbon, Portugal

Characteristics of appropriation and sense of ownership associated with different urban gardens

Authors: Sandra Costa, Birmingham City University & Centre for the Research of Technology and Agro-Environmental and Biological Sciences, United Kingdom & Portugal / Frederico Meireles Rodrigues, University of Trás-os-Montes and Alto Douro & Centre for the Research of Technology and Agro-Environmental and Biological Sciences, Portugal / Cláudia Andrade, University Institute of Lisbon, Portugal / Gabriel Muiños, University of la Laguna, Spain / Carla Mouro, University Institute of Lisbon, Portugal

*** Urban garden as space of everyday life: case study of Baštalište garden**

Authors: Vladan Djokic / Jelena Ristic Trajkovic / Verica Krstic, all: University of Belgrade, Serbia

B2 Urban planning instruments for implementing urban gardens and designing neighbourhoods

Chair: Silvio Caputo

*** Town planning, development patterns and the reduction of private gardens in the suburbia of Cyprus**

Author: Byron Ioannou, Frederick University, Cyprus

*** Environmental Design Solutions to Promote Safety in Urban Gardens**

Authors: Sandra Treija, Riga Technical University, Latvia / Alisa Korolova, Riga Technical University, Latvia / Monika Latkowska, Warsaw University of Life Sciences, Poland

*** The Influence of Community Gardening on the Status of Housing Estates in Budapest**

Authors: Adrienne Csizmady, Hungarian Academy of Sciences, Hungary / Zsuzsanna Fáczy, Szent István University Ybl Miklós, Hungary

*** The Future of Urban Allotment Gardens in Latvian Cities as Reflected in Spatial Development Plans**

Authors: Kristīne Āboliņa / Anna Skredele / Andis Zilāns, all: University of Latvia, Latvia

C2 Enhancing resilience and ecosystem of cities

Chair: Andrzej Mizgajski

*** Water management & resilience of urban allotment gardens against climate risks**

Author: Paulo Brito Luz, Instituto Nacional de Investigação Agrária e Veterinária INIAV, Portugal

The influence of atmospheric particles on the elemental content of vegetables in urban gardens of Sao Paulo, Brazil

Authors: Luís Fernando Amato-Lourenco / Tiana Carla Lopes Moreira / Vanessa Cristina de Oliveira Souza / Fernando Barbosa Junior / Mitiko Sasaki / Paulo Hilário Nascimento Saldiva / Thais Mauad, all: University of Sao Paulo & National Institute for Integrated Analysis of Environmental Risk & Nuclear and Energy Research Institute, Brazil

*** Anthropogenic flows of matter and energy through allotment gardens as a reflection of the method of management**

Authors: Lidia Poniży / Marta Węglewska / Karolina Rzańska, all: Adam Mickiewicz University, Poland

*** Ecological identity of urban neighbourhoods: biodiversity maintenance through allotment and domestic gardening**

Authors: Ari Jokinen, University of Tampere, Finland / Pertti Ranta, University of Helsinki, Finland/ Ville Viljanen, University of Tampere, Finland

Enhancing ecosystem services in cities through multifunctional rooftop gardens - Insights from a co-designed pilot project in Barcelona, Spain

Authors: Johannes Langemeyer, Autonomous University of Barcelona, Spain / Lidia Calvo, EixVerd, Spain / Ana Isabel Abellán García, independent consultant, Spain / Francesc Baró, Autonomous University of Barcelona, Spain / Mònica Batalla, Polytechnic University of Catalonia, Spain / Martí Boleda i Torrent, Pompeu Fabra University, Spain / Vidal Guerrero, EixVerd, Spain / Esther Sanyé-Mengual, Autonomous University of Barcelona, Spain / Montserrat Bosch González, Polytechnic University of Catalonia, Spain

D2 Quality of soils, groundwater and vegetables in urban gardens versus environmental pressures

Chairs: Béatrice Bechet & Salvatore Engel di Mauro

Strategies for reducing heavy metal accumulation in urban-grown food

Authors: Giuseppina Pennisi / Francesco Orsini / Livia Vittori Antisari / Gilmo Vianello / Giorgio Gianquinto, all: University of Bologna, Italy

Evaluation of soil, groundwater and vegetable quality in Lisbon urban allotment gardens

Authors: Teresa E. Leitão & Maria José Henriques, National Laboratory for Civil Engineering, Portugal / Maria do Rosário Cameira & Miguel Mourato & Luísa Louro Martins, University of Lisbon, Portugal / Hugo D. Costa & João Miguel Pacheco, former MSc from University of Lisboa, Portugal

Spatial distribution of trace elements in urban allotment gardens: influence of and on land-use change

Authors: Cécile le Guern, Regional geological survey Pays de la Loire, France / Liliane Jean-Soro / Béatrice Bechet, both: The French institute of science and technology for transport, development and networks & Federative Research Institute on Science and Technology of the city, France

An exploration of potential airborne contamination of urban garden in Rome, Italy

Author: Salvatore Engel-Di Mauro, Department of Geography, State University of New York at New Paltz, United States

Variability transfer of potential toxic elements transfer in vegetables grown on urban allotment gardens – A case study from the West of Scotland

Authors: Alaba Agboola & Andrew Hursthouse, University of the West of Scotland, United Kingdom / Simon Cuthbert, University of the West of Scotland, United Kingdom / Roslyn McIntosh, Inverclyde Council, United Kingdom

Informal allotment gardens in Lisbon: the gardener's perspective

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Abstract

Due to the rapid growth of cities worldwide, green spaces – including informal allotment gardens – have an important role in delivering ecosystem services providing ultimately well-being for the local population. In recent years, the municipality of Lisbon has developed a strategy for urban agriculture through the creation of horticultural parks within the city. However, most of the gardening activities still occur spontaneously (not controlled by the municipality) and informally in derelict land. To consider the importance of these spaces in future planning and decision-making by the municipality, we assessed the motivation, benefits and challenges faced by gardeners who use these allotment gardens. We conducted semi-structured interviews with gardeners in 60 informal allotment gardens in Lisbon. Questions focused on the gardeners' profile, their motivations for cultivating, and the challenges faced during cultivation. The interviewees consisted mostly of elderly, retired men,

previously acquainted with agricultural activities. The great majority cultivated crops for leisure and highlighted the importance of being outdoors, not referring the potential economic benefits from such endeavours. Still, more than 60% of the interviewees believed that they do save money with this activity. The most recognised challenge, due to the climatic features of the city, was related with water shortage, preventing gardening activities during hot months. The importance of gardening activities for elderly gardeners was also highlighted, as an activity that can help to provide physical, psychological, and social well-being. This study emphasized the importance of these spaces for the well-being of these gardeners, suggesting the need to regulate these spaces to maintain active this sector of elderly gardeners, while providing better conditions to cultivate all year round and possibly increase Lisbon's urban green infrastructure.

Introduction

In an increasingly urbanized world, cities are expanding in number, size and inhabitants, being expected that by 2030, over 60% of the population will live in urban areas (UN 2010). This fast growing process has called the attention to the need of preserving urban nature, considered of strategic importance for the quality of life of our increasingly urbanized society. Moreover, some cities have low areas of green urban spaces, particularly southern European cities that show below-average availability values (Kabisch et al. 2016). For this reason, the development of a network of urban green spaces - including urban allotment agriculture - has been attracting the attention of many political programs and communities, as a mean to ensure the well-being of city dwellers, while also preserving urban biodiversity and ecosystem services provided. Initiatives to implement allotment gardens are expanding due to the positive impacts that these areas can have in urban areas, including improving urban sustainability and resilience, social cohesion and inclusion of immigrants, supplements in the income of disadvantaged households or adoption of new lifestyles (Bell et

al. 2016). Overall, allotment gardens are thought to provide opportunities for local health improvement and community development (Firth *et al.* 2011; Kurtz 2001).

In Portugal, agriculture has always played a major role in the development of rural areas and cities. In Lisbon, the oldest capital in Western Europe, allotment gardens were the first type of green space to appear in the city, contributing for a healthy environment and citizens' interaction (Sanchez & Santos 2010). In the 20th century the rural exodus to urban areas, especially to Lisbon, led to a rapid growth of the city (Telles 1987). The construction of infrastructures to accommodate these new urban dwellers led to an excessive occupation of most of the unoccupied lands in the absence of policies and spatial development plans that safeguarded green spaces (Telles 1987). It was only very recently, that concern about green spaces was included in the municipality policies and practices (CML 2016), with consequent development of horticultural production areas within the city. These (re)emerged not only for their traditional relationship with the city's history, but also for improving people's well-being and the environment, seeking to find a balance between human actions and nature (Hansen *et al.* 2016).

In Lisbon, an increasing number of disperse and informal allotment gardens emerged recently, especially after the beginning of the economic crisis of 2008 affecting Portugal (and Europe) (CML 2016). These urban spaces are created spontaneously by citizens in municipal derelict land, and are not regulated nor supported by the municipality. The conditions found at many of these allotment gardens reflect their precarious state and uncertainty about the future. To counter the widening of these unorganized gardens where the lack of control tends to facilitate the installation of tents or other illegal buildings, which gradually and at short-term progress to illegal neighbourhoods, inspections and cleaning actions took place, albeit not being successful to halt its progression (CML 2016). Other reasons for the municipality to control these areas are public and environmental health and the need to assure greater food security of the population (CML 2012).

To satisfy the local population clear interest for urban agriculture, the municipality recognized the need for the creation of organized spaces where gardeners could have the opportunity and conditions to grow food products, initiating in 2007 the development of a strategy for urban agriculture that included, since 2011 onwards, the creation of several horticultural parks (Santos *et al.* 2012). In these parks, in addition to the access to plots for cultivation, the municipality provides fences, storage cabinets, irrigation water, training and technical support.

With the construction of such horticultural parks, the municipality aims to prevent the widening of informal gardens, which contrast with the municipality's strategy for urban agriculture, providing gardeners with better conditions while also improving the sanitary conditions and the aesthetics of those spaces. In addition to creating new green spaces in the city, the municipality converted areas with a high concentration of informal allotment gardens into horticultural parks, creating conditions for planning mixed uses in public spaces, with social and economic advantages for all, increasing, at the same time, biodiversity and ecosystem services, as seen in other cities (Beilin & Hunter 2011; Krasny *et al.* 2014). However, in these parks, gardeners need to pay an annual rent to the municipality, and this can be a constraint to the most impoverished families.

Considering Lisbon's urban gardening strategy, with the recent appearance of horticultural parks, and the desire of the municipality to cease the spreading of informal allotment gardens, in this study we aimed at understanding who are these gardeners, their motivations for gardening in these derelict lands and the challenges they face. This can provide insights to the planning of the urban green infrastructure of Lisbon, incorporating the needs and expectations of all sectors of the local population.

Methods

To characterize urban gardeners profile, motivations, agriculture practices, perceived benefits and challenges faced

by this informal activity, a survey was conducted in the frame of a European FP7 project - Green Surge (<http://greensurge.eu/>).

On the basis of information provided by the municipality and satellite imagery, complemented with field recognition, we were able to map all the allotment gardeners existing within Lisbon city limits. Between August 2015 and January 2016 we visited allotment gardens dispersed over the city and performed 60 semi-structured interviews to the corresponding gardeners (Fig. 1).



Figure 1: Location of Lisbon allotment gardens where interviews were conducted (source: google maps)

These gardens varied from single to multiple plots, varying in size from 4m² up to 2800m². Most of these plots were cultivated by a single gardener and were protected with improvised fences and locks.

The interviews were conducted at different times throughout the day, both during the week and on weekends, in order to increase the chance of finding the gardeners and increase the probability of having different profiles (e.g. retired and full-time working people). All gardeners approached, accepted to be interviewed at first instance. We analysed possible relations between answers with non-parametric Spearman correlations and statistical significance of $p < 0.05$.

Findings and discussion

Regarding the gardeners' profile, we found that, as expected, the majority of gardeners were Portuguese citizens (85%), a result which is in agreement with the reduced proportion of non-Portuguese population resident in Lisbon (6.3%) (INE 2016). In addition, we verified that immigrants from Portugal's ex-colonies (e.g. Cape Verde) also practice gardening in these informal gardens.

Most of the interviewed were men (90%), originating from rural areas (77%), having therefore previous contact with agriculture. The youngest gardener interviewed was 39 years old, but 78% were 60 years old or older.

Recreation was highlighted by 97% of the respondents as the main motivation for gardening. However, we found a significant correlation between the recreational nature of the activity and buying seeds ($r=0.34$; $p=0.006$), which suggests that despite gardening being a hobby, the majority of gardeners invest in high quality seeds that translate in better quality food products.

Urban gardens are known to bring therapeutic benefits to gardeners, providing a feeling of well-being and relaxation through the contact with nature (Maller *et al.* 2006), having therefore physical and mental benefits (Tzoulas *et al.* 2007; Bertram & Rehdanz 2015). These benefits were also perceived by Lisbon gardeners, with 83% stating that relaxation provided by the activity is very important. The first referred reason as to why gardeners feel better after working in their allotment gardens was entertainment (48%), followed by stress relief and distraction from concerns, meaning mind clearing (32%).

Another known benefit of urban agriculture is the social interaction that these spaces provide, helping to bring a sense of community, knowledge sharing and social cohesion (Smit *et al.* 2001a). This was also verified in our study, as 62% of the interviewed referred to it as being very important.

Only a small fraction of gardeners (7%) recognized that their primer motivation relates to the economic benefits of the

activity. In fact, for 62% of the respondents, gardening does not compensate, considering the physical effort and expenses with tools and consumables (e.g. seeds, fertilizers). This result highlights the role of these urban spaces as important recreation places for gardeners, being considered economically neutral or even detrimental for 33% of the respondents. However, when asked whether they save money with this practice, 67% believe they do, even if it is a small amount.

Most gardeners (67%) referred water shortage as the main challenge for the activity, having to collect rainwater (55%), use municipality water (e.g. fountains) (23%), or bring tap water (5%) to keep their crops. In a Mediterranean climate, such as the one in Lisbon, where precipitation diminishes drastically in summer, for 47% of the respondents it does not compensate to grow horticultural crops during hot months, considering the physical effort and economic revenue. However, gardeners who have a well in their garden tend to cultivate all year ($r=-0.35$; $p=0.006$), and have a more diversified range of food products, when compared with those with water shortage problems. Product diversification is also found among gardeners for whom it is very important to save money ($\bar{X}=13.2$; $\text{min}=3$; $\text{max}=23$), relatively to the remaining ($\bar{X}=6.9$; $\text{min}=2$; $\text{max}=19$) ($r=-0.42$; $p=0.0007$), and also those that garden every day (55%), compared to the ones that only go occasionally to the allotment garden ($r=-0.31$; $p=0.01$).

In contrast with other studies, in which fully organic agriculture is the commonest agriculture practice (Voigt *et al.* 2015), more than half of the respondents (58%) admitted to use fertilizers or chemicals, with consequent effects on soil, water and environment quality.

According to literature, the lack of planning and mismanagement of these urban spaces can cause less favourable opinions regarding the aesthetic effect of allotment gardens in cities (Smit *et al.* 2001b). Practicing urban agriculture in informal allotment gardens often translates into a poor selection of the site chosen for food production, occupying any space available close to home, irrespectively of soil and water conditions.

The proximity of urban allotment gardens to heavily populated and polluted areas is recognised as a major concern in urban areas, meaning that air, water and soil quality is unknown and can cause products contamination (Izquierdo *et al.* 2015), which translates in a potential health risk to consumers (Säumel *et al.* 2012). However, 95% of the gardeners interviewed believed that their products are healthier than supermarket goods, having also a better taste.

We believe that to evaluate and limit these negative impacts in human health, soil contamination should be monitored and the use of toxic pesticides controlled. Therefore, the development and application of legislation related with urban gardening in informal allotment gardens is necessary, as a mean for human and environmental protection.

Despite not being formally asked, many people mentioned that, if they had the opportunity of having a plot in a horticultural park, they would prefer it, instead of having the current one, the main reason being the availability of water in these parks. This suggests predisposition for formal gardens which would diminish the risks existent in the informal ones. However, since the organized plots are attributed according to the gardeners' home proximity, many people do not have this opportunity.

The Municipality of Lisbon recognises that there is a need to regulate informal allotment gardens, providing gardeners with better conditions for the practice of agriculture. However, some of the interviewed referred that they could not afford the required rent, having the informal allotment gardens in alternative.

Considering this information, we believe that it is important to involve citizens in the planning process of agricultural areas within the city. Some examples of municipal strategies that involve citizens in planning and governance of urban agriculture are found in other countries, and could be applied in Lisbon. In the Netherlands, the Neighbourhood Green Plans are a policy program in which citizens of Utrecht are actively involved in developing green projects across the city (Hansen *et al.* 2016). In Ljubljana (Slovenia), locals have been transforming a

degraded urban space into a community space for urban gardening, social interactions, education, and culture. The project enhances and promotes possibilities for urban gardening as well as more active inclusion of inhabitants in decision-making about planning, development, and management of urban spaces; the plot owner is the Municipality of Ljubljana which allows free usage of the land (Buijs *et al.* 2016).

Given the profile, motivations and constraints of gardeners interviewed in this study we believe that horticultural parks are not a generalised solution and there is room for a compromise between the municipality strategy for urban gardens and the expectations of gardeners of informal allotment gardens. Incorporating informal allotment gardens in the municipality's network plans, creating better conditions in these gardens (e.g. a certain amount of water available during hot months) with the gardeners' commitment to better sanitary and environment conditions (e.g. waste removal, practice of organic agriculture) could benefit both interested parties. We believe that the regularization and incentive of urban gardening in Lisbon will benefit the city, economically, socially and environmentally.

Conclusion

The increasing number of dispersed and informal allotment gardens contrasts with the municipality's strategy for urban agriculture, which aims to provide citizens with better conditions for gardening, replacing those by horticultural parks. However, these parks are still restricted to a small portion of the local population, and the payment of an annual rent can be an impediment to impoverished families. With this study we were able to profile the gardeners using Lisbon's informal allotment gardens and characterize their main motivations: recreation, social interaction and opportunity of being outdoors, not neglecting the low investment. Despite the lack of water during summer, impeding the activity during hot months, and the physical effort and expenses with tools and consumables, these urban gardeners highly value its benefits. However, these spaces have often poor sanitary conditions, leading to negative aesthetic effects, and are mostly located in

highly polluted areas, which, with the additional use of fertilizers, contribute to potential health risks for gardeners. We believe therefore that there is a need for a compromise between the municipality strategy and Lisbon's informal gardeners, in order to maintain these urban spaces while providing better conditions for the practice of agriculture and regulating good practices.

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Urban garden as space of everyday life: case study of Baštalište garden

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Abstract

This paper deals with the urban garden as the space of everyday life. It studies the importance of urban gardens as a living environment, where human presence and human actions are a central theme. The relevance of research topics reflects the need to reconsider existing and explore new forms of relationships between users and nature in accordance with current environmental and climate issues, as well as with the changing position of nature in contemporary culture. The study explores everyday gardening practice (the activities, behaviour and motivations of users), as well as the patterns they create in lived space, on the case study of "Baštalište" urban garden in Belgrade. The results of this study are descriptions of these practices and the plurality of both significant and ordinary links between them. Thus the paper contributes to the research of urban gardens in the specific local context of Serbia and points out the importance of the research of local context, but also, in the wider sense, the paper contributes to the research of spatial aspects of urban gardens that affect relationships between user, built environment, culture and nature in general. This paper emphasizes the production of a new socio-ecological world and participatory structure as crucial aspects of

gardening in the city. Ultimately, the research shows that the concept of urban garden practice presupposes the establishment of a sensitive relation to the specific climatic and ecological, social and cultural context.

Introduction

The forming of urban gardens, as part of the concept of urban agriculture and generally as a way of living in the city, has become increasingly advocated in sustainable societies and developing societies. This study focuses on the aspects of urban gardening that is directly linked with increasing the quality of everyday life in the city. Paper starts from the statement of Paul Shaperd that the gardens are perfect human habitat and that their peculiarities measure the unique experience of each society as it confronted nature (Shaperd 2010:117). Urban gardens struggle for human and environmental welfare based on sustainability, difference, tolerance, and cooperation. They reintroduce unquantifiables such as access to nature; arenas for self-determined productions of space; focal points for community revitalization; fresh produce and flowers; non-commercial public and leisure space; biodiversity; and the right to the city (Atkinson 2007:253). The assumption behind this study is that numerous benefits would be realized if this concept were to be recognized, not just as a means of occupying green areas, but as a concept that would increase the quality of urban living.

The methodology was designed as a qualitative study and includes a theoretical investigation and field research. The theoretical deliberation has provided basic knowledge about urban gardening, followed by findings related to its values and impact on the local community and consequently the entire society. At the same time, the potential significance of urban gardening was highlighted from the aspect of living in the city. Also, the context and state of urban gardens in Serbia have been presented. The first organized legal urban garden in Belgrade, "Baštalište", was analyzed as case study. The qualitative methodological approach corresponds to the complex paper's subject, i.e. the transdisciplinary character of spatial

relations between man and nature. This approach enabled a comprehensive qualitative exploration of the social and physical phenomena within their complex contexts, with the intention of explaining these phenomena in the form of a narrative and in a comprehensive manner. The basic methods used during the research were case study method, interviews with Katarina Milenković (one of the initiators and coordinators of the "Baštalište"), and with gardeners. Research also included the process of collection, classification and systematization of data.

The concept of nature in urban space

In the past, a clear boundary existed between the natural and the artificial, with a tendency to avoid the complex interrelations between them. Today, however, this boundary between the mentioned categories is blurred. According to Spiegl (2007), the old Nature–Culture dichotomy moves towards the synthetic "culturization" of nature. Therefore, it is not possible to discuss nature without investigating the extraordinarily complex meaning related to the term "nature". Raymond Williams (1983) finds that nature is "possibly the most complex word in the [English] language" and that "an incredible amount of human history" (ibid. 1980) has been built into this term. Throughout history, nature has most often been used to describe two things: a material reality and a cultural construct. Nature as a cultural construct (religious, artistic, historical) has for long not been a subject of study, although the measurable relationship between man and the material world is also a construct, and contributes to further transformations of the cultural constructs. Hagan (Hagan 2001) believes that after the development of the theory of complexity in the sixties, it is not possible anymore to make a historically clear distinction between nature and culture, since nature and culture have been completely intertwined and mutually represented.

A garden as a designated place of human action, but also as a concept, has special significance for man. By creating and using such spaces, as well as through our relationship with them, we actually express our own appreciation of that which is natural and created, but also of the community we belong to. Very early

in history, gardens used to represent an image of the man's beliefs, convictions and values (Francis & Hester 1990). According to Francis M. and Hester T.R. (1990), gardens form a part of our common landscape, a space of everyday life, designed and created by man, regardless of the form in which they have been materialized, be it green areas on the ground or a bed of plants on the balcony of a building. Once only regarded as part of private property, gardens have today become increasingly open to the public and turned into a system of open spaces in urban environments.

Urban gardens as the space of everyday life

Everyday life is a form of normal living, filled by routine and repetitive actions, and as stated by Hartley (Hartley 2003), culturology views the everyday life as a test field for investigating the problems of the political and cultural construction of identity and meaning. The definition of the term "everyday life" largely depends on the theoretical position from which it is surveyed. Contemporary theories acknowledge a series of different approaches to the investigation of this notion (Bennett & Watson 2002; Chaney 2002; Gradiner 2000; Highmore 2002; Sliva & Bennett 2004). Moran (2005) points to two main ways in which cultural studies regard everyday life: as a ritual and as mass consumption. Another approach, focusing on De Certaus' work *L'invention du quotidien*, translated into English as *Practice of Everyday Life*, relates to the role a man has in a society. De Certau (2002) suggests the necessity of "operation" that reverses our notion of a society. This approach has served as the basis for developing a specific aspect of investigating the aesthetics of everyday life that analyzes the phenomenal aspects in everyday spaces. Roch (2005) calls this approach "reports from reality", and Highmore treats them as "esthetics' operative procedures" (Highmore 2002).

The most authentic activities of everyday life are ritual and routine. These two extremes have a lot in common: both imply repetition, both are always done in the same or similar manner, and both are part of everyday life. The key difference is the symbolic action implied by the ritual, as opposed to routine.

Using everyday activities, de Certeau problematizes the practices and tactics employed by an individual. According to de Certeau, every act of "consumption" – such as reading, walking through a city, watching television or wasting material goods – that is usually seen as mere passive consumption of what someone else had imposed or, at best, offered, is in fact a form of "production", because what the user will do with a product that has been offered to him can never be predetermined. Also, symbolic consumption–use is not apolitical, since it embodies the constant struggle between two global sides: one side (dominant groups, system, and power) trying to impose certain meanings that it finds useful because they support the status quo and the other side (the oppressed, weak, everyday participants) resisting them. Resistance realized by everyday practices is indirect, cunning and surreptitious – de Certeau uses a metaphor related to poaching – and does not attempt to destroy the wholesomeness of the reign, which would not be realistic, but rather to keep undermining and tearing the system down from within. Rulers may believe they are truly and unequivocally in charge, while endless lines of invisible termites under their thrones are actually gnawing away on the building that is their reign (ibid. 2002).

The translation of cultivation into an urban tactic, or what Michel de Certeau calls the "art of the weak", represents the garden's radicalization (Atkinson 2007:249). As de Certeau states the tactician does not have the luxury of formulating sustained programs of action or stabilizing them in a fixed space. Whereas strategies privilege spatial relationships, tactics "gain validity in relation to the pertinence they lend to time—to the circumstances which the precise instant of an intervention transforms into a favorable situation" (de Certeau 1984:9). According to Atkinson such an analysis maps onto contemporary urban practices known as "guerrilla gardening, which seek to disrupt the hegemony of capital at the level of the everyday" (2007:250). This approach leads to networking and activism in the city: "there are people, young kids, who through nothing more than gardening are now becoming activists" (Staeheli, Mitchell & Gibson 2002:200).

Atkinson also states that the spatial turn in theory and praxis during the latter half of the twentieth century provides a useful starting point for evaluating this reinvention of gardening. In a critical climate that has moved away from the idea of space as a natural referent toward Lefebvre's space as "social morphology", cultivation has provided a rich field for utopianists interested in everyday spatial practices—the activities of users and the patterns they create in lived space (Atkinson 2007:240). In that context he cited Wilson's 1999 community-gardening manifesto "Avant Gardening": "cultivate your own garden" sounds more today like hot radical rhetoric. Growing a garden has become—at least potentially—an act of resistance. But it's not simply a gesture of refusal. It's a positive act. It's praxis (ibid.:9).

Another important feature of the garden in contemporary theory is also the fact that the garden, as opposed to the park, has emerged as a preferred spatial type. Atkinson explains this by the fact that we can begin to understand this partiality by way of the divergent means of production associated with each space. For example "garden" denotes a productive activity as well as a thing, while "park" is an object, and one to which we relate primarily as consumers (Atkinson 2007:244). On the other hand, the garden operates as the park's foil by frankly announcing itself as a place invested with vast amounts of human labour. In the context of the everyday life it is important to emphasize that what makes allotments so interesting visually is actually the evidence of human activity on the land (Crouch & Ward 1988:202).

Finally, from the aspect of everyday life and the body, it is important to emphasize that the gardens re-educate or restore the sensory and sensual aspects to the body.

Unlike the manicured and uniform park spaces of Y-S, these are figures for the differential space that Lefebvre imagined would re-educate or restore the sensory and sensual to the body. For Shira, contact with this space immediately produces a recognition of "how unstimulated her senses had been all those Y-S years"; she responds with surprise and pleasure when "the

smells assaulted her: animal smells, vegetable smells, the scent of yellow tulips, the heavier scent of narcissus, cooking odors, the tang of manure, the salty breath of the sea. Everything felt", as she puts it, "unregulated" (Atkinson 2007:248).

A case study of the urban garden "Baštalište" in Belgrade

Context of the research – Urban gardens in Serbia

As in Serbia there is no legislation that would recognize this type of use of green areas, urban gardens in Serbia are formed and created spontaneously (most often illegally) as self-organized citizens' acts. Sometimes the gardens develop with the aid of local communities, but they are directly dependent on the participation and self-organization of end-users.

The spontaneously generated urban gardens of Belgrade were first defined and mapped in 2007 within the project Legislation on Green Spaces in Belgrade – A Method for Mapping Biotopes, implemented by the Urban Planning Institute of Belgrade and financed by the Ministry of Environmental Protection. The project has mapped all areas that fit the concept of urban gardens and whose biotope type has been classified as "agriculture" (the key to mapping the biotope 2007). According to Belgrade's biotope map, the total area under garden colonies within the territory included in the General Urban Development Plan is 177.46 ha, which is 0.22% of the total territory covered by the General Plan (Amendments to the Master Plan of Belgrade 2021).

The city authorities do not appear prepared to provide regulations regarding this issue. Unlike the authorities, on the example of "Baštalište", as the first urban garden in both Serbia and Belgrade, it can be seen to what extent the residents are prepared to accept the very concept of urban agriculture, thus gaining the right to reap some very important benefits from this concept, both for themselves and for their community. This is precisely why the first aim of this investigation is to draw attention to this concept, its possibilities and advantages as a form of extension of urban dwelling, that is, as an integral space of everyday life, but also to raise in an urban environment such as Belgrade the very important issue of the

significance of socialization, recreation, education, as well as production of healthy food in a local community.

Also, even though this concept and its development have in the last decades gained increasing significance in the world expert literature and many cities base their view of sustainable growth on it, the expert literature in Serbia has thus far not given any importance to this concept, and the factual existence of urban gardens has been considered an unwanted occurrence and has not been included in the planning documents.

"Baštalište" urban garden in Belgrade

For now, there is only one legal urban garden in Serbia called "Baštalište", located in Slanci, a couple of kilometers away from Belgrade. "Baštalište" was created in April 2013, and its founders are the non-governmental organizations "Ama – Center for Nurturing Man and Nature" (www.amacentar.org) and "Belgrade Flower Festival" (www.bfc.rs). This is the first urban garden that advocates and promotes urban gardens as a tool for the ecological/economic/social/health development of local communities and sustainable cities.

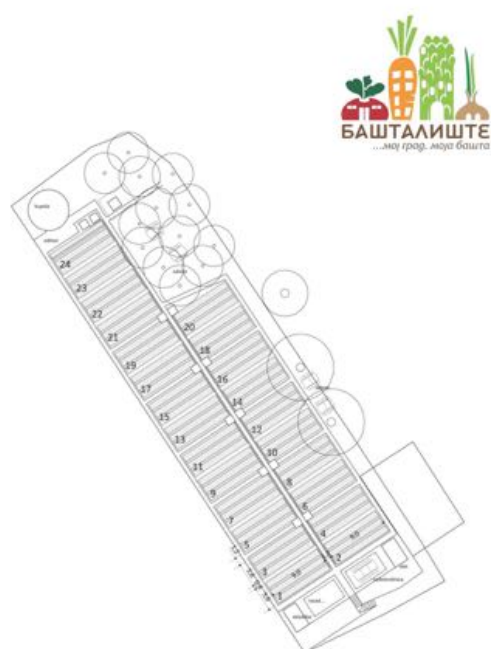
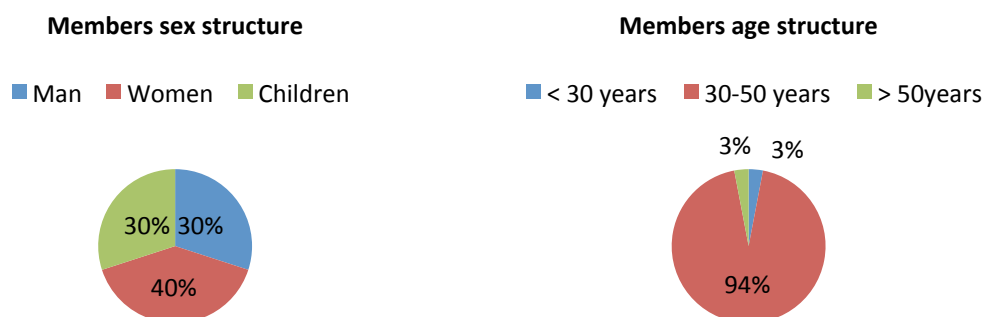


Figure 1: Plan of "Baštalište" urban garden

On a plot of land measuring 1800m², 40 Belgraders grow vegetables for their own needs in compliance with the principles of organic production (Fig. 1). "Baštalište" has 22 parcels of 40m². The system of protection does not exist. This urban garden is fenced thanks to neighbors who distanced themselves. On one side is placed a conventional orchard, and a private home on the other.

"Baštalište" is a project that was founded by two non-profit associations of citizens. It is intended for the urban population of Belgrade regardless of age, or education, etc. The land is a legacy of a married couple with no direct descendants. They donated it to the local primary school for socially useful activities. Taking into account that the school did not deal with this plot for last 30 years, it was conceded on use to "Baštalište urban garden". The calls for new members are being organized at the beginning of new season (October, November) and during the year if necessary. The waiting list for the plot was also established, because there is practice to contact interested people from the existing waiting list before the announcement of a new call for members. The new members fill in the application and come to "Baštalište" for an interview with the old members. Old members decide on admission. In the context of this paper it is important to emphasize that "Baštalište" has good cooperation with the local community. For heavier works, they employ local residents. Also water is supplied from the neighboring wells. Fig. 2 provides information about the garden's users – their age, sex, employment and motivations for joining "Baštalište".



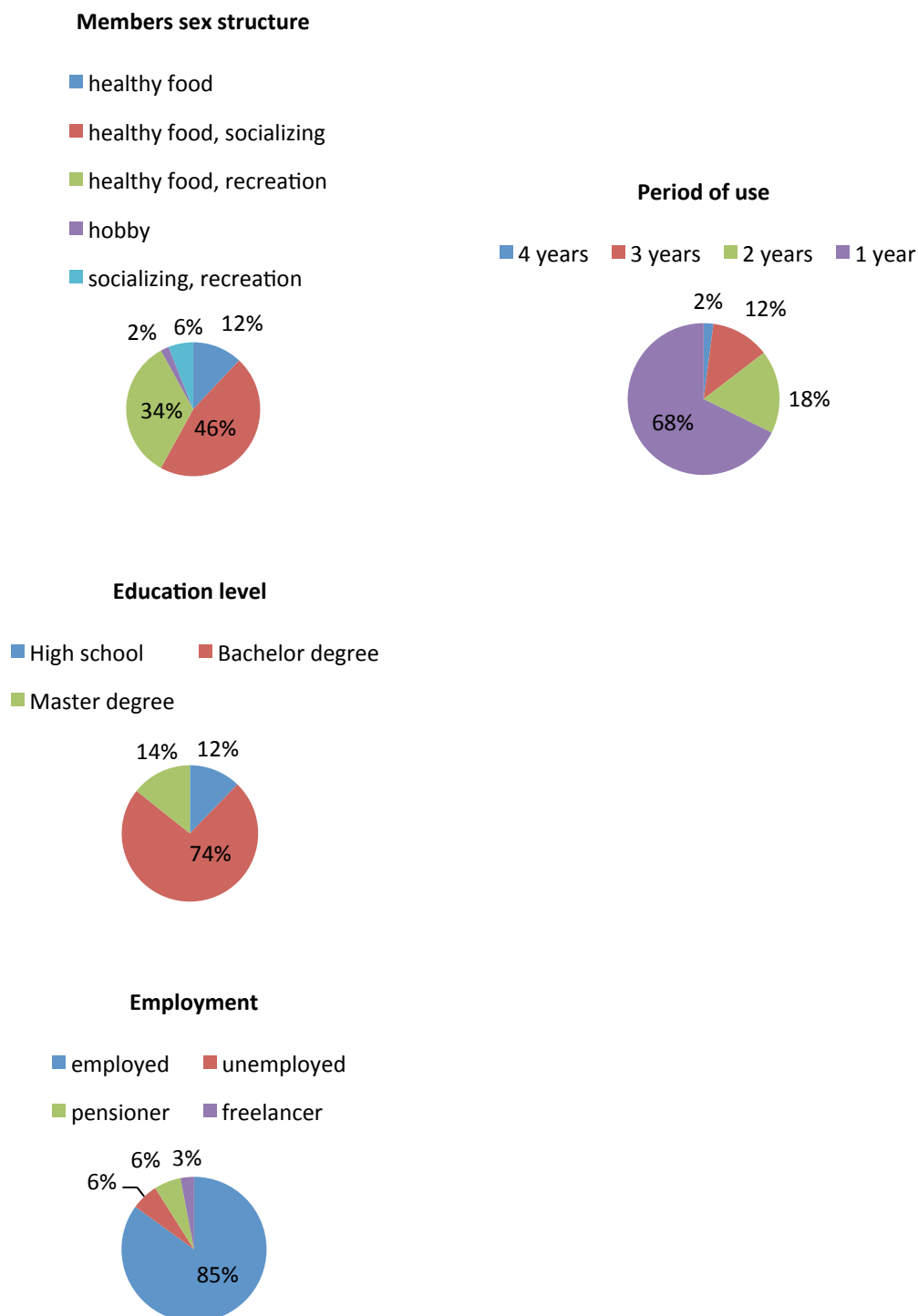


Figure 2: Information about the garden's users in "Bastaliste"

This urban garden is used exclusively for growing annual, non-invasive vegetation and the members interchange. People grow different kinds of vegetables for their own use: lettuce, onions, spinach, chard, potatoes, zucchini, cucumbers, pumpkins,

tomatoes, peppers, cabbage. As one of the forms of protection, vegetables are combined with each other and with spice herbs (basil, dill, and marigold). In the common part of plot are grown mint, oregano, sage, various flowers and berries. All new members attend a course about planning the garden and sowing at the beginning of each new season. The course is open to the public. In 2015, there were 4 courses with a total of 120 participants. Other types of training occur spontaneously in "Baštalište", for example the older members teach the new ones. "Baštalište" is active from February to November. Members come according to their needs, minimum once a week. Most of the time, the members are dedicated to their parcels. A smaller amount of time is devoted to the common area and common works such as mowing, maintenance and other. Members often share transportation, exchange seeds, seedlings and fruits, drink coffee, contribute to each other's in absences meet, etc. Once a month is organized a mandatory meeting of the members.

The year to year transformation and promotion of this community garden have been clearly visible, first of all from:

- Its improved functioning with simultaneous assessment of the most adequate model for Belgrade within the sustainable urban garden concept;
- Promotion and transformation in terms of space and aesthetics;
- Education of members about their knowledge of gardening, and also rights and obligations.

The basic goal of this urban garden is to point to the need for urban gardens in urban settlements and accordingly raise awareness about this concept in the city.

Urban garden as a living environment – Plurality of both significant and ordinary links between gardening practices

The data obtained confirm the assumption (Fig. 1) that the dominant reasons and motivations for joining "Baštalište" were related to health or sociological rather than economic factors. Hence, the users stress such values as solidarity, team work, respect and tolerance within the urban garden. These values have

also been defined by an internal document: The rules for behaving in "Baštalište". Besides that, when signing the contract of membership, members committed to respect the declared values. These values are entered in Section 1 of the contract (Fig. 3). According to Katarina Milenkovic (coordinator of the "Baštalište"), the idea is to promote and develop community, through the setting up of such a system of values.

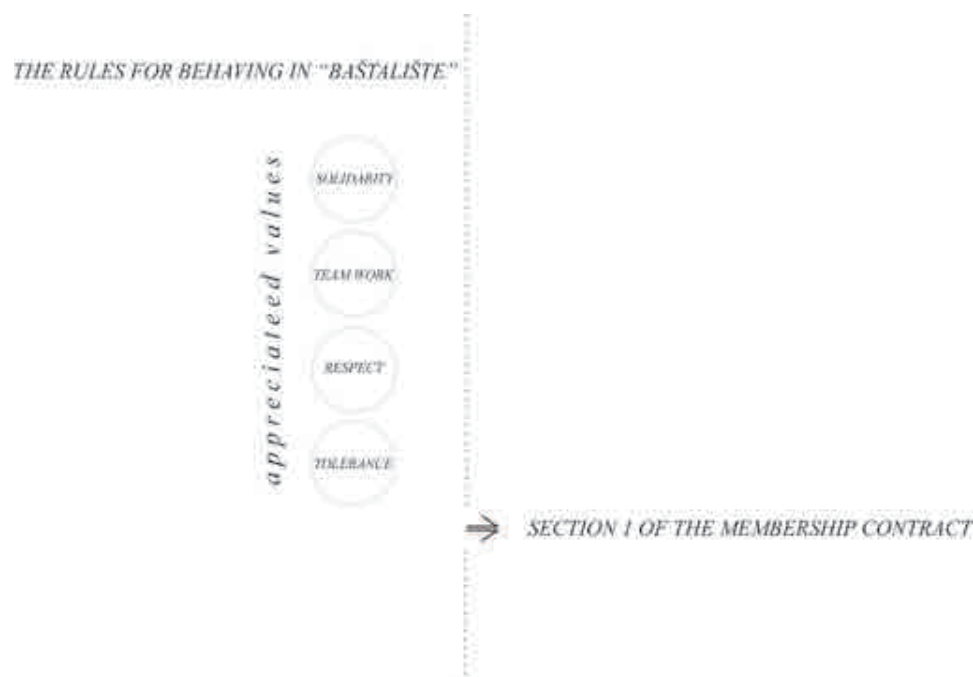


Figure 3: Values in Baštalište

Furthermore, emphasis is placed on education. Education is continuously provided at two levels: education of the public and education of garden users. Its openness to the public, primarily in terms of education and promotion of the concept of gardening in the city, is stressed as one of the basic aims of this urban garden. With this in mind, the pupils of the local elementary school "Ivan Milutinović" have been included in garden work, as well as the residents of Slanci.

Since the space of the garden is an extension of the space of dwelling, as well as in other dwelling spaces here have also been established internal rules and logic of functioning among its members. Accordingly, there are rules for accepting new members, created so that long-term members reserve the right to

decide upon an interview whether to accept someone new. Also, just like in other spaces of everyday life, certain routines have surfaced here that are repeated on a daily basis. Most of the time, the members are dedicated to their plots. Smaller portions of time are dedicated to the common area and common ventures such as mowing, trimming the common area etc. when needed.

Also, members point out the importance of developing a community through gardening and of the possibility for making a contribution to the community. The members get acquainted, socialize, often share rides to "Baštalište", exchange seeds, seedlings and fruits, have coffee together in "Baštalište", and help fellow members when away (Fig. 4). Once a month, a mandatory meeting of the members takes place. Occasionally, joint lunches are organized. The initiators of this garden say that each year the members' awareness is raised about the significance of "common" and personal responsibility. What is more, the members have initiated the founding of a common plot where they would all work together and share the fruits as agreed.



Figure 4: Gathering of members, socializing and exchanging experiences

In the context of this topic, it is important to emphasize that the perceived routines and rituals among the users of this space show that the concept of urban gardens certainly has a very strong ability to create opportunities for the integration of an individual into the society. One of the most significant benefits is precisely the possibility of socialization and strengthening bonds between users and the local population, of

exchanging information and working towards achieving a common goal – promoting the local community (Dow 2006). By growing plants, the users develop a sense of their own value and usefulness. The urban gardens thus provide a source for building self-awareness, an education tool as well as a source of knowledge (Sloan 2009). Also, users stress their connection with and a sense of belonging to this space, which is definitely a characteristic of residential spaces. Therefore, the mentioned attitudes of the users certainly confirm that urban gardens enable the establishment of specific features of a space, that is, a sense that every space is unique and precious (Howe & Viljoen & Bohn 2005). Emphasis on healthy foods and gardening as a hobby further confirms the significance of this place in view of recreation and people's health (Crouch & Wiltshire 2005). Insight into the Figure 2, i.e. the age structure of the users of this space may confirm the fact that gardens provide physical activity to all generations (Fig. 5).



Figure 5: "Baštalište" provide socialising and physical activity to all generations

Finally, the fact that some of the members live in very distant parts of the city and travel tens of kilometers to participate in the work of "Baštalište" should not be disregarded. Without doubt, this speaks in favor of the need and significance of such a concept in the urban environment.

Conclusion

The planning and management of all forms of green areas in big cities take place under specific conditions, with the authorities being prone to quick changes and passing trends, often quite damaging. The urban environment poses many threats and difficulties to the development of green areas, from the lack of space due to an increasing number of residents and new buildings, to unfavorable climate conditions, state of the waters, air and ground. The mentioned case study is just one of the examples confirming the need for developing such concepts in cities, especially due to their significant and positive ecological, health and sociological aspects. Promotion of the mentioned aspects is very important for establishing a sustainable relationship between nature and culture, and accordingly for promoting the quality of everyday life.

Also, the mentioned case study suggests the importance of research in local contexts, with the aim of perceiving the specific characteristics and needs of an individual urban environment, as well as creating and developing the specific features of a space.

The significance of developing communities through gardening is obvious. Projects aimed at food production may become the goal of a community, helping them work together and develop a sense of being able to contribute to the society. Urban gardens allow for specific features of a space to be formed, a feeling that each space is unique and valuable. At the same time, they provide ecological, social, health and economic benefits to their owners/users, by providing fresh, healthy and cheap food, encouraging physical activity across generations, providing a place for gathering the members of a community and sparking an exchange of knowledge and experience, by educating the young as well as the other residents first about the importance of a healthy lifestyle, but also about the importance of the quality of the environment and the green areas. Hence, urban gardens certainly contribute to the development of a new socio-ecological world with a participatory structure and a sensitive relation to the specific climatic and ecological, social and cultural context.

Acknowledgements

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B2 - Urban planning instruments for implementing urban gardens and designing neighbourhoods

Town planning, development patterns and the reduction of private gardens in the suburbia of Cyprus

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Keywords: Urban Forms, Private Gardens, Reurbanisation, Soil Sealing

Abstract

Private gardening was a widespread practice since the beginning of intensive urbanisation processes in Cyprus and was already in use before the 1970s. During the last forty years, early suburbia retransformed and growing practices have weakened, on one hand due to the time distance of the new population from its rural past, and on the other hand due to the new development models that minimise green and unsealed soil. The aim of this paper is to examine the reduction of private gardens. A residential quarter of the early suburban development in Nicosia is taken as a case study. The study of an early-developed suburb can provide a brief understanding of the alterations on the land cover and the development patterns of the past decades. The paper will measure the consequent shrinkage of space for green and gardening, and form hypotheses for its causes. The main argument of this research is that garden space reduction was caused by the town planning decisions and the transition of the development models.

The first step for approaching the problem is to outline the background and the trends of private green for the whole city. In a district scale, dispersed densification process scoping to the increase of private land efficiency, has proved negative for soil sealing, environmental services and growing in cities. Auditing the current conditions within the boundaries of the selected study area is a second significant step. Field research and aerial photo observations inform on possible shrinkage in

vegetation and gardening lots (both in terms of size and preferred species) in relation to the building development model applied in each period.

Introduction

Investing in greening the cities, could deliver benefit in various fields of city environment (Milder 2012). Some of the measurable benefits, are storm water runoff reduction, property value increase, air quality improvement, and energy saving. Living in green places has also positive effects on the residents, creating at the same time more attractive places for private and common life (Artmann & Breuste 2014). The gardening process is in fact a benefit for the city and it definitely does not cost any particular expense from the side of the local authorities or the governance (Ioannou *et al.* 2016). One of the most significant contributions of gardening to the urban environment is the prevention of soil sealing the provision of ecosystem services. The first attribute is more comprehensive for the local communities, while the second is becoming gradually a part of urban quality of life (Artmann & Breuste 2014). Scholars usually discuss urban green as an aspect of public space and urban commons. Recent researches have shown that these types of surfaces are desirable in residential areas as an amenity (Artmann 2014). Traditionally in low and medium income residential areas, private gardening has been the means of preserving these surfaces productive and green.

Suburban form and gardening practices: early stages

Up to the late 20th century, the towns of Cyprus were limited almost in their medieval boundaries. Massive population movements from the rural settlements to the towns had begun during the sixties and increased violently after the Turkish invasion in 1974. Single house was the dominant development model, outside the dense fabric, since the 1930s. This trend was generalised during the 1950s, when car ownership tripled during 1956-1959 (Morris 1959). The new urban areas were designed to respond to the demand for flat, cottage style, single houses. Densities were extremely low, compared to the historic fabrics. Land take

was also low and the offer of development land has always been far below the demand. Plot sizes of around 500m² (Republic of Cyprus 1959), street layouts prioritising private vehicle circulation and land over provision, are still the standard features of the urban development in Cyprus. At this stage, residential buildings were modest regarding their size, masonry and timber roof covered units of an architectural style quite relevant to the British colonial cottage, adopting at the same time modifications adjusting to the local climate (Georgiou 2013).

Private gardening was part of daily life since the dwellers recent past was agricultural (Ioannou 2014). The dominant suburban development model of a freestanding residential building (100–150m²) left enough private green space. Gardening in this early suburban period was covering the space around the building as follows: (a) Fruit or ornamental tree, flower and shrub gardens at the side of the street, (b) Orchard at the side strip of the building and (c) Orchard and vegetable garden in the back yard. This division also revealed the role of green in relation to the street. Ornamental trees, shrubs and flower gardens along the street of usually imported species; fruit trees such as citrus, medlar, pomegranate and olive trees at the site strips for covering part of the household needs; fruit trees and vegetables in the back yard. Vegetable gardening was limited to some herbs or vegetables with less need for water. Citrus trees and especially lemon trees were the most popular in these gardens. Front garden extended into the soil beds of the tiny runoff channels in front of the buildings. Ornamental trees or olive trees usually planted in this strip providing a kind of fencing between the residence and the street. The selection of plants balanced between tradition and innovation, where the more “innovative” plants, usually the ornamental ones, appeared more along the street (Fig. 1).

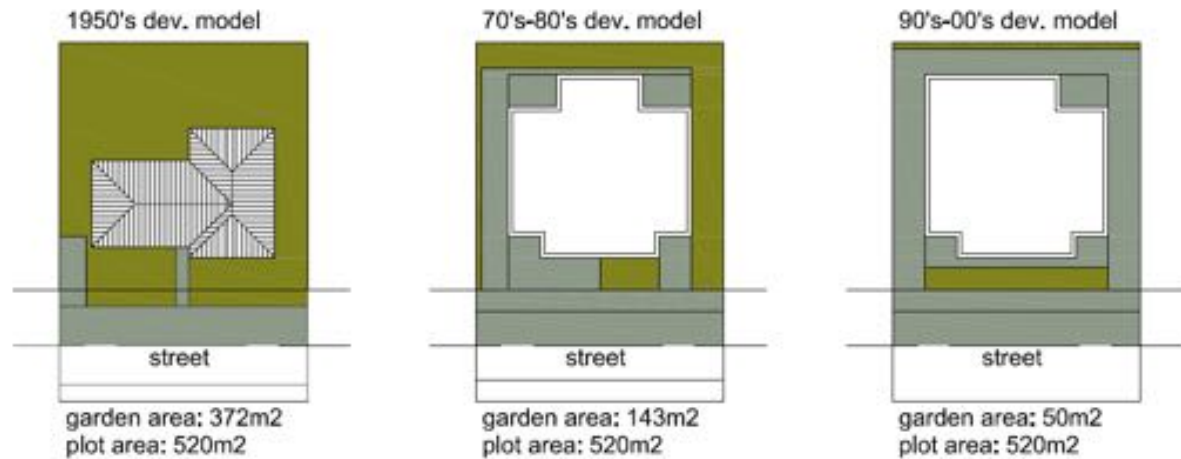


Figure 1: Private garden and development models (grey: hard surface, green: garden; source: Ioannou)

The early period developments (up to the 1960s) were extremely modest in covering the ground with artificial materials. In fact, the only sealed soil surfaces in the neighbourhood were the asphalt strips in the middle of the street and the building foot print. There was no use of irrigated grass or any other kind of irrigated surface green to cover soil around the garden plants. Green weeds covered the soil surface during the raining period, which then turned dry during the hot period (from May to November). Deciduous plants and native weeds circle made these gardens change according to the season. Since irrigation used the drinking water supply, the plants were carefully chosen in order to minimise water consumption.



Figure 2: Typical cottage style suburbia (source: Ioannou)



Figure 3: Typical development of 70's and 80's (source: Ioannou)

New development models

Modernistic concrete slab versions of a significantly larger footprint succeeded the 1950s cottage houses. Early suburban areas still left many empty plots to build, while the offer of new residential land was increasing. Gradually, changing life styles generated more hard surface needs (parking etc.). Also, higher

built spaces per person increased land coverage and soil sealing (Minister of Interior 2008) that led to reduced green surfaces on the typical "residential plot" of 520m². During the 1970s and 1980s two new models of residential buildings developed in the typical plot: (a) flat free standing single house (b) semidetached two or four unit family complexes. Front garden could no more extend into the runoff channels in front of the buildings since pavements and the underground drainage system is now constructed (Fig. 1). Multi-storey housing complexes have already appeared during the '60s, but up to the 1980s their construction remained very limited in relation to the other two models described.

Gardening and unsealed surfaces in general have reduced their total area. Though, they kept some basic features from the previous period: (a) Ornamental tree, flower and shrub gardens stays at the side of the street but trees are now leaving the modernist façade revealed. (b) Side strips are dedicated for parking needs. (c) Orchard and vegetable garden strips remain at the back yard, where vegetable gardens become smaller. People are gradually disconnected from their rural past and gardening practices, especially growing vegetables and herbs is limited (Ioannou 2014).

Zoning regulation after the '60s and finally the "Town and Countryside Planning Law" of 1990 combined with the emerging real estate trends is changing densities and heights, altering the existing freestanding single house character of these areas. There are cases where the development rights increased five or six times compared to the building volumes of the early developments. The new developments are also more demanding in sealed soil in order to serve parking and other needs. During the second half of the '90s, small-scale multi-storey residential complexes still in this 520 sq. meter typical plot turned into a significant development option. Despite the existence of empty plots in early suburban areas, new multi storey buildings replaced the freestanding single houses of the fifties. The last development model suspended any sense of gardening since the whole of its ground floor covers parking needs. The maintenance of the limited garden strips on the street site with exotic or

ornamental species does not involve the residents at all (Fig. 1).

Sprawl dynamics and dispersed development created the paradox of a continuous alteration of the neighbourhood image, and at the same time the reduction of green and the exclusion of gardening practices. Dispersed densification processes were rather a respond of the planning system to the development needs, the car oriented society and the landowners' pressures, than a part of a structured planning policy (Ministry of Interior 2008). Despite the suspension of the development process during the last seven years due to the economic crisis, zoning and the development rights do not protect soil sealing and private gardening at the moment. It is therefore certain that the development of these areas will continue on the same mode as soon as the recession ends.

Case study Pallouriotissa - Nicosia

Pallouriotissa district is an early suburb very close to Nicosia city centre. Plot division and land development provisions both in this area and in general, have allowed a long period for plots being dormant. The increase in development rights and in real estate demands during the last 25 years caused dense spots within this early-developed suburbia. The actual case study area is a typical quarter of Pallouriotissa district (Fig. 4) suitable for examining urban transformation and evaluating the decrease of private gardening. The assessment focuses on three aspects:

- Densification and gardening surfaces,
- Soil sealing and climatic impacts,
- Visual perception of green.

The findings of this paragraph are based on field research, involving, aerial photos and land survey material as well as observations and a series of informal interviews with dwellers in the context of "Urbanism I" course (2015-2016) at the Department of Architecture of Frederick University.

The selected quarter is a former grain field which was divided into 95 plots during the 1930s. Up to 1963, 47 of these plots were built as flat suburban cottages (1950s model, Fig. 2), and

26 of them were demolished and replaced during the last period (1990s-2000s) (Fig. 4). Colonial style suburban cottages are still not included in the listed buildings, so they are vulnerable to demolition. The densification process during the last fifty years has reduced the area of private gardens to 26% from 70% expected at the initial stage of the plot division (Table 1). Densification will definitely continue since the provisions of Nicosia Local Plan allow increased development (built area) of 140% of the total plot area, instead of 30-35% of the suburban cottages.

Private gardening and green spaces are not only threatened by planning provisions and development trends but also by the changing life styles and the time distance from the rural origins of population (Ioannou 2014). 15 from the 21 early period houses are still inhabited by their initial residents, or new residents, or by economic immigrants that keep the gardens and especially fruit trees in a modest condition. The younger residents of some of these houses have already done massive alterations that eliminate any sense of gardening from the plot. Irrigated grass and hard surfaces have replaced the original garden presented in Fig. 2. Shrubs and trees are quite limited, ornamental and usually of imported species. It is quite interesting that in the greatest number of the remaining cottages unsealed soil and old orchard preservation has retained gardening traditions, even in a modest degree. The revival of the same gardening practices in the developments of the 1970s and the 1980s is limited and there is a clear preference to hard surfaces for parking and other uses. Finally, multi-storey flat complexes of the last period cannot host any substantial gardening practice.



Figure 4: Study area at Pallouriotissa district at 1963, R=replaced (source: Cyprus Department of Land Registry and Survey)

Fokaides *et al.* (2016) report implies that private gardening is an important aspect of the cities of Cyprus for two basic reasons: (a) it prevents urban ground from soil sealing and consequently from the urban heat island effect, (b) suburban areas are poor in green public spaces, so private gardens cover this need of green public space. The urban ecosystem services are actually new concerns influenced by the reduction of gardens, while the attitudes of private developers and residents are important (Artman & Breuste 2014). As observed in the case study area (Table 1), the reduction of garden sizes and the discontinuity of soil and fauna are some negative impacts of the development process.

	Early period: 70% garden	70's-80's: 30% garden	Late period: 10% garden
Number of build- ings	21	17	57
Garden area (m2)	7,644	2,652	2,964
<i>Private Gardens Coverage / Total Plot Area = 26%</i>			

Table 1: Building typology and private gardening surfaces in 2016

Fokaides et al. (2016) research report on soil sealing in Nicosia indicates that, under the local climate conditions, there is a crucial threshold of unsealed private land percentage, which secures environmental quality and prevents the urban heat island effect. This threshold is around 40% of the private developments' surface. According to the same research, when the unsealed land goes below 20% there is a significant problem of heat island effect. It is obvious that the early stages model satisfied the 40% threshold and it is again clear that future trends will lead garden areas to below 20% and therefore cause severe environmental downgrading for the whole quarter.

The vision for this quarter when established was indeed the notion of a cottage environment. Low height residences surrounded by gardens mainly of local species, shrubs and trees of a typical Mediterranean orchard or a flower garden. People could walk in the middle of a low traffic street, since green runoff channels occupied the pavements' space. Green was visible everywhere while change of seasons was visible too through colours, images and smells. It was actually a suburban type of development retaining most of the qualities and benefits of living in suburbia. The described environment altered and all these qualities have vanished (Fig. 2-3). Dispersed densification led to the suspension of gardens and green. Interviews with three dwellers of newer developments of the quarter showed that these models are not able to assure gardening practices and retain the connection of the residents with gardening. Since there are not many alternatives to practice gardening beyond private space, the new urban population is alienated from gardening practices and the contact with earth and soil.

Conclusions

This short research has shown that private garden spaces in the case study area, and further more in the suburbia of Nicosia, are not actually retrofitted but gradually demolished. Town planning decisions regarding zoning and the change in development patterns, building sizes and space demands are the main reasons why private green surfaces have disappeared. These causes deprive vibrant private garden spaces not only from the residents and gardeners, but also from the city in general. In this sense, private gardening could preserve as an urban common. The research demonstrates that gardening is part of a life style and life styles are shaping places (Farr 2008) but at the same time, places and experiences can also affect life styles. In most of the cases in Pallouriotissa district where garden space (the experience) is available, gardening is still emerging and the residents do respect the originality and the traditional character of the garden. The residential development models of the recent decades and the dispersed densification processes have also contributed in the disappearance of the notion and the qualities of a suburban cottage environment in a neighbourhood scale. The qualities of living in a greener environment with a unique notion of Mediterranean "orchard style" suburbia are now less visible. New gardening practices, just like the new building models, lack in character uniqueness and of course, residents' involvement in the gardening practices.

The last point that is crucial for the environmental performance of the urban areas in Cyprus is that the replacement of private gardens by parking places and sealed surfaces is not audited, or officially considered in any way as an environmental degradation. Gardening was the means for retaining private green spaces in cities with a huge proportion of sealed surfaces, suffering from the heat island effect and with a limited provision of public urban green. Since this problem is not highlighted, there is not any kind of a forthcoming remedy.

The current research also implies that densification and compact city policies (if any) might affect other aspects of environmental qualities of the urban space. Cyprus suffers from sprawl and has to form structure policies on densifying neighbourhoods but

gardening and soil sealing issues are crucial and have to also be part of this debate.

To conclude, some planning recommendations are:

- Private gardening has to be realised as an urban common,
- Existing cottage houses and their gardens should be listed and preserved,
- Regulation and control measures should secure adequate unsealed soil and gardens for any new development,
- Environmental agencies should promote the revival of the "Cypriot urban garden" as a green asset and an identity feature of the neighbourhoods of the island.

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Environmental Design Solutions to Promote Safety in Urban Gardens

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Keywords: Allotment Garden, Crime Prevention, Theft Prevention, Safe Environment, CPTED

Abstract

Urban gardens in certain European countries often face problems of theft and vandalism. Whereas previous research shows that a proper design and effective use of the built environment contribute to a reduction of criminal activities. Based on this data, this paper aims to investigate which strategies gardeners use to prevent theft and vandalism in their gardens, and whether the chosen allotment areas correspond to any principles of Crime Prevention Through Environmental Design (CPTED) as well as which principles of CPTED can be applied in cases of urban gardens. The theory of Crime Prevention Through Environmental Design has certain principles already tested in practice, showing decrease in criminal activities. In order to test the current situation in allotment gardens and to find out which design principles are most likely to be implemented in such areas, it was decided to choose eight case studies: four allotment sites in Riga and four sites in Warsaw. Focusing on allotment sites with different locations (within the residential neighbourhoods and in outskirts), the research shows the relevance of CPTED principles in different situations, making it possible to develop guidelines suitable for different cases. Literature studies, observations, evaluation of existing design solutions according to the checklist developed on the CPTED principles, and semi-

structured interviews with garden facilitators were chosen as a tool to analyze the current situation in allotment gardens in Latvia and in Poland. The collected data is used for comparison of previously and currently implemented strategies to prevent crime in the garden area with those proposed by CPTED. The results of this research show that, in addition to design principles, there are various factors influencing probability of theft and vandalism, such as location within the city, "public access"/openness to public, and integration into the city's green structure.

Introduction

Theft and vandalism in urban allotment gardens is a common problem in many European countries (Pawlikowska-Piechotka 2012; Viljoen & Howe 2012), however types of criminal activities in different countries or on different sites may differ. According to gardeners' reports, certain allotment areas in Riga are facing problems of crop and equipment theft. Other sites are characterized as unsafe areas in general, facing problems of homeless and drug addicted people living in garden huts or using the garden area for recreation. As shown in various police and garden users' reports, urban allotment gardens in different cities across Poland are also facing problems with safety issues similar to cases in Riga (Duš 2015). This is not a phenomenon observable in Eastern Europe only. According to Gateshead Council (2016), allotment gardens in different cities across England are more subject to vandalism (Gateshead Council 2016). This data shows that theft, vandalism and other safety related problems may differ depending on local peculiarities, site size and location, and other possible factors.

CPTED general principles and their adaptation to the case of urban allotment garden areas

Previous research proves that urban design can be used as a tool to decrease criminal activities in the city (Fennelly & Crowe 2013). First introduced in the 1960s and precisely formulated in the 1970s, the general idea of crime prevention through environmental design (CPTED) is based on the statement that crime re-

sults from the opportunities provided by the urban environment. Meanwhile, proper design can affect reduction in the fear and the incidence of crime, improving communities' quality of life (Gibson & Johnson 2013). Implementation of the CPTED principles by the British police has led to a significant decrease in burglaries: 80% - in existing neighbourhoods and 95% - in new residential areas (Levald *et al.* 2015). This data advocates for the crucial role of the built environment in decrease in criminal activities.

Introduced in the second part of the 20th century, CPTED faced various transformations, offering changes and additions to its basic principles (Atlas 2013). Various guidelines are based on four principles: natural surveillance, natural access control, territorial reinforcement and maintenance (Fennelly & Crowe 2013). Implementation of the CPTED principles in urban allotment areas needs evaluation of the specific characteristics of each individual site. Such principles as natural surveillance provided by the "windows on the street" strategy or several activity programmes, cannot always be implemented, because of the location and the size of garden areas, or other possible factors. As a result, solutions for each specific site may differ, as differ also gardens' characteristics.

Methods

The aim of this research was to investigate which safety promoting approaches are used in allotment garden areas in Latvia and in Poland and whether any of these approaches include principles of crime prevention through environmental design (CPTED). The research consisted of both qualitative (interviews) and quantitative (evaluation according to checklist) methods.

Semi-structured interviews (n=8), following an interview guide, were conducted with key informants from allotment gardens in order to find out what safety related strategies are being used and how they contribute to decrease in theft and vandalism. Having among case samples different types of sites, those with unconsciously implemented CPTED principles and other security insuring approaches, with safe environment, and sites with low level of safety, and environment staying in contradiction with

CPTED principles, makes it possible to compare how the application of CPTED works in case of allotment gardens.

For the quantitative part, an adapted version of the existing CPTED checklist based on literature studies and previously realized projects' data was used to evaluate the current situation in allotment areas in Latvia and in Poland. Site observations included evaluation of garden environment according to the checklist and photo fixation.

A comparison of applied principles and tools in different garden areas and records on crime made it possible to find out which CPTED tools are more effective in urban allotment garden areas.

Allotment areas evaluation according to CPTED principles

The research was conducted in four allotment areas in Riga and four areas in Warsaw. The choice of allotment sites was determined by their location within the city, size of the site and different types of public access. As can be seen from the maps below (Figure 1-2), the chosen gardens are located in different parts of the city and with different proximity to residential housing areas. Also size of the areas, provision of general utilities, garden rent and openness to public differ, however, all areas are managed by an association of gardeners (Table 1). The choice of gardens with different characteristics, made it possible to check whether the CPTED principles work in different situations and whether the location of a garden also influences theft and vandalism occurrence in the area.

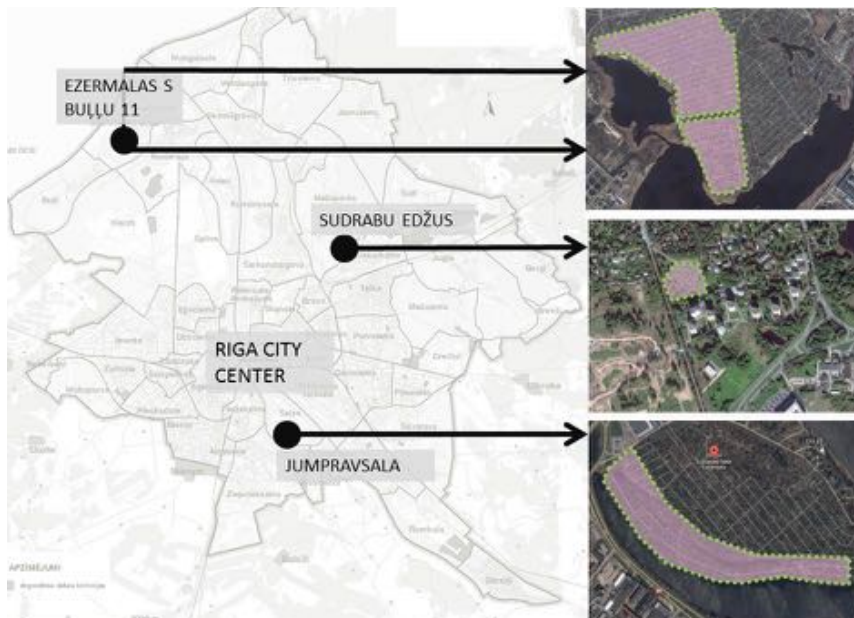


Figure 1: Location of chosen allotment areas in Riga (source: Korolova; Google maps)

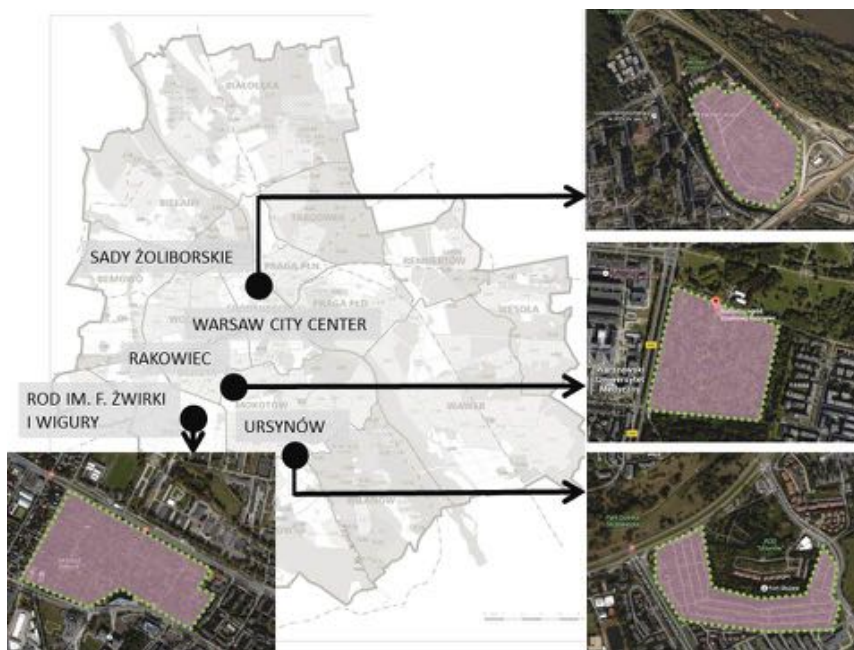


Figure 2: Location of chosen allotment areas in Warsaw (source: Korolova; Google maps).

Name of the allotment garden	Number of plots and size of each plot	Type of management	Lease agreement and status of land use	Public availability of the site	Surroundings and Proximity of residential housing	General utilities
Bullu 11	248 plots (300-400m2 each)	<i>Dārz-kopības kooperatīvā sabiedrība</i> (Cooperative Association of Gardeners)	6 years, Permanent	Open	Other allotment gardens, 1 km to residential housing	Electricity
Ezermala	960 plots (250-400m2 each)	<i>Dārz-kopības kooperatīvā sabiedrība</i> (Cooperative Association of Gardeners)	6 years, permanent	Open	Other allotment gardens, 1 km to residential housing	-
Jumprava ala	350 plots (400m2 each)	<i>Ģimenes dārziņu apvienība</i> (Association of Family Allotment Gardeners)	6 years, part of the territory temporary	Open	Other allotment gardens, canal from one side	-
Sudrabu Edžus	50 plots (150-200m2 each)	<i>Ģimenes dārziņu apvienība</i> (Association of Family Allotment Gardeners)	6 years, temporary	Closed	Residential housing (20 m)	-
ROD „Rakowiec”	522 plots (Total area ca. 19 ha)	Polish Association of Allotment Gardeners; Gardeners’ manager	No limit on duration of lease agreement	Open	Located between city parks	Electricity, water supply
ROD im. F. Żwirki i Wigury	310 plots (Total area ca. 14 ha)	Polish Association of Allotment Gardeners	No limit on duration of lease agreement	Open	Located close to the housing estate (10 m) and primary school	Electricity, water supply

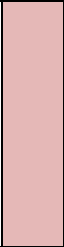
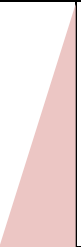
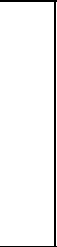
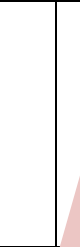
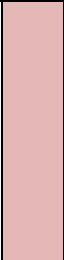
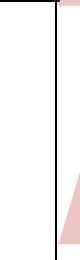
		ers; Gardens' manager	ment			
ROD „Ursynów”	306 plots (Total area ca. 13 ha)	Polish Association of Allotment Gardeners; Gardens' manager	No limit on duration of lease agreement	Closed	Located close to the campus of WULS	Electricity, water supply
ROD “Sady Żoliborskie”	461 plots (Total area ca. 15 ha)	Polish Association of Allotment Gardeners; Gardens' manager	No limit on duration of lease agreement	Open	Located close to the city park	Electricity, water supply

Table 1: Description of chosen allotment gardens

Name of allotment garden area	Lighting*	Signage	Clear Sightlines (straight pathlines, no plant cover views)	Transparent internal fencing	Natural surveillance from residential house windows	Public accessibility	One gate open, other closed and/or seasonally closed	Activity issues	Abandoned or badly maintained plots	Safeguard on site	Safety on the site
Cases of Riga											
Bulju 11											Safe environment with no theft or vandalism recorded
Ezermalas											Gardeners complaining on theft and vandalism, homeless people. Homeless dogs.
Jumpravsala											Recorded theft of crops. Previously recorded theft of metal tools and equipment, now all equipment is removed to avoid theft. Occasional vandalism.

Sudrabu Edžus (Mežaparks)										Sometimes recorded theft of crops or some garden facilities. Sometimes the trespasser is the fellow gardener, thinking he is not stealing, but borrowing things.	
Cases of Warsaw											
ROD „Rakowiec”										Gardeners feel generally safe. Theft occurs sometimes. In spring specific plant species are stole, in winter – metal taps.	
ROD im. F. Żwirki i Wigury										Gardeners feel safe, no theft or vandalism is recorded.	
ROD „Ursynów”										Gardeners feel safe to some extent. Recorded theft, destruction of windows and doors.	
ROD “Sady Żoliborskie”										Gardeners feel safe to some extent. Recorded theft of wallets and phones from huts and metal equipment in winter.	
Name of allotment garden area	Lighting*	Signage	Clear Sightlines (straight pathlines , no plant cover views)	Transparent internal fencing	Natural surveillance from residential house windows	Public accessibility	One gate open, other closed and/or seasonally closed	Activity issues	Abandoned or badly maintained plots	Safeguard on site	Safety on the site
Cases of Riga											

Buļļu 11											Safe environment with no theft or vandalism recorded
Ezermalas											Gardeners complaining on theft and vandalism, homeless people. Homeless dogs.
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Sudrabu Edžus (Mežaparks)											Sometimes recorded theft of crops or some garden facilities. Sometimes the trespasser is the fellow gardener, thinking he is not stealing, but borrowing things.
Cases of Warsaw											
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ROD „Ursynów”											Gardeners feel safe to some extent. Recorded theft, destruction of windows and doors.
ROD “Sady Żoliborskie”											Gardeners feel safe to some extent. Recorded theft of wallets and phones from huts and metal equipment in winter.

-  - Exists/is installed/is provided on allotment site
-  - Does not exist/not installed/not provided on allotment site
-  - Partly/some exists/is installed/is provided on allotment site

*In case of allotment garden areas, lighting criteria have two options: territory is provided with lighting on public roads/paths and there is no lighting on public roads/paths.

Table 2: Evaluation of allotment garden areas according to adapted CPTED checklist using both good and bad indicators.

To trace the relation between the CPTED principles and site organization and design in the chosen allotment areas, findings have been structured according to the main principles of CPTED. This allows illustrating which CPTED principles are more commonly unconsciously applied in allotment gardens and how this affects the reduction of crime.

Natural Surveillance

According to various studies, natural surveillance appears to be one of the most important crime prevention tools, as criminals usually avoid open and easily overlooking areas (National Crime Prevention Council 2003). Natural surveillance involves clear site observation, insured by windows overlooking the street, clear sightlines and lighting. As stated by Jane Jacobs, “eyes on the street” strategy insures the place being observed and so promotes safer environment (Jacobs 1961). Thus, natural surveillance does not prevent trespassers from entering the area, but insures that everyone is watched.

This statement was proved by case studies in both cities, Riga and Warsaw. In case of "Sudrabu Edžus" allotments, proximity to high rise residential houses, windows overlooking the allotment area, as well as openness of the territory as a result of cut trees and bushes along the external border, makes it possible for locals to monitor the area and react quickly if they notice trespassers (Fig. 3). Furthermore, as the majority of "Sudrabu Edžus" gardeners live in these houses, it makes the surveillance more effective, as the gardeners are interested in preventing crime in the area. The interview data showed that cutting down of trees and bushes along the external fence has reduced theft and vandalism in the garden (App. I4). As shown in the example of "Bulļu 11", natural surveillance provided by transparent fencing within the area also appears to be important, as any criminal activities on neighbours' plots can be easily recorded by other fellow gardeners (App. I1). In their turn, "Rakowiec" and "Sady Żoliborskie" allotments in Warsaw show how isolation promotes crime in the area. Even though located close to residential housing, "Rakowiec" gardens can't be easily overlooked from windows and from the outside in general, as the external fence is in some places quite high and densely growing plants are blocking views (Fig. 5-6), (App. I5, I8). As a result, this data shows that in case of urban allotment gardens natural surveillance can be effective both from the outside and within the site, while the lack of natural surveillance provokes crime.

Furthermore, surveillance is represented by other forms, such as formal (police monitoring), semi-formal (as garden manager or safeguard) and technical surveillance (CCTV/cameras), which also appear to be effective in crime reduction (Levald *et al.*, 2015). Interviews in the allotment areas of "Bulļu 11" and "Ezermalas" garden communities showed that everyday police monitoring contributes to development of safer environment (App. I1, I2). However, as in the case of "Ezermalas" each plot has a high non-transparent fencing, when in fear of being captured, trespassers often get over the fence and escape easily as police officers cannot follow up direction of their movement (Fig. 4; App. I2). Seasonal safeguarding of "Bulļu 11" has improved the safety of the garden area, reducing theft and vandalism rate to zero (App.

I1). All four chosen allotment areas in Warsaw are safeguarded during the day and night, watching the entrances and patrolling the area (App. I5, I6, I7, I8). Yet, the fact that the problem of theft and vandalism still exists, proves that safeguarding as the only approach is not enough to eliminate crime.



Figure 3: Allotment gardens "Sudrabu Edžus". View on the residential housing blocks (source: Korolova)



Figure 4: Allotment gardens "Ezermalas". Internal fencing (source: Treija)

The comparison of 3 case studies from Warsaw with similar provision of security tools (safeguarding, lighting, signage), and with similarities in isolation (high almost non-transparent external fencing, and densely growing trees and shrubs along the external border) (Fig. 5-6), shows that integration of mixed use functions in the garden area reduces crime. In the case of "Rakowiec" allotments in Warsaw, playgrounds, picnic areas, and organization of festivals, ensure more active use of the area, promoting safer environment (App. I5). On the opposite, gardens with no other functions integrated, and used only by allotment

gardeners, are characterized as relatively safe, as the allotment function per se does not ensure enough activity on the site to promote natural surveillance (App. I7, I8). This data supports the idea that even when allotments are surrounded by high fences and dense plants, crime still can be reduced if other mixed use functions are integrated in the area.



Figure 5: "Rakowiec" allotment gardens in Warsaw. Internal fence view (source: Latkowska)



Figure 6: "Rakowiec" allotment gardens in Warsaw. External fence view (source: Latkowska)

Natural Access Control

Natural access control including any kinds of physical elements, such as fences, doors, gates and shrubs, are believed to prevent site visits by unauthorized persons. This principle of environmental design helps to define private and semi-private space, besides certain placement of gates and fence organization helps

to direct people flow. As described by psychologists, the idea that the area is private or has a complicated access often scares possible trespassers off (National Crime Prevention Council 2003).

Case studies in Riga prove that the absence of external fencing and gates makes the area more accessible to trespassers. According to the interview data, theft is a common problem in "Jumpravsala" gardens and all gardeners are warned about high risk of getting their crops and equipment stolen (App. I4). As theft of any metal equipment is considered to be a common problem, "Jumpravsala" gardeners avoid installation of metal water pumps. However, interviews showed that some gardeners set up the water pump inside the hut, to hide the equipment, or even bring the pump each time they visit the garden and then take it back home. By contrast, "Bulļu 11" allotments having only two entrances, one gate usually closed (each gardener has their own key) and the other open during the day, show no theft and vandalism in the area. The decision to have the gates in "Sudrabu Edžus" garden area closed for public access has helped to reduce theft. Yet, the problem of theft still exists; gardeners appear to steal from their fellow gardeners, considering this as borrowing of crops and/or equipment (App. I1, I4). Meanwhile, the comparison of closed and opened to public allotment gardens in Warsaw showed that prohibition of entrance to non-gardeners and locked entrances do not contribute to safer environment. There gardens accessible to public are characterized with safer environment (App. I5, I6, I7, I8).

Territorial Reinforcement

Signage, fencing, pavement treatment, a good visual appearance and other related factors contribute to the sense of ownership of a place, discouraging possible trespassers by the fact that the territory has an owner and is protected, but also because users of the area know each other and are familiar with the surroundings. Observations and interviews from allotment areas also proved this statement, as small well-maintained garden areas, with a clear definition of the area to be owned and managed, where the head of the association of gardeners knows each gar-

dener, appear to have less theft and vandalism. On the opposite side, large garden territories, such as "Ezermalas", with no clear border, no signs or lighting, and high monotonous fencing, give an impression of garden users' indifference; as a result theft and vandalism are a big problem in this area (App. I1, I2, I3, I4). However, the fact that all chosen garden territories in Warsaw have lighting and signage (paths have names, plots are numbered), as well as external fencing, still face theft and even vandalism, proves that application of these certain principles is not enough to eliminate crime totally (App. I5, I6, I7, I8).

Maintenance

Maintenance is in relation to the "Broken Windows" Theory by Wilson and Kelling (1982), advocating the idea that urban disorder provokes crime. The more degraded or abandoned the territory is, the more likely it will attract unwanted people and provoke crime (National Crime Prevention Council 2003). By contrast, well maintained and clean spaces promote safer environment.

As shown in the case studies in Riga's allotment areas, theft and vandalism are more likely to occur in garden areas with abandoned plots or plots in bad condition. Meanwhile, "Bullu 11" allotments with no free plots available, all fences and plots being well maintained and no rubbish noticed on the paths, has no theft or vandalism complaints. Also the situation in „Jumpravsala" started to improve after all plots had been rented out. However, the fact that all chosen garden areas in Warsaw despite some abandoned plots and occasional holes in fences, still are having a different situation with crime, shows that in case of Warsaw the existence of abandoned plots does not usually affect the crime rate (App. I5, I6, I7, I8). Still, in case of urban allotments not only the formal occupation, but also everyday activity on the plot is crucial. Like in many European countries, the tendency to transform allotment plots into green recreation areas with no crops is also observed in Riga as more and more gardeners choose recreation instead of planting and growing crops. This, however, directly affects the amount of time spent

in the garden, as irrigation and weeding out, encourages gardeners to visit the garden more often.

Conclusion

Research shows that in order to be effective, theft and vandalism prevention strategies have to offer complex approaches. The situation with safety on site in the analysed allotment areas shows that a location within the city and the proximity of residential housing promote natural surveillance and are crucial in case of Warsaw, but do not play the key role in crime reduction in Riga. As in Riga the safest urban garden area is surrounded by other allotment communities and cannot be overlooked from residential housing windows, it can be suggested that other crime prevention tools, such as lighting, clear sightlines, site transparency, controlled access and safeguarding, appear to be more effective. All the analysed sample cases from Warsaw, having similar safety promoting approaches, but different locations, among which only one area with transparent fences and easily overlooked external borders described as very safe, allow the researchers to assume that site transparency and location play a crucial role in crime reduction in Poland.

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Appendix

Inter-view Index	Position/years in the position	Allotment's Name	City, Country	Date of the interview
I1	Voldemārs Losāns, Head of the Cooperative Association of Gardeners /18 years	Bulļu 11	Riga, Latvia	May 12, 2016
I2	Head of the Cooperative Association of Gardeners / 11 years	Ezermala S	Riga, Latvia	May 12, 2016
I3	Rasma Griņa, Head of the Association of Family Allotment Gardeners/ -	Jumpravsala	Riga, Latvia	May 12, 2016
I4	Andis Zilāns, representative of the Association of Family Allotment Gardeners	Mežaparka Attīstības biedrība	Riga, Latvia	May 19, 2016
I5	Manager of the Polish Association of Allotment Gardeners/ 1 year	ROD „Rakowiec”	Warsaw, Poland	May 15, 2016
I6	Polish Association of Allotment Gardeners/ 11 years	ROD im. F. Żwirki i Wigury	Warsaw, Poland	May 15, 2016
I7	Polish Association of Allotment Gardeners/ 2 years	ROD „Ursynów”	Warsaw, Poland	May 16, 2016
I8	Polish Association of Allotment Gardeners/ 1 year	ROD “Sady Żoliborskie”	Warsaw, Poland	May 16, 2016

The influence of community gardening on the status of housing estates in Budapest

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Keywords: Neighbourhood Community, Social Capital, Deterioration of LHEs, Civil Participation

Abstract

The majority (75%) of the community gardens in Budapest are located in Large Housing Estates (LHEs), where more than one third of the population of the capital resides. These estates are characterised by a decreasing social status, combined with an increasing population change. Our earlier investigations observed that an upswing in housing construction could intensify their deterioration. To slow down this process, the tools of urban regeneration have been introduced. Local governments are increasingly turning to the community garden idea as a solution to social problems related to alienation, and as a tool to improve the public perception of LHEs in the long term. For our research we selected three community garden projects that have had contrasting influences on the 1970s-era LHEs where they were founded, in order to show the social-potential of the idea. The founders of these gardens used top-down structures, with the intention of creating self-sustaining and active community gardens. If the projects are successful, they could represent a powerful tool for social rehabilitation impacting the network of community, mobilisation of local populations and the public perception of housing estates. In this paper we will outline the first findings of the projects, with the intention to monitor the ongoing urban rehabilitation process and the changing status of LHEs.

Introduction

Context of the LHE in Hungary

The physical appearance of Hungarian housing estates differs little from those of Western Europe, while the population composition is significantly different, dating back to their first allotment under socialism (Csizmady 2006). The regime transition saw private ownership rise above 90%, and the amount of social housing fall to almost zero, but it did not cause a significant change in the social status of LHEs.

In the present day, one third of the population of Budapest lives in LHEs and, of these, two thirds live in panel housing. On the basis of census data we can distinguish three clearly differing status groups (Fig. 1) (Csizmady 2008). The majority of inhabitants moved from the countryside to Budapest, and many of these new urban dwellers suffer from the lack of usable green areas, and the lack of a social network. Architects and sociologists have debated the disadvantages of this type of housing since the 80's, but there have been no effective interventions until recently. The EU has financed large-scale rehabilitation since 2010, with an emphasis on the physical transformation of the building stock. In the past few years, changes in the conditions of tendering have prescribed a larger proportion for "soft" programmes (SZVK 2015).

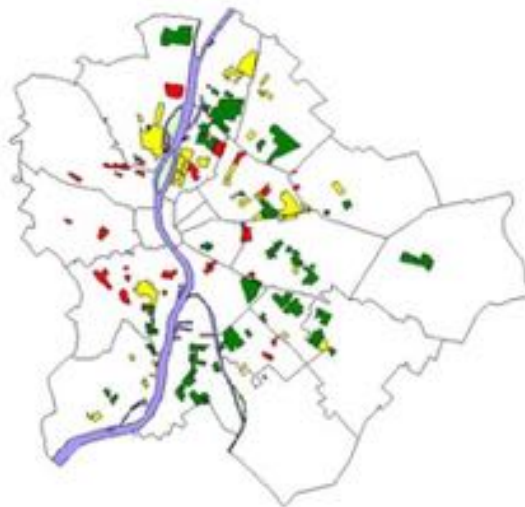


Figure 1: Status groups of LHEs (Csizmady 2006), Legend: red - high status; yellow - middle status; green - low status

A key component of this was creating communities, along with raising the responsibility of residents for their environment. Community gardening was one of several new ideas to appear in the toolbox of local governments.

Urban gardening in Budapest

The first workers' and miners' gardens in Hungary evolved during the period of WWI. In the 60's, "garden-plots" were created in lands that were less suitable for large-scale use, which provided the enjoyment of gardening for those groups that had moved to the city, mainly into LHEs, from the countryside. From the 1970s onwards, an increasing number of small garden areas also emerged in peripheral urban zones. (Fáczányi et al. 2015) The rising cost of maintaining such gardens forced many people to sell them, and increased openness to the community garden idea. In Budapest, the first community garden was formed in 2010 following European patterns. Currently there are around 30 active gardens and more than 15 in the planning phase. The majority of active community gardens (~75%) are connected to housing estates, although there are gardens in inner brownfield lands, and in the historic inner city area (Fáczányi 2016). Until 2013, top-down structured gardens were typical, followed by a few bottom-up civil initiatives. In contrast to the international context, there are no open community gardens or thematic gardens in Budapest. An example of the progressive use of a socially-aimed garden was, however, evident in the creation of a community garden intended for the homeless.

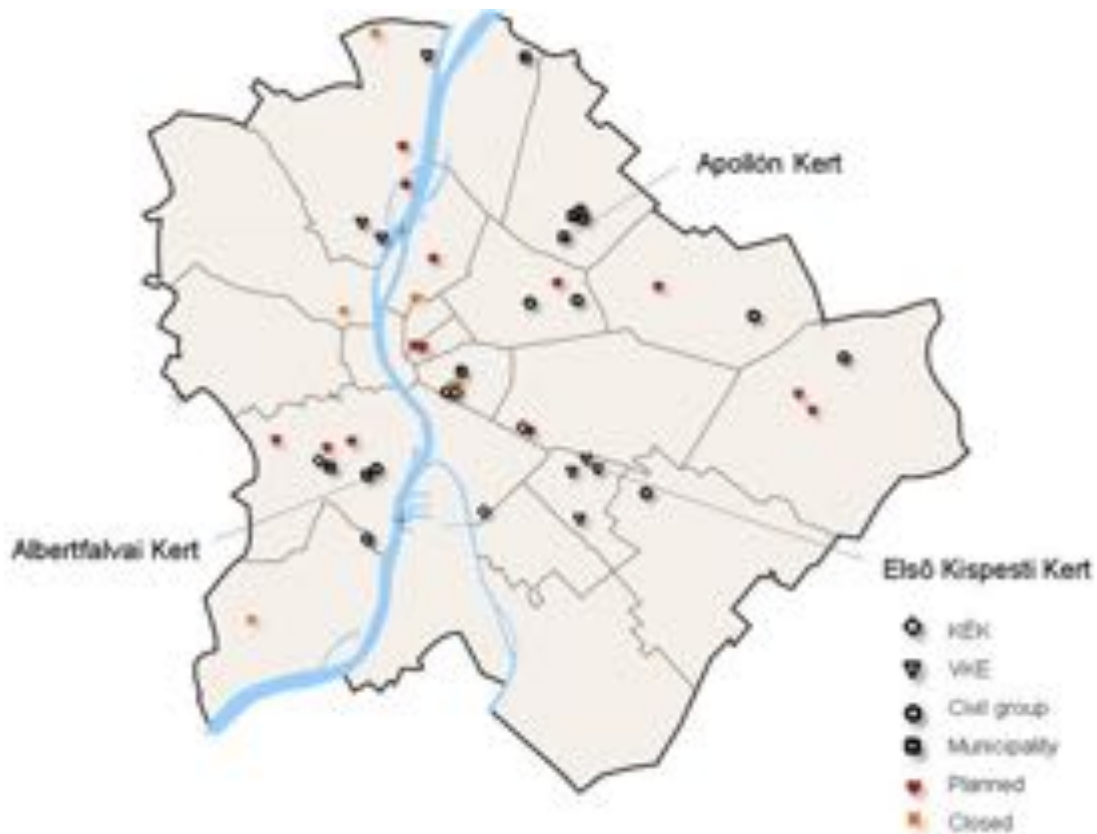


Figure 2: Community gardens in Budapest (Fáczányi 2016)

Methodology

Our research group brings together the methods of its component sociologists, architects and landscape architects. The research theme of the paper is relatively new and faces difficulties measuring the alteration of status, since it is itself one factor in the change. We examined the establishment and organisation of top-down structured gardens, to elucidate their different procedures, and used field observation and non-structured interviews and questionnaires (25-29 per site), and mapped garden usage and community networks in order to better understand the experience and effects of the gardens for residents. We will continue to follow the creation of communities in these gardens, and their contribution to environmental renewal and population changes in the long term.

Findings

Spread of the community garden idea in LHEs

The lifestyle associated with mass housing areas has been subject to criticism since the socialist period, focused on the problem of alienation: New residents often find it hard to make friends and integrate. Places for meeting people are limited, and the nature of the public environment discourages it. Many people from the countryside purchase a cheap flat in these areas as first-generation urban dwellers, and suffer from no longer having a garden. In our survey conducted before the renovation programme in Békásmegyer in 2005, residents said that they would have actively participated in the renovation, if there had been someone to organise it: 38.7% were sure of taking part, 12.5% considered it possible, and one third would have contributed to the work. Most significant are the 40% who indicated that they would help in the maintenance of the parks after the renovation, saying that they would happily mow the lawn or plant flowers. Conditions at that time were unsuitable for the emergence of such community-based garden-maintenance, with a lack of experience and knowledge from both residents and the municipality, and there was no civilian organisation available that could have started such a project; the community garden idea was still entirely unknown. However, in the last five years we have witnessed an explosive dispersal of the concept, as local authorities and proposal writers have taken it up. We consider the motivation of LHE community garden members to be determined by three main factors: (1) the wish to extend their cramped living space, (2) the lack of social spaces; (3) the hope of self-produced vegetables. The "trendy", environmentally-conscious drive is less apparent.

Top-down garden models

Hungarian society demands the presence of leadership and well-functioning systems. (Frentzel-Zagorska 1990) The community garden offers an example taken from the West that is also worth designing from the "top". The KÉK (Contemporary Architectural Centre) started spreading the community garden idea connected to urban development, founding the first successful garden in a

brownfield renovation area, followed by a partnership with an urban rehabilitation project in downtown Budapest. The three projects, because of their locations, played a significant role in the popularisation of community gardens. Three other gardens founded by the KÉK were on housing estates (with the support of Telecom). The KÉK carries out garden management operations, including organisation and funding, and seems to be now at the limits of its capacity.

The VKE (Urban Gardens Association) began operating at the same time as the KÉK and has founded seven community gardens in LHEs in municipal-owned locations. It is cooperating with the mayor's office and the Faculty of Landscape Architecture and Settlement Planning at Szent István University. Its leader, mostly based on his experience in the US, set the naturalisation of the community gardens in Budapest as a goal. Outside of spreading its know-how, the organization considers community building to be 90% of its task. It supervises a garden for one and a half years, during which time it builds the garden community with the instruments of company-management. It shares the experience of the organisation at garden councils and events, helps in the formation of role circles, aids conflict management and facilitates collective decision making. At the end of this period, it leaves the garden, and thus its capacity can be utilised for founding new projects. Its communities are autodynamic and organise a lot of events.

As community gardening became more popular, some district governments appeared as garden-founders in 2013-2014. The idea became part of development schemes to rehabilitate the green areas of housing estates. The emphasis is often not on the community, but on urban vegetable growing, and on green spaces maintained by the public. The community garden function has become an instrument of green space development, retaining the intention of creating communities in its name.

As a result of top-down initiatives, in parallel with municipal gardens, civic groups, autonomous communities and residents have opened new community gardens. This kind of implementation shows how community gardening can contribute to the strengthening of

civil society and stimulate greater openness from district governments.

The three gardens chosen for our case study were typical top-down projects, where the intention was to create a self-sustaining community. Gardens founded by the KÉK were not investigated in this research because of their leading role in the maintenance of the gardens.

Első Kispesti Kert

The Kispest LHEs were built with 5 and 11-storey buildings in 1977–1986, and belong to the category of low-status housing. The garden was founded near to the LHE by the VKE in 2012 with financial support from the municipality. There are 26 beds, a shady rest area with benches, a place for campfires, and a tool shed. The low status garden members live in the neighbouring LHE. According to the survey, the motivations of the members of the Első Kispesti Kert were most often the

"hope for new company, the consumption of one's own fruit/vegetables, and environmental consciousness".

At the time of the garden's founding, almost every member gave importance to the statement that with the garden, *"we create something that we can be proud of.* For garden members, the

"neighbourhood has become homelike, they feel more connected here since the founding of the gardens."

The number of their acquaintances among members of the garden has expanded considerably (50–70 garden members). These findings are largely determined by the fact that the community participated together in the formation of the garden from the start of planning, both "intellectually" and physically. The garden members listed a huge amount of events that had recently been organised in the garden.

The small and cohesive community has turned into an active civil society think tank: The community has become an opinion leader for local policies, formulating their opinions in the field of education, environment and sport. The positive environmental impact of community gardens can also be seen to have played a ma-

major incentive role in the maintenance of public green spaces and remaining lands.



Figure 3: Első Kispesti Kert

Albertfalvai Közösségi Kert

The 10-storey buildings of Albertfalva's medium-status LHEs were built along the main street of the former village in 1973-78. The community garden was established in 2015 as the second garden to be founded by the municipality of District 11. There are 29 beds and a tool shed, but no place for a campfire was built, to prevent the disturbance of neighbouring residents. The garden members live in panel block buildings surrounding the garden, most of them having moved there in 2008-2012 from rural areas. The motivations of garden members were most often the following:

"the proximity of nature and earth [...] and the possibility of using a piece of land as one's own."

At the founding of the garden, everybody gave importance to the statement that from the garden

"I can eat fruit/vegetables grown by myself."

Compared to the garden members from Kispest, they belong more to the lower-middle class. For garden members, the

"neighbourhood has become more family-like, they feel that they belong here more since the creation of the garden."

For the majority, personal interests were realised in the gardens, and they are satisfied with these; but only a few referred

to the additional benefits gained by the community. They do not require further help or support; they accept the gardens as they are. They do not hold events, because, according to many respondents, the garden only started last year and they do not know each other well enough yet. We could describe it as an “urban allotment,” which carries the seed of the possible emergence of a community at this stage. At the same time the sight of the well-kept vegetables has acted as a catalyst to begin the planting of flowers close to the entrance of several buildings.



Figure 4: Albertfalvai Közösségi Kert

Apollón Kert

The Újpalota LHE were built on former suburban agricultural land between 1968–77, and had become subject to significant social stress by the early 1990s. Community development in this area is part of the Urban Rehabilitation Programme, of which neighbourhood work and the operation of an information office are emphasised. The most important results of the development group’s work are the formation of the Company of Neighbours from Újpalota, the coordination of local planning procedure, and the intellectual support of three community gardens. The municipality founded the Apollón Garden in 2014 by, along with two other gardens. A nonprofit organisation, owned by the municipality, carried out its realisation and undertakes administration and member registration. Deficiencies in the formation of the garden made the start more difficult: the establishment of a water source was delayed for months; several beds are inadequately po-

sitioned in the shade, while concrete tables and benches in the sunny part cannot be fully utilised and cannot be replaced. The number of the acquaintances of garden members has not increased significantly, due to the lack of community events, and to the limited participation in meetings. In spite of the difficulties there are only a few beds that are left uncultivated, but the collective areas are untended, and the garden gives an impression of neglect. The development has not really achieved its goal, the participants are dissatisfied because they are not supported, the garden managers are frustrated since the community cannot be mobilised, and the municipality is disappointed, because the residents are not making use of the "community" possibilities offered to them. The locals are hostile, because most people do not know by what right the members of the community garden use the former common area. The inhabitants often refer to the garden as a "graveyard." The local government "dares not" initiate a new garden, despite the increasing demand for one, and the availability of local government funds, because of the negative attitude of residents.



Figure 5: Apollón Kert

Discussion and Conclusion

Our ongoing research has tried to elucidate how the community garden could influence green environmental changes, and improve the living standard of local communities. We chose three LHE-based projects with different social effects to demonstrate these changes.

We can conclude that one of the direct social benefits of community gardens is the expansion of the gardeners' social network, in the broader community and in the activity of fellow gardeners. The level of activity could be fostered with support from civil organisations, individuals with strong civic commitment, or local government. In addition, EU subsidies have recently played an increasing role in financial support. These kinds of support belong to "soft" elements of urban rehabilitation, which could also play a role in social rehabilitation aimed at improving the environment and community, and the putative status of housing estates.

The community garden is one of the most popular and easy to establish of these elements. Nevertheless there are several conditions that are crucial to its successful operation: 1) An external 'power' is needed to introduce the rules of the community garden and assist in the establishment of this new kind of community. 2) Strict rules are seen to be useful in LHEs, in order to guarantee compliance. 3) A significant advantage is observable when future garden members are involved in design and implementation from the beginning.

We witnessed several positive social effects in the LHEs: 1) The joint activity develops tolerance, connection to the garden and local identity. 2) Public programmes are usually related to sustainability, ecology, self-organisation, neighbourhood community questions and education. It fosters the awareness of inhabitants and willingness to take an active role in the community. 3) The community garden could have also a positive spillover effect if it is combined with a self-motivated community. It could foster the widespread dissemination of the gardening idea in germ form, while also working as a catalyst to strengthen other non-governmental organisations. The presence of community gardens induces "willingness and commitment" for the maintenance of LHE green areas on a volunteer basis. Personal attachment among residents to the green area, and the quality of its appearance, have the effect that the undefined, unmaintained "no man's land" areas become more visible and more intolerable by contrast, inclining residents to intervene. It fosters the introduction of a West-European culture in which townspeople

take possession of their environment, and have confidence to use facilities and to take decision-making roles in their neighbourhoods. Unnoticed additional benefits of this process include new neighbourly relations and friendships outside the community framework.

By contrast, a failure of the community garden could produce the opposite effect to that outlined above. If a project fails, it can easily lead to stigmatisation of the gardening idea and could strengthen disinclination of local residents against community gardens in the long term. This is demonstrated in the example of Újpalota, where the opening of a new garden would now be difficult.

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The Future of Urban Allotment Gardens in Latvian Cities as Reflected in Spatial Development Plans

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Abstract

Allotment gardens in many European towns and cities are experiencing revitalisation and a diversification of functions. In this context a rethinking of the appropriate designation and place of allotment gardens in urban development and spatial plans is needed. In Latvia, where urban greenspace is under intense development pressure, the need to define a renewed identity for allotment gardens is particularly relevant. The objective of the study was to identify how towns and cities in Latvia have addressed the allotment garden landuse function in their development policies. The study included an analysis of the development plans, maps and building codes of 51 towns and cities in Latvia with populations greater than 2000. Answers were sought to the following questions:

1. Is the allotment garden function defined as a "development" or "greenspace" landuse category in municipal development policies?
2. Is the allotment garden landuse function defined in municipal maps?
3. Is the allotment garden function defined as a "temporary" or "permanent" landuse function?

Although allotment gardens are actively used in all of the studied cities, only in about half is the land use explicitly defined in the development plans and accompanying maps. If urban development policies in Latvia continue to attach an ambiguous meaning to the allotment landuse function, this greenspace and its social functions could be lost to the many residents for whom it is vital.

Introduction

In many European urban areas urban gardening is experiencing a resurgence which is being expressed in a variety of forms serving both urban greenspace and recreational functions (Bell et al. 2016). However, Latvian cities have experienced a sharp decline in the number of allotment gardens. For a sizeable number of urban residents allotment gardens remain relevant and demand exceeds supply. Due to existing management deficiencies allotment gardens are frequently perceived in a negative light by the broader public. They are often perceived as ugly which often results in allotment gardens being designated degraded territories and, consequently, rezoned for development. The place of allotment gardens in the urban green structure, their functional role and management are thus relevant issues for spatial planning research.

The objective of the study was to identify how cities in Latvia address the allotment garden landuse function in their development policies. Answers were sought to the following questions:

1. Is the allotment garden function defined as a "development" or "greenspace" landuse category in municipal development policies?
2. Is the allotment garden landuse function defined in municipal maps?
3. Is the allotment garden function defined as a temporary or permanent landuse function?

The study included an analysis of the development policies, development plans, accompanying maps (*further – maps*) and building codes of all towns and cities in Latvia with populations greater

than 2000. These 51 towns and cities were selected for study since the majority of the population reside in multi-story apartment blocks without direct access to private garden nearby house; consequently allotment gardens are particularly relevant to the lifestyle of part of these residents.

The Role and Integration of Allotment Gardens in Urban Green-space Structure

"As spring approaches Rigans become restless. They gaze at the big walls of buildings, cobblestone or asphalted streets and in silence think to themselves: 'Riga is truly beautiful and pleasant, but... would it not be nice, if the summer could be spent in the countryside! In the fresh air and sunshine I would grow my own onions or beets – this would be so healthy for both the body and soul.'"

These are the opening lines of a 1938 article on Allotment Gardens in Riga published in a local newspaper "Latvijas Darba Kameronas Ziņas" (Gūtmanis 1938).

Even today, in 21st century Riga, when spring arrives, many city-dwellers enjoy the warm weather in the countryside, close to nature. During the summer this is particularly evidenced by the relatively deserted city streets and the streams of cars on Sunday evening with Rigans returning from their country homes or cottages. However, those residents who do not have properties outside the city retreat to seek alternatives in the city itself.

In Latvia the self-provision of food and active recreation in family gardens is still alive. Allotment gardens (AG) near apartment block neighbourhoods in rural villages and smaller towns are an integral part of the greenspace and cultural landscape. In bigger cities the situation is different which is illustrated by the example of Riga.

In Riga, the capital of Latvia, the first AGs were officially established in 1907 on lands previously used as pasture meadows. Until 1940 lease agreements were for 1-3 years as AG were a temporary form of land use prior to construction development. The municipal government provided basic infrastructure in allotment

territories and advertised the gardening for social functions. In the city centre the demand always exceeded supply with more vacant lots in the periphery (Duboks 2012; Upenieks 1940). During the Soviet years (1940–1990) AGs in Riga were defined as temporary use of land prior to building or park development. Garden sheds were forbidden until 1970 when small cottages and sheds were allowed in territories designated as long term garden territories. From 1940 till 1986 the number of official plots grew from 7,515 to 32,482 and in 1980 AG covered 4% of the territory of Riga. Gardening was very relevant for inhabitants and unofficial allotment colonies emerged in different places – in 1983 more than 77 hectares were illegally occupied by gardeners. Sometimes these territories were bulldozed for the sake of “order”. Legal AGs were defined as a temporary land use but was not included in the Riga master plan as specific territories. In 1970 a special Act defined that lands not needed for building purposes could be used as AG. Few territories were defined as permanent allotment territories (Duboks 2012).

From 1990 with land denationalisation, privatisation and introduction of property taxes the role of urban planning increased. Until that time AG were perceived as a normal activity but not as important as building development and they were rezoned to other land use. For example, over the last 10 years the population of the capital Riga has declined by 10% (638,749 in 2015), while the number of allotment garden plots has decreased by 30% (9,643 in 2015). Thus, the status of AGs in the greenspace structure of development plans and maps had to be established step-by-step.

The relevance of AG inclusion in urban development planning can be explained by specific and diverse AG functions. According to Krasny (2014), the origins of the AG movement are associated with industrialization and the need to ensure food self-sufficiency during the war and post-war periods. With the availability of cheap industrially produced food, increasingly more people are conscious of food quality and home-grown food is considered healthier (Scheromm 2015). AG not only offer urban residents with an alternative form of recreational greenspace, but also positively impact the health of users, communities and ur-

ban neighbourhoods (Acton 2011). As part of the urban green structure, AG support ecological functions (Gómez-Baggethun *et al.* 2013). As AGs largely have permeable surfaces, they help regulate the hydrological cycle (Langemeyer *et al.* 2016). It is suggested by researchers that in the future urban gardens will be increasingly important for urban food security and sustainability. Urban forests and AG are frequently used for environmental education purposes (Gómez-Baggethun *et al.* 2013). Research indicates that in former Soviet-block countries the main recreational activities amongst the older generation is gardening and bicycling (Rowinski *et al.* 2015).

The eastern part of Europe, which has been impacted hardest by a demographic decline and an aging population, faces serious planning challenges. Ensuring accessibility and mobility, development of social infrastructure and providing quality healthcare present new opportunities to create aging-sensitive and inclusive urban and regional development plans and to promote active-aging (Müller & Schiappacasse 2009).

Based on the results of the project "Green Surge", which undertook an inventory of greenspace in European cities, 44 greenspace types were defined that were grouped into 8 categories (Cvejić *et al.* 2015). This greenspace typology has as one category AG and community gardens, which are distinguished by their specific functions, organization and semi-public status. In summary, AG territories are a specific type of greenspace within the urban green infrastructure with diverse ecological and social functions. Historically, Latvians perceive gardening as an integral part of their lifestyle. It is considered an activity that can be done everywhere and is merely a temporary use of space.

Methodology

The policy review included an analysis of national level and municipal level development and spatial planning documents in Latvia. Analysed policy documents include:

- The Sustainable Development Strategy of Latvia;
- The National Development Plan of Latvia;

- Municipal development plans, maps and building codes;
- Google Earth Maps.

In municipal building codes it was studied under which specific zoning categories AG are defined:

- a. AG land use under non-development – greenspace/agricultural land zoning OR built land zoning;
- b. AG as temporary, short or long-term land use.

Maps of existing and potential land use were reviewed to identify whether AG are spatially defined as a land use. If maps do not include AG as a land use designation, a legal basis for the AG land use does not exist. Results of the policy analysis are summarized in Table 1.

Analysis of Allotment Garden Policy in Latvia

Development Planning Regulations and Documents

The Sustainable Development Strategy of Latvia 2030 is hierarchically the highest long-term development planning policy document in Latvia. It does not refer to AG (Sustainable Development 2010). Similarly, the National Development Plan of Latvia 2014–2020, the main medium-term development planning document in Latvia, does not directly mention AG (Latvijas Nacionālais 2014).

Requirements for local development planning and land use classification schemes are defined in the Cabinet of Ministers Regulations No. 240 “Territorial Planning and Construction Regulations”. AGs are referred to only in the Appendix of this regulation (Territory Use Classification): Residential Use – Garden Shed Construction and Agricultural Territory Use (Vispārīgie teritorijas 2013). The regulation does not provide a definition of AG as such nor their functions. Cabinet of Ministers Regulations No. 240 defines conditions that must be met when rezoning “AG shed and cottage” territories to a permanent residential development landuse. The regulation foresees that over time cottage and garden shed territories will be re-zoned to a permanent residential landuse. Over time, on the periphery of urban areas existing AG sheds become permanent residences and the land was is re-zoned as residential.

The analysis of development policies in Latvia reveal that state level regulations do not address the AG landuse function or do so indirectly. Even national level development policy plans, with objectives "to preserve the image of Latvia as a green country" and "sustainable use of natural resources", do not address AG directly. This lack of National legislation allows each local municipality to approach AG differently.

Allotment Garden Landuse Zoning in Development Policies in 51 Latvian Cities

In Latvia, in 19 of the 51 cities studied, planning policies explicitly define the meaning of AG In eight cities AG are defined as a temporary land use (Table 1).

AG Landuse Zoning Category – Non-Development Land or Built Land (number of cities)	AG Landuse Zoning Sub-Category (number of cities)	Number of Cities	
		Location of AG Defined on Maps	Location of AG Not Defined on Maps
AG Zoned Non-Development Land 28 (6 temporary)	Public Greenspace 18 (4 temporary)	12	6 (4 temporary)
	Agricultural 10 (2 temporary)	6	4 (2 temporary)
AG Zoned Built Land 6	Cottages & Garden Sheds 6	2	4
AG Zoned Non-Development Land & Built Land 5	Public Greenspace 5	1	4 (1 temporary)
	Cottages & Garden Sheds 5	4 (1 temporary)	1
AG "de facto" Re-Zoned Residential – Zoning Code Permits Construction of Permanent Single Family Houses 9 (1 temporary)			9 (1 temporary)
AG Landuse Function Not Defined 3			

Table 1: Allotment Garden (AG) Landuse Zoning in Development Policies in 51 Latvian Cities

In 28 cities planning policies include AG in a non-development land category – 18 cities as public greenspace and 10 cities as agricultural land (Table 1). In 18 of these 28 cities AG territories are defined on maps, but in 10 cities an AG landuse is not spatially defined. In some cases, although the AG landuse is not defined on the map, existing AG territories or the names of AG colonies are depicted on appended illustrations. In six of the 28 cities where AG are included in the non-development land category, the AG landuse is defined as a temporary use of land until re-zoning to a different use.

In six cities AG are classified as “cottages and garden sheds” landuse category where permanent residential houses are not permitted and building restrictions apply. The analysis reveals that there is a big variation in the permitted size of garden sheds – 6 m² to 40m². In one of the cities (Kuldīga) garden sheds can be two stories high and have specifications comparable to permanent residences. In only two of these six cities are the “cottages and garden sheds” landuse territories defined on maps, whereas in the other four cities maps depict territories with a “cottages and garden sheds” zoning as future residential landuse areas.

Five cities distinguish two categories of AG landuses in their development policies – “non-development land” and “built land” distinguishing allotments with any buildings permitted and allotments with garden sheds and cottages. However, only in one of these cities are both land uses defined in the map. In three cities only the category “built land with garden sheds” is defined on the map, but in one city neither of the two defined landuses are spatially defined. This shows that allotments with buildings are more acknowledged by policy makers.

In many cities planning policies define a minimum AG plot size. In most cases this is between 600-1200m². That is the usual plot size for living house, except for three cities, where the size is 200-300m² like the traditional plots for allotment. The definition of large AG plot sizes results in AG colonies that resemble residential subdivisions. In nine of the 51 cities the AG

landuse designation "de facto" results in AG territories being re-zoned to residential landuse as the building code permits construction of permanent residential dwellings.

Less than half the the studied cities have planning policies that are supportive of urban AG. Only 24 of the 51 cities recognize AG as a landuse equal in status to other land uses – the AG landuse has a permanent status, construction of residential dwellings is not permitted and the AG landuse is defined on maps. Overall, the AG landuse is least developed in the nine national level cities where the number of persons living in residential high-rise apartments is the greatest. However, in only in three of these cities the AG landuse has a permanent status and is spatially defined. In three of the studied cities, of which two are national level cities (Rēzekne, Valmiera), AG are not addressed by development planning policies.

All of the studied cities have former AG territories, in addition to those included in plans and characterized previously (Table 1), that have been re-zoned to another landuse. The most frequent form of landuse re-zoning is to single family residential (28 cities), low-rise residential (18 cities) and public institution (10 cities). Former AG territories have undergone re-zoning to 18 different types of landuses.

Conclusions

In Latvia, where allotment gardens are not regulated at the national level, towns and cities address allotment garden issues quite differently in their landuse policies; frequently in an ambiguous manner. Local development policies usually fail to define the allotment garden landuse category on spatial development maps, or permit allotment garden sheds equivalent in size to permanent residential dwellings. In those cities, where the allotment garden landuse is not defined in development planning policies nor on spatial development maps, allotment gardening is relegated to an illegal status. The study reveals that 27 of the 51 cities studied do not define a separate land use function for allotment gardens. In eight cities the allotment garden landuse function is a temporary designation. Only in four or the nine largest cities in Latvia is the allotment garden landuse func-

tion defined as a specific zoning category and included in maps. In light of the diverse ways allotment gardens can contribute to quality of life for urban residents, it would be prudent for Latvia to review existing policies towards them so as not to lose an urban asset.

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C2 - Enhancing resilience and ecosystem of cities.

Water management and resilience of urban allotment gardens against climate risks

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Keywords: Climatic Regions, Global Crisis, Water Cycle, Water Management, Water Scarcity

Abstract

Nowadays, intergovernmental organizations like the United Nations or OECD are reporting "world population growth", "food shortage" and "water supply" as thematic areas, closely inter-related, to be addressed within the scope of "global crisis". In addition to this situation, in many countries, climate variability and change are factors affecting water management (e.g. increasing water use restrictions to protect reservoirs, lakes or groundwater levels). Across almost all Europe, at national geographic level with long-term annual averages, most accepted indicators of renewable freshwater resources suggest that water availability is high enough to sustain domestic/economic sectors and environment needs (EEA 2009; Rijsberman 2005). However, water scarcity occurrences are increasing in extent and intensity due to the water cycle variability and uncertainty or the effects of overexploitation. In this sense, historical series of water cycle variables (e.g. evapotranspiration and precipitation) are crucial to provide information to forecast meteorological and hydrological conditions.

Urban agriculture is a complex issue requiring an integrated approach to link its multifunctionality and sustainability to the water cycle and taking into account the potential risks of disturbing weather events and anomalies in climate trends. Within this framework, the rational use of water, as regards the need of societal behaviour to ensure adequate choices consistent with both agro-environmental and economic objectives, will

promote decisions with positive impacts on the soil-water-plant status and on the competitiveness of the investments. More particularly concerning urban allotment gardens strategies and activities, water management guidelines are required, validated according recognised criteria and standards, to support best practices related to irrigation, drainage, rainwater harvest and storage systems (e.g. high water application efficiency related to adequate design and management options). Based upon scenarios with respect to various climatic regions, with an annual aridity index (P/ET) (UNESCO 1979) ranging from 0.5 (semi-arid) to higher than 1 (temperate), and approaching site-specific conditions (soil-plant-water), this paper aims to present design/management options, for the above-mentioned systems, to evaluate the possibility of ensuring adequate water volumes to plant requirements at all stages. Thus, such information may be of further interest to water balance and crop methodologies (e.g. Aquacrop – FAO 2015) and to facilitate decision-making regarding water availability and supply practical solutions, including the most affordable for low-income households.

Introduction

In every continent there are strong socio-ecological vulnerabilities related to a reduction of freshwater availability. Greatly associated with physical and economic water scarcity situations, restrictions on water supply are affecting around 1,600 million people (Seckler *et al.* 1998). Moreover, climate changes and the world population growth are contributing to high demand of water and food, thus, increasing global water crisis (Hanjra & Qureshi 2010).

Basic procedures with respect to water resources management take into account the need for measurements of the water cycle components. Water from precipitation is intercepted by plants, also infiltrates, evaporates, and a portion moves over the surface as runoff (Schwab *et al.* 1993). The evapotranspiration (i.e. the process of water evaporation and plants transpiration) is the component referred to as consumptive use and its estimate

may be used to predict soil water deficits and irrigation requirements.

The weather is often affected by uncertainty due to the high variability of rainfall and evapotranspiration, namely in Mediterranean climate. Drought events are bringing more awareness of the importance of irrigation solutions, and drainage must be promoted to face the occurrence of excessive rainfall periods (Schwab et al. 1993). Such conditions, observed in time (frequency, intensity and duration) and space scales are producing an increasing of negative impacts on urban areas related to floods and erosion, dry seasons and water scarcity, extreme temperature ranges, heat island etc.

Urban allotment gardens (UAG) have a multifunctional characteristic, with benefits related to provisioning, regulating and socio-cultural services. Water management best practices and related technologies (e.g. pumping, irrigation and drainage) are needed to mitigate threats to ecosystems, namely the overexploitation of water, the soil compaction or the lack of nutrients. Based upon four countries involving several climatic regions, and approaching site-specific UAG conditions, this paper aims to evaluate water management options, efficiently implemented to ensure water availability to plant requirements.

Theory and Methodologies for Climatic Classification

Water Scarcity

Water scarcity (WS) is a phenomenon induced by human or nature conditions reflecting the imbalance between the withdrawal (concerning different needs of demand), and the availability to supply water (EEA 2009). At a global approach recent data suggest an increase of "physical" WS, due to reduction of precipitation and flows (e.g. related to climate change) and to increasing water requirements (e.g. related to population growth) (GEO 2010; Hanjra & Qureshi 2010).

<u>COUNTRIES</u>	Precipitation		Internal Flow	Inflow of surface and ground waters	Renewable freshwater resources		Renewable freshwater per capita
	(m ³ x 10 ⁶ - mm)		(m ³ x 10 ⁶)	(m ³ x 10 ⁶)	(m ³ x 10 ⁶ - mm)		(m ³)
PORTUGAL	82 164	900	38 593	35 000	73 593	800	6 893
GERMANY	307 000	900	117 000	75 000	188 000	550	2 285
CANADA	4 930 000	500	2 740 000	51 500	2 791 500	280	83 931
ETHIOPIA	936 005	900	110 000	0	110 000	100	1 363

Table 1: Renewable freshwater resources of four countries related to the long-term annual average of precipitation, over at least 20 years (OECD 2008).

As indicated in Table 1, displaying a summary of water cycle-related information (macro-scale), the renewable freshwater resources (RFR) of the countries are derived primarily from the impact of the annual precipitation falling on the territory. The available data show that the differences in total volumes are mainly correlated to the land area extension. However, when precipitation records are given in "mm" measurement unit (or L.m⁻²), in the mentioned countries - with the exception of Canada at the upper limit of a semi-arid climate - the values can be described as similar and typical of moist/sub-humid climates (Maliva & Missimer 2012). Then, the analysis of the Internal Flow (IF = Precipitation - Actual Evapotranspiration), defined as the total volume of river runoff and groundwater generated in natural conditions, exclusively by Precipitation (P) within the country (OECD 2008), point out to ratios (IF/P) close to 50%, with the exception of Ethiopia, around 10%. The latter result is explained by the high magnitude of the Evapotranspiration (ET) factor in IF.

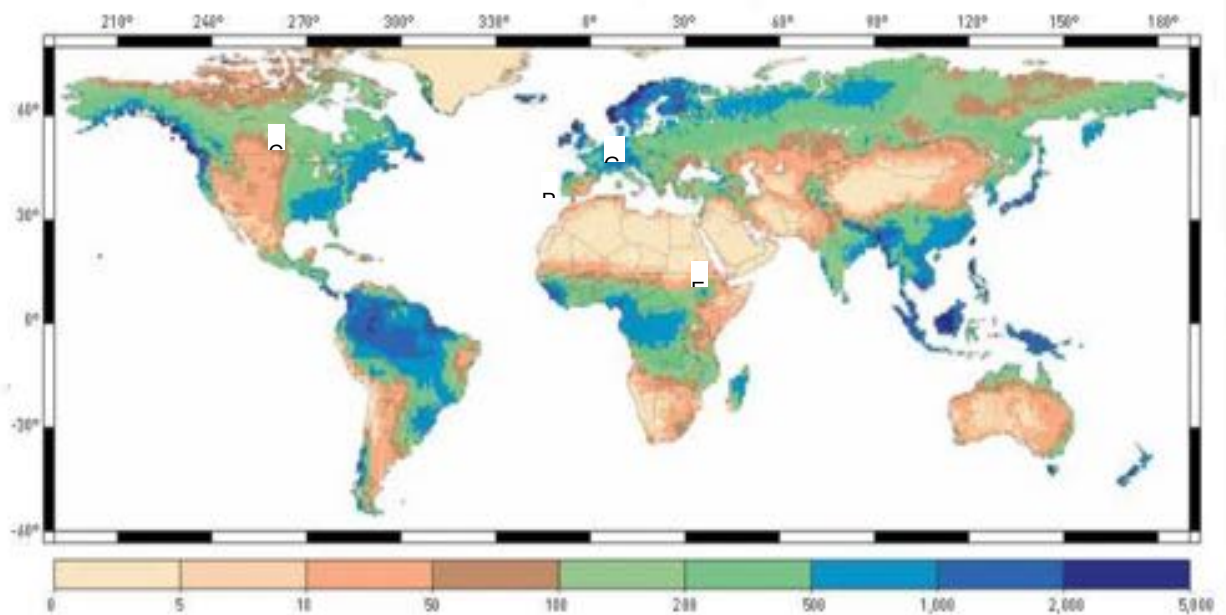


Figure 1: Annual runoff (mm/year) (source: GEO 2010)

Figure 1 is helpful in supporting the global view of annual runoff regimes with direct impact in IF. It is observable that due to specific water cycle conditions of major regions of Ethiopia and Canada, those values will be generally low (countries are mainly coloured brown and light green). Other components of RFR are the inflow of surface and groundwater, related to an external water resource (i.e. neighbouring country). Such inflows account for an important amount of water in the case of Portugal and Germany as observed in Table 1.

Several indices/indicators are useful to assess RFR and physical WS. The water stress index, representing RFR per capita per year, is being widely used, usually on a national scale (Rijsberman 2005); the value of $1,700\text{m}^3/\text{year}$ per capita is proposed as the threshold to satisfy the needs of countries (household, industry, agriculture, energy and environment). Countries whose RFR are below that value experience "water stress" and below $1,000\text{m}^3/\text{year}$ per capita experience "water scarcity" conditions. Seckler *et al.* (1998) also mention the problem of economic WS, when the countries have sufficient water resources to meet needs, but will have to increase water supplies through additional storage, conveyance and regulation systems.

The ranking of assessed countries RFR, considering units in mm/year, shows that the higher value is associated with Portugal and the worst condition is found in Ethiopia. On the other hand, as shown in the last column of Table 1, RFR measured in units of m³/year per capita cause some shifts in the ranking, bringing Canada into a better position, because of very low population density. Moreover, it is also possible to conclude that, at country level (and average values), Germany presents some vulnerability to water stress and Ethiopia is facing the most negative conditions of water availability.

Aridity and Drought

The situations of water deficit in regions, associated to nature factors, can be identified as "aridity" or "drought" phenomena. Both are usually caused by low rainfall or high evapotranspiration periods, consequently with impact on water availability and supply. Aridity is a permanent condition and is very often associated with long-term pressure on water use and land degradation for a region (Pereira *et al.* 2002). Arid definition is linked to notions like dry or insufficient water to support vegetation or agriculture (Maliva & Missimer 2012). In contrast, drought is defined as a temporary and recurring climatic event. Drought cyclical episodes are observed in different contexts (EEA 2012): 1) meteorological (e.g. water cycle anomalies); 2) agricultural (e.g. soil moisture reduction); 3) hydrological (e.g. aquifers water level); or 4) socio-economic (e.g. restrictions in rural/urban activities). Moreover, dryness and drought have different levels, thus, several indices are being used to quantify and classify their degree over a given region and are helpful to define climatic regions/zones. An aridity index may be based only on precipitation; for instance, semi-arid regions are commonly defined by annual rainfalls between 250 and 500mm. The UNESCO Aridity Index is based on the ratio of annual P and ETp (Potential Evapotranspiration), and in regions classified as semi-arid, that ratio ranges between 0.2 and 0.5 (Maliva & Missimer 2012). In this sense, and also to forecast meteorological and hydrological conditions, it is important to

have access to data of historic climatic series of water cycle components, namely P and ETp.

COUNTRIES	Climatic regions	Annual Precipitation - P	Annual ETp	Aridity Index (P/ETp)
		mm	mm	mm.mm ⁻¹
PORTUGAL	A - Southern Semi-Arid (Mediterranean)	500 (75% Oct-Mar)	1000	0.5
	B - Northern Sub-Humid	1200	800	1.5
GERMANY	Northern Sub-Continental (Continental)	600	500	1.2
CANADA	Western Prairies (Continental)	500	500	1.0
ETHIOPIA	Savannah (Tropical)	900 (80% Jun-Set)	1300	0.7

Table 2: Climatic regions and the aridity index (AI)

Table 2 identifies climatic regions of countries with specific water-related conditions to be linked to the annual abstraction of water (i.e. the water amount removed from natural or artificial sources, during a time period) for irrigation. The following explanations are relevant to improve water use strategies related to each regional water cycle:

- 1) Portugal registers an annual average precipitation around 900mm, but 75% is concentrated in the humid semester (i.e. October to March) and there are considerable differences between some southern regions (A) and northern regions (B), with annual averages ranging from 500 to 1,200mm (PNA 2001). Both Mediterranean regions (Fig. 2), with a remarkable difference between the Aridity Index (AI) values (A-0.5 and B-1.5), are subject to typical dry seasons, thus, requiring irrigation practices.

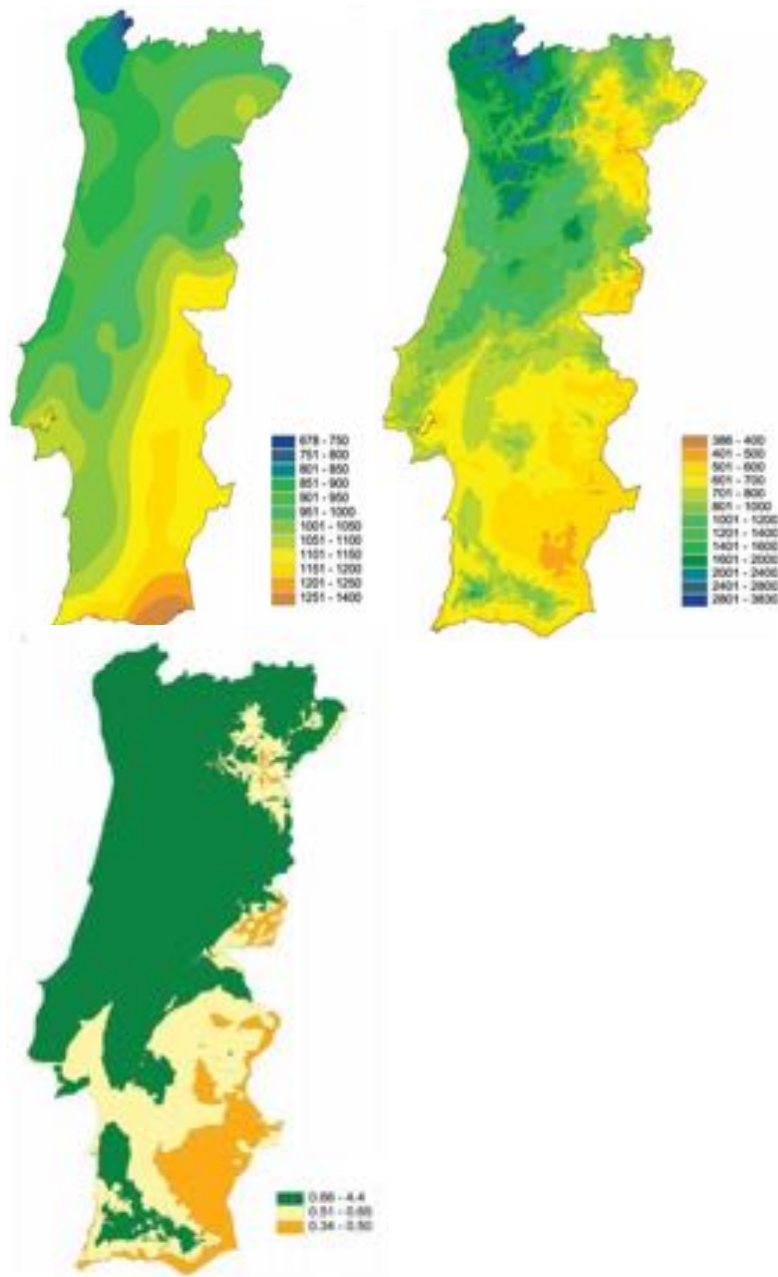


Figure 2: Annual averages maps (1960-90) of precipitation (P) and potential evapotranspiration (ETp), and aridity index (AI) classes in Portugal (source: Rosário 2004).

2) Germany registers also an annual average precipitation around 900mm, but this value is relatively evenly distributed along the seasons. This study evaluates a northern region (Lower Saxony) with sub-continental climate, which is characterized (comparing to national values) by a lower than average P and a higher than average ETp (Riediger et al. 2014). Even though the AI is higher than 1, irrigation is a common practice in the region.

- 3) The Canadian Western Prairies, with a continental climate, have similar P and ET_p values to national annual averages found. However, much of evaporated moisture is transported out of the region instead of being used to feed the precipitation. Extended dry periods, as reported along 1999–2005, may be observed in the region (Stewart & Lawford 2011).
- 4) A broad range of AI values is also found in Ethiopia (from close to zero – hyperarid zones, to above 2.5 – moist/humid zones). Large portions of Ethiopia are drylands, but in this study the Savannah region has been chosen, with an AI equal to 0.7, considering its potential for irrigation. The warm rainy season (i.e. June to September) accounts for 80% of the annual precipitation (Fazzini *et al.* 2015).

Results of Water Needs and Analysis of Water Strategies in UAG

Water Cycle and Irrigation

Global water cycle scenarios are taking into account climate change simulation models predicting more severe and persistence droughts, with longer periods of heat and water stress, for many regions of the world as Northern Africa, America or Europe (OECD 2008). A clear trend toward drier conditions with potential impacts on water supply of European cities was observed during the 20th century (EEA 2012). On the other hand, the implementation of irrigation practices in UAG must take into account the site-specific conditions, associated to the water cycle. Irrigation is somehow an artificial component of the local water cycle, when its conditions are not ensuring enough water to plant needs. The prediction and evaluation of the normal seasonal dry periods, or drought events, are basic steps to establish an UAG irrigation plan and scheduling guidelines (when and how much irrigate), considering adequate time scales, namely, on a daily or a weekly basis.

COUNTRIES	Seasonal Dry Period	Seasonal Precipitation	Seas. Pot. Evapotransp.	Pot. Irrig. Req.	Water Needs
		P(s)	ETp(s)	$\approx ETp(s) - P(s)$	100 m ²
	Days (months)	mm	mm	mm	L
PORTUGAL	A- 120 (Jun-Sept)	100	600	500	50 000
	B- 120	200	500	300	30 000
GERMANY	120 (May-Aug)	150 (dry year)	250	100	10 000
CANADA	120 (May-Aug)	200 (dry year)	300	100	10 000
ETHIOPIA	120 (Feb-May)	50	550	500	50 000

Table 3: Seasonal water-related data to support UAG irrigation programs.

Pursuing an objective of general UAG interest, this study provides a set of data in Table 3 (reported to climate conditions described in Table 2), that can be used to support decisions regarding irrigation. The selected climatic regions of the mentioned countries are initially characterized by their seasonal dry periods. Along selected periods, water budgets can be developed by simulating the irrigation and precipitation events that replace the soil water deficit. It must also be noted, that ETp for a given period shall be associated to the consumptive use of water by plants. ETp and P values, as components of each local water cycle, are thus used to predict water application doses and irrigation intervals. By focusing the same length, comparisons become clearer; however no coincidence was observed among the months to be evaluated.

For each region and same series of historic climatic records, previously approached, the seasonal precipitation P(s) and potential evapotranspiration ETp(s) were crucial to evaluate water needs. A final result of the net depth (amount) of water to be supplied was obtained through the difference between ETp(s) and P(s). The precipitation values from Germany and Canada were typical of dry years. According to the conditions identified, it is observable that Portugal and Ethiopia, with warmer climates, present higher ETp(s) values and irrigation requirements, even though the northern Portuguese region has the highest AI. The final results point out that UAG water needs, for an average plot size of 100m², shall range from 10 to 50m³.

In this study, considering its illustrative purpose with no concrete cases, some procedural simplifications were adopted to determine potential irrigation requirements, as a first approximation. Thus, were not taken into consideration: 1) the irrigation system application efficiency (to determine water gross requirements), 2) the crop coefficients affecting E_{Tp} (to determine the ET variation during the crop development) 3) the initial soil water level, 4) the effective precipitation. More comprehensive and accurate information with case examples of irrigation programs, including towards small plots, may be found in several manual/guidelines, namely from FAO (2007) and USDA (2008).

Water Management in UAG

To overcome expected potential water scarcity problems in UAG, various water management strategies may be adopted, involving techniques and structures such as: 1) micro-irrigation systems, 2) soil-water sensors, and 3) rainwater harvesting and storage facilities. Some practices of water reuse or deficit irrigation are also currently valuable options.

All design and management solutions shall solve potential conflicting technical, environmental and socio-economic objectives (e.g. the trade-off between the cost of systems automation and technical-environmental benefits). Besides, urban-rural interface problems involved in natural resources conservation are even more serious because of population density and increased local runoff/erosion caused by severe changes in land use (Schwab et al. 1993).

The UAG solutions to water management must be based on a detailed knowledge of site-specific data, as well as on time availability of the gardeners and automation options. A preliminary inventory of local soil, plant and climatic conditions will contribute to reliable decisions upon configuration and management of installations and equipment. In this scope, this study addresses the following recommendations:

- 1) The suitability of different plants to soil-water quality standards and thresholds shall be ensured;

- 2) To schedule and control irrigation amounts and intervals, along the different crop stages (which have specific requirements), contribute to reduce water losses. In light soils with shallow root systems, irrigation is scheduled with small and frequent irrigations to avoid deep percolation or waterlogging. In heavy and deep soils, water application amounts may be increased (as frequency is reduced) to use the water storage capacity of the soil. To avoid runoff and erosion, application rates of irrigation system emitters are lower in heavy soils (or crusted, compacted soils). Watering during the warmest hours of the day is not recommended;
- 3) Water availability and crop irrigation requirements can be planned by day, week or season, based on water demand and local forecasting of evapotranspiration and precipitation. To most climates with typical conditions to irrigation practices (e.g semi-arid, Mediterranean, continental with dry periods), the predicted ET_p at the peak month of water needs shall range between 5 to 10mm/day (1mm = 1L.m⁻²). This information is helpful in defining the corresponding daily irrigation demand.
- 4) Heavy irrigation or rainfall events may lead to the soil saturation. The occurrence of water logging and surface runoff in plots will cause damages in plants (as drowning crops, diseases, root asphyxia) and soil (e.g. erosion, lack of aeration). Drainage layers, drain holes, perforated drain pipes and systems of channels are currently available technologies and some of them may also provide the possibility for diverting water to storage infrastructures;
- 5) To evaluate options of rainwater harvesting and storage systems. Thus, it will be necessary to develop artificial structures or basin areas where rainwater falls, providing detailed calculation of areas, volumes, heights, lengths etc. of facilities (reservoirs, ponds, pipes and pumps) to divert, collect, storage and distribute water. For example, for ensuring water to an UAG plot of 100m² in Ethiopia (Savannah), along the dry season (and expected

average climatic conditions), it would be necessary to catch and storage, along previous rainy season, a water volume of 50m³ (Table 3). A reservoir project could be designed with an area of 25m² and a height of 2m.

In UAG water-related projects may become a problem due to costs concerning investments or energy use. Some low-income families may be unable to adopt water saving measures and structures, as micro-irrigation systems or water storage reservoirs. A FAO (2007) publication refers the "affordable micro-irrigation techniques" (AMIT), related to simplified systems (e.g. shiftable dripper line, spaghetti micro-tubes, perforated hoses etc.), for small areas from 100 to 500m², thus with potential to be used by UAG users. Other options proposed by FAO, also consider water storage suitable devices as plastic barrels, iron drums or other self-made covered tanks, generally with capacities ranging from 300 to 3,000liters. Those systems may be operational with low water pressure obtained from some elevation (i.e. through gravity action) or a small pump.

Conclusions

This study, focusing UAG options and strategies related to water management, revealed the extreme importance of climate issues, particularly because droughts and water shortage periods are expected to increase water deficit and stress situations. Such information, from a macro/global scale to the micro/local scale, is crucial to improve the effectiveness of services and projects related to water use in UAG (e.g. catchment, storage, treatment, distribution and application). In addition, it is relevant to adopt advanced and integrated water management solutions involving engineering, agro-environmental and socio-economic subjects, taking into account the information accuracy to improve the results and findings of models. For example, water balance and crop methodologies (e.g. Aquacrop – FAO 2015) using climatic updated data can better support UAG users, regarding decisions upon efficient water management.

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Anthropogenic flows of matter and energy through allotment gardens as a reflection of management manner

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Anthropogenic Flows

Abstract

Cities can be compared to living organisms as they transform raw materials, fuel, and water into built environment, human biomass and waste. Anthropogenic flows and transformation of material and energy may be regarded as urban metabolism. Urban allotment gardens participate in that process. The main aim of the study was to demonstrate the relationship between matter and energy flow through the ecosystems of allotment gardens and their usage. The first step was to identify the anthropogenic flows of matter and energy through allotment plots, and on this basis we prepared a questionnaire called 'The gardener's diary', which was the main tool for collecting the necessary data. From May to October of 2014, 17 plot users of Poznan allotment gardens (11 users from 4 AGs in the city core and 6 users from 4 AGs in the outskirts of the city) filled-in the forms. Based on the questionnaire we identified three types of plot usage: mainly for recreational purposes; mainly for food production; or mixed. The obtained data on the flow of matter and energy through allotment garden were then divided into two groups: "inputs" (e.g. water, chemical fertilizers) and "outputs" (e.g. sewage, fruits and vegetables). Next, all the data were converted to the same weight units [kg] as well as energy units [MJ] and referred

to the plot area [m²]. To assess the anthropogenic flows of matter and energy through allotment gardens we used two indicators: (i) indicator of matter management efficiency – W (the ratio of the total weight “inputs” coefficient to the total weight “outputs” coefficient) and (ii) energy efficiency indicator – E (the ratio of the total energy “inputs” coefficient to the total energy “outputs” coefficient). The results allowed for a quantitative comparison of plots and showed differences resulting from the usage of allotment gardens. The recreational way of usage stands out with low weight coefficients for both input and output flows. Plots related to food production were characterized by high weight coefficients of input flows, which in turn have been dominated by water consumption through irrigation. However, weight coefficients of “outputs” were low. The mixed type of usage was characterized by relatively high and balanced “inputs” and “outputs”. Water being the dominant “input”. Moreover, the high use of fertilizers (organic and chemical) and pesticides was significant.

Introduction

Cities can be compared to living organisms in the way they transform raw materials, fuel, and water into the built environment, human biomass and waste (Decker *et al.* 2000). If cities are perceived as organisms, then anthropogenic flows and the transformation of material and energy may be regarded as urban metabolism (Kennedy, Cuddihy & Engel Yan 2007; Wolman 1965). Wolman (1965) published a first quantitative analysis of the metabolism of cities, in which he estimated the overall fluxes of energy, water, materials, and wastes into and out of a hypothetical city of a million residents. In his research, he developed a linear model of urban metabolism that included input and output processes. After Wolman, many scholars developed a range of interpretations and extensions of the concept of urban metabolism (cf. Brunner 2007; Girardet 1990; Huang, Kao & Lee 2007; Newman 1999). At the emerging stage of urban metabolism research, the material flows were mainly taken under consideration. The concept of the energy flow analysis was

included a bit later and was claimed to be treated equally with material flows (Zhang 2013).

Urban metabolism was analysed from a very different perspective. Some studies considered the material and energy flows in the industries and the households, and the resulting environmental impacts (Bailey, Bras, Allen 2004; Yang, Gao, Xiao & Wang 2012, Newman et.al. 1996). Next to the complex research, the metabolism of single flows were also analysed as water metabolism or energy metabolism (cf. Zhang, Yang & Fath 2010; Zhang, Zhang & Yang 2011).

The urban metabolism approach has been widely adopted as an effective means to quantify the inputs of energy, water, food, and other materials, as well as waste outputs (Sahely, Dudding & Kennedy 2003). It can be used to account for and assess the scale and potential extent of recycling food, water, energy, and materials through the urban system (Weisz & Steinberger 2010).

A wide range of case studies is presented in the literature, referring to research on the metabolism of regions and cities, much less common are studies on the metabolism of a particular type of area within a city, as an example, the research on energy flows for the area of Barcelona's Montjuic Urban Park, presented by Oliver-Solà et al. (2007). Detailed studies on the specific metabolism of a given type of land use would contribute to a better understanding of urban metabolism in general and draw attention to those areas where metabolism contributes to the fulfilment of global and local sustainability agenda.

Notice that, thus far, we have tried to identify metabolic flows throughout an urban allotment garden plot, taking it into account as a relatively distinct ecosystem. In analogy to the ecosystem of the city, the ecosystem of the allotment garden plot has to be supported by human activity to fulfil its functions. With regards to the above, we hypothesized that the different ways of the use of an allotment garden plot influences the different human-induced matter and energy flows. The main aim of the study was to demonstrate the relationship between matter and energy flows through the ecosystems of allotment gardens and the way of allotment garden usage.

Materials and methods

To assess anthropogenic matter and energy flows through allotment garden plot it was necessary to collect data of input and output flows. The main tool for gathering data was the use of a questionnaire called "The gardener's diary". The users of 11 plots situated within 4 AGs colonies (I – "2, Armii Wojska Polskiego" – three plots, II – "Minikowo" – three plots, III – "Euro 2012" – two plots, IV "Energetyk I" – three plots) located within Poznan city limits were asked to systematically fill-in the diaries from May to October of 2014 (during the most intense period of gardening activities in the year). In the questionnaire we asked about, for instance: plot layout – area of bower, terrace, lawn, decorative plants and crops; water, gas and electricity supply, its utilization, waste (including green waste) and sewage production; produce yield by plot (e.g. fruits, vegetables or flowers), amount, quality and origin (chemical or natural) of fertilizers and pesticides used. The questionnaire was also supplemented with questions about demographic data and plot ownership. The collected data, results of particular plot observations and a user's declaration allowed to define the character of an AG– whether it was predominantly recreational, predominantly productive or mixed.

According to the city ecosystem's matter and energy flow model (Macias 2001), based on the following assumptions:

- a city may be treated as a structure of anthropogenic connections of matter and energy flow
- flow streams layout may be characterized quantitatively, if described in weight or energy units (Macias, Mizgajski 1998)
- stream comparison is only possible when all factors are described by the same weight and energy unit

The anthropogenic model of matter and energy flow for AG's plot was developed (Ryc.1.), where the plot is considered to be a distinctive, separate ecosystem. In this model, elements considered to be "inputs" to the plot's ecosystem and "outputs" from the plot's ecosystem were described.

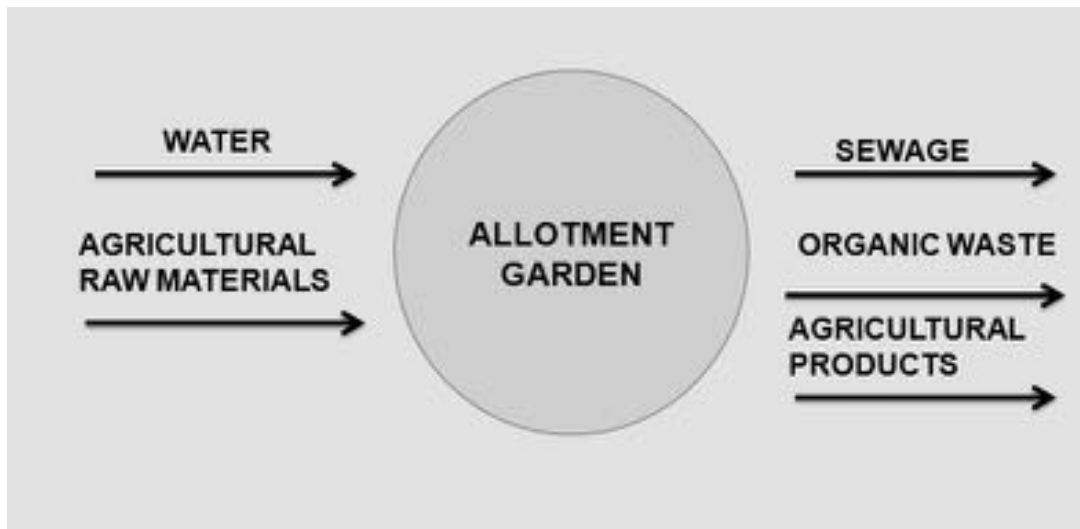


Figure 1: Considered anthropogenic flows of matter and energy through an allotment garden plot

INPUTS		OUTPUTS	
WATER	Supplied from wells and piping systems installed within the urban allotment gardens	SEWAGES	liquid wastes produced within the ecosystem of allotment gardens and collected in septic tanks belonging to plots
AGRICULTURAL RAW MATERIALS	pesticides, chemical fertilizers and organic fertilizers	ORGANIC WASTE	waste for compost, including: mowed grass, leftover vegetables, fruits and flowers
		AGRICULTURAL PRODUCTS	vegetables, fruits and flowers

Table 1: The elements of "inputs" and "outputs" of the allotment garden plot ecosystem

Data collected in the questionnaire allowed to define and compare input and output stream sizes within a particular plot area as well as between different plots. In order to make estimation and comparison of input and output streams within a particular plot and between different plots possible, partial values acquired from the questionnaire had to be converted into the same weight units [kg] as well as energy units [MJ] and referred to the plot area [m²]. To change e.g. the volume units

to the weight units, we applied the weight converters and to demonstrate the energy value of matter we used the energy equivalents. Both the weight converters and the energy equivalents were calculated according to Macias (2001). To assess the anthropogenic flows of matter and energy through allotment gardens, we used two indicators (Macias 2001): (i) the indicator of matter circulation – W (the ratio of the total weight “inputs” coefficient to the total weight “outputs” coefficient):

$$W = \Sigma W_{in} / \Sigma W_{out}$$

W – indicator of matter circulation

ΣW_{in} – total weight “inputs” coefficient [kg/m²]

ΣW_{out} – total weight “outputs” coefficient [kg/m²]

and (ii) energy efficiency indicator –E (the ratio of the total energy “inputs” coefficient to the total energy “outputs” coefficient).

$$E = \Sigma E_{in} / \Sigma E_{out}$$

E – energy efficiency indicator

ΣE_{in} – total energy “inputs” coefficient [MJ/m²]

ΣE_{out} – total energy “outputs” coefficient [MJ/m²].

Results

Almost all respondents of the analysed plots have been using them for more than 15 years, only two allottees used their plots for a shorter time for the reason that AG colony “Euro 2012” were established in 2010 especially as compensation for gardeners who lost their plots as a result of the liquidation of other AG colonies. Majority of the users are at above 50 years of age, only one respondent is less than 40. The collaborated gardeners are predominantly unemployed persons, which explains why they could spend an average of 4 days per week on their allotment garden plots during the vegetation period.

Based on the data obtained from the questionnaire and our observation during the visits, we identified the various ways of plot usage. All the plots of “Minikowo” AG (II_A, II_B, II_C) are

mainly recreational, the ones at "2 Armii Wojska Polskiego" (I_C) and the two of "Euro 2012" (III_A , III_B) are aimed at food production, the remaining five plots - the two of "2 Armii Wojska Polskiego" (I_A , I_B) and the three of "Energetyk I" (IV_A , IV_B , IV_C) represented mixed type of usage.

The information obtained from the plot users within the half-year period of study have demonstrated input and output streams of the plot. The raw data collected are presented in Table 2 (see annex).

Allotment garden plots intended for fruit, vegetables and flower production are characterized by very little utilization of chemical fertilizers, on the other hand organic fertilizers stand high in comparison to recreational and mixed plots. Also, the amount of organic waste is lower, presumably as a result of the lack of lawn, or its small area, since grass is the main constituent of green waste produced at analysed plots.

By converting raw data into weight units (Table 3, see annex), it is noticeable that for plots of recreational usage, coefficients of input and output flows are relatively lower and are dominated respectively by water and sewage, the low use of fertilizers (organic and chemical) and pesticides as well as a high production of green waste (mostly mowed grass) are significant. The plots aimed for food production are characterised by high weight coefficients of "input" flows which are dominated by water used for irrigation. Weight coefficients of "output" are low. The high use of organic fertilizers and low consumption of chemical fertilizers and pesticides is also characteristic. Output flows are low, thus dominated by vegetables and fruits. The mixed type of plot usage obviously combines the specific features of the production and recreational plots. "Inputs" and "outputs" are relatively high and balanced. Water is the dominant „input". The high use of fertilizers (organic and chemical) and pesticides is distinctive.

The raw data converted into energy units (Table 4, see annex) showed that the chemical fertilisers are the most important components of total energy "inputs" coefficient; organic

fertilizers have far less relevance even though for weight "inputs" coefficients, the difference between chemical and organic fertilisers are not so significant. Among the outgoing flows, the highest energy equivalent is characterized by organic wastes.

Discussion and conclusions

The value of indicators: W (indicator of matter circulation) and E (energy efficiency indicator), presented in the paper expresses the ratio of the sum of "inputs" and the sum of "outputs", calculated for the particular allotment garden plot. The greater the total weight "inputs" coefficient and lower the total weight "outputs" coefficient the W and E indicators assume a higher value, while greater than 1. In case the sum of "inputs" is less than sum of "outputs" the W and E indicators stand less than 1. When the sum of "inputs" and "outputs" is comparable than W and E indicators are close to 1. Analysed plots intended for fruit, vegetables and flower production are characterized by relatively high W indicator, with much higher "inputs" than "outputs". In case of recreational plots the value of W indicator is close to 1, what demonstrate that the sum of "inputs" and the sum of "outputs" are comparable, while the W indicator for mixed plots is greater than 1, however its values are lower than for recreational ones. W indicator is dominated by water and sewage.

The E indicator shows the input flows and the output flows in energy units, which means that the water supplied to the system is omitted in the index because the energy equivalent of water is 0. The E indicator value, calculated for the analysed plots, do not show a clear connection with the way of use of the plot. It is difficult to discern here any regularity. Therefore, the hypothesis formulated in the beginning, that the different ways of the use of an allotment garden plot influences the different human-induced matter and energy flows. is not confirmed unequivocally. Do not generalize, and referring only to the analysed plots, we can draw the cautious conclusion that the type usage of the plot corresponds to the greatest extent with the use of water.

Presenting the matter and energy flows in quantitative form and comparison of inputs and outputs of the system allow us to specify the type of metabolism. According to Zhang, Yang and Li (2006) the metabolism – an important function of any urban ecosystem (urban allotment garden plot as well), can be divided into dissipative and reductive metabolism. Dissipative metabolism occurs when the system releases materials or energy into the environment; reductive metabolism occurs when the materials or energy are captured or stored by the system. The metabolism function becomes disorganized if the level of reductive metabolism is less than the level of dissipative metabolism. If reductive metabolism is greater, the urban ecosystem remains stable, vigorous and orderly. On the other hand, Newman (1999) pointed out that all materials entered the system and taking part in metabolism eventually ended up as a waste so that the best way to ensure that there are reductions in impact is to reduce the resource inputs. It is not only the quantity, but also the quality of matter and energy of the inputs and outputs of the system that matter. It is very well depicted by the comparison of energy and weight partial units for chemical and organic fertilizers. While partial weight units for both do not differ significantly, partial energy units are considerably higher for chemical fertilizers. It is an effect of higher energy equivalent (an energy utilized to produce particular units) of chemical fertilizers than organic fertilizers. Thus, an AG plot utilizing organic fertilizers is far more balanced than the one utilizing chemical fertilizers, which are significantly more energy-consuming during the process of their production.

We should be careful about the interpretation of the total "inputs" and "outputs" coefficients and treating all the components equally, due to the share of non-sustainable raw materials (e.g. fertilizers) in the "inputs" or due to the share of green wastes in "outputs", which are mostly re-used as a fertilizer within the AG plot. At the same time quantitative presentation of matter and energy flows throughout the ecosystem of AG plot shows us the structure of "inputs" and "outputs" which could be the basis for comparison of the analysed AG plots

and allows us to indicate of those ones whose metabolism is more balanced.

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Table 2. "Inputs" and "outputs" - raw data

	Recreational			Food production			Mixed				
	II _A	II _B	II _C	I _C	III _A	III _B	I _A	I _B	IV _A	IV _B	IV _C
Area [m²]	382	380	422	416	350	396	300	300	518	475	450
INPUTS											
Water [l]	3000	1300	1300	18000	8200	2150	6000	5000	6000	16500	7500
Chemical fertilizers [kg]	15	10	2,25	14	7	0	41	29	40	20	10
Organic fertilizers [kg]	20	0	0	15	120	100	10	7	8	15	5
OUTPUTS											
Sewage [l]	2000	1000	1200	1200	0	0	1500	1200	2000	2000	2000
Organic wastes [l]	550	567,5	585	650	300	350	1900	400	1250	900	1300
Flowers [kg]	2,6	2,9	3,3	33	32,5	1,9	6,3	16	10	31,5	7,5
Total fruits [kg]	53	107	5	111	74,5	6	64	10	175	110	42
Total vegetables	72	14	0	40	00	7	7	4	140	26	10

Table 3. Partial and total weight coefficients

Type of plot	Recreational			Food production			Mixed				
	II _A	II _B	II _C	I _C	III _A	III _B	I _A	I _B	IV _A	IV _B	IV _C
Area [m ²]	382	380	422	416	350	396	300	300	518	475	450
Weight „inputs” coefficients											
Water [kg/m ²]	7,846	3,418	3,078	43,230	20,688	5,424	19,982	16,652	11,573	34,706	16,652
Chemical fertilizers [kg/m ²]	0,039	0,026	0,005	0,034	0,020	0,000	0,137	0,097	0,077	0,042	0,011
Organic fertilizers [kg/m ²]	0,052	0,000	0,000	0,036	0,343	0,253	0,033	0,023	0,154	0,032	0,022
Total weight "inputs" coefficient - ΣW_{in}	7,938	3,444	3,083	43,300	21,051	5,677	20,152	16,772	11,804	34,779	16,685
Weight „outputs” coefficients											
Sewage [kg/m ²]	5,231	2,629	2,841	2,882	0,000	0,000	4,996	3,996	3,858	4,207	4,440
Green wastes [kg/m ²]	0,425	0,388	0,350	0,389	0,214	0,221	1,583	0,333	0,603	0,474	0,722
Fruits [kg/m ²]	0,139	0,282	0,012	0,267	0,213	0,053	0,213	0,027	0,338	0,232	0,093
Vegetables [kg/m ²]	0,191	0,037	0,000	0,118	0,283	0,018	0,023	0,013	0,270	0,055	0,042
Flowers [kg/m ²]	0,007	0,008	0,008	0,079	0,091	0,005	0,021	0,053	0,019	0,063	0,014
Total weight "outputs" coefficient - ΣW_{out}	5,986	3,336	3,202	3,735	0,710	0,292	6,816	4,370	5,069	4,967	5,298
$W = \Sigma W_{in} / \Sigma W_{out}$	1,33	1,03	0,96	11,59	29,65	19,46	2,96	3,84	2,33	7,00	3,15

Source: own study

Table 4. Partial and total energy coefficients

Type	Recreational			Food production			Mixed				
	II _A	II _B	II _C	I _C	III _A	III _B	I _A	I _B	IV _A	IV _B	IV _C
Area m2	382	380	422	416	350	396	300	300	518	475	450
Energy „inputs“ coefficients											
Chemical fertilizers [MJ/m2]	5,143	3,447	0,698	4,408	2,620	0,000	17,901	12,662	10,115	5,515	1,455
Organic fertilizers [MJ/m2]	0,094	0,000	0,000	0,065	0,616	0,454	0,060	0,042	0,028	0,057	0,040
Total energy "inputs" coefficient - $\sum E_{in}$	5,237	3,447	0,698	4,473	3,236	0,454	17,961	12,704	10,142	5,572	1,495
Energy „outputs“ coefficients											
Sewage [MJ/m2]	0,066	0,033	0,036	0,037	0,000	0,000	0,017	0,016	0,049	0,053	0,056
Green wastes [MJ/m2]	1,212	1,104	0,996	1,110	0,611	0,630	4,513	0,950	1,719	1,350	2,058
Fruits [MJ/m2]	0,339	0,688	0,029	0,652	0,456	0,129	0,521	0,065	0,825	0,565	0,228
Vegetables [MJ/m2]	0,339	0,065	0,000	0,209	0,502	0,031	0,041	0,024	0,480	0,097	0,075
Flowers [MJ/m2]	0,016	0,018	0,018	0,188	0,217	0,011	0,049	0,126	0,044	0,150	0,034
Total energy "outputs" coefficient - $\sum E_{out}$	1,957	1,890	1,061	2,007	1,569	0,791	5,092	1,054	3,073	2,066	2,417
$E = \sum E_{in} / \sum E_{out}$	2,68	1,82	0,66	2,23	2,06	0,57	3,53	12,05	3,30	2,70	0,62

Source: own study

Ecological identity of urban neighbourhoods: biodiversity maintenance through allotment and domestic gardening

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Abstract

Spontaneous plant species in urban gardens, i.e. wild species that are not intentionally introduced into gardens by the gardeners, are usually regarded as worthless weeds. In this research, an assumption was tested that gardening practices in urban allotment and domestic gardens can serve as a filter that favours spontaneous species that are valuable components of local floristic diversity. An open field allotment garden (3ha, 250 plots without shelter) and 79 domestic gardens in the same urban neighbourhood (2,000 homes) were studied in Tampere, Finland. The allotment has been used for gardening from the 1940s, and the neighbourhood has been built during 1900–1930 by industrial workers. Most buildings were originally small wooden houses, but gentrification has gradually changed the neighbourhood. Research methods included systematic surveys of vascular plant species in the allotment area, domestic gardens, the rest of the neighbourhood, and the whole city area. Interviews with gardeners were utilised in the analysis.

The results show that (1) gardening in urban allotment and domestic gardens can maintain much of the surrounding floristic diversity, including some plant species that exist in the city

only in that neighbourhood, and (2) these two forms of urban gardening complement each other in maintaining spontaneous vascular plant species, species numbers and rare species on the neighbourhood scale. These findings resonate with the species pool theory and show that both allotment and domestic gardening may have clear roles in maintaining biodiversity values of the urban landscape. The positive influence of gardeners on urban biodiversity and ecosystem services was higher than expected. The paper provides new understanding of the roles of urban residents in biodiversity maintenance, because allotments and domestic gardens, including their socio-ecological interactions and co-effect on urban biodiversity on the neighbourhood scale, are rarely studied in the same research.

Introduction

The combinations of environmental factors and organisms differentiate urban ecosystems from most natural ones (Sukopp 2003; Kowarik 2011). This historic uniqueness of urban situations is a relevant starting point to study urban biodiversity – the variety and richness of plants, animals and their habitats, including genetic diversity – and how it can be supported by collective and domestic urban gardening. This paper focuses on spontaneous plant species, i.e. wild species that are not intentionally introduced into gardens by the gardeners. Some previous studies focus on the capacity of collective urban gardening to maintain biodiversity (cf. Andersson *et al.* 2007; Matteson *et al.* 2008; Pawelek *et al.* 2009; Speak *et al.* 2015) or agro-biodiversity (Watson & Eyzaguirre 2002; Guitart *et al.* 2012), but urban domestic gardens are much more studied in this respect (cf. Goddard *et al.* 2010). While potential connections of allotment and domestic gardens have been sometimes recognized in urban studies (Drescher *et al.* 2006), it is hard to find empirical studies that take allotment and domestic gardens under scientific scrutiny at the same time.

The aim of this paper is to analyse the shared capacity of allotment and domestic gardens to produce and maintain urban

biodiversity in the same residential area. The focus is on vascular plant species (plants mostly known as flowering plants), because they can be fruitfully used in urban biodiversity research. Vascular plants have regularly higher species richness in urban areas than in the surrounding countryside, resulting from the large variety of microhabitats and various intensities of land use in cities (Müller & Werner 2010). Species numbers of vascular plants in urban areas have gradually increased over time because of introduction of non-native species and their naturalization. This has continued for centuries because of unintentional influence of trade and traffic, but also deliberately when ornamentals and crop species have been introduced to cities. Consequently, in addition to natives, urban flora includes archaeophytes species (alien taxa which in Finland became established before the year of 1600) and neophytes (established after that). Most spontaneous plant species, which are the focus of this research, belong to these non-native and naturalized species, but they also include some native species that may spontaneously emerge in gardening sites. In this research the gardening activities are conceptualised as a socio-ecological filter, meaning that while gardeners focus on taking care of crop and ornamental species and controlling weeds, many spontaneous species from the surrounding landscape can penetrate the filter. Our observations and interviews showed that the gardeners tolerate many of these species for different reasons and for various degrees. They may control them as weeds, but not all of them, because spontaneous species frequently emerge at the gardening site. Some gardeners are too busy to notice the weeds, some are precise weederers, and somebody wants to save an unknown plant to see its later development. Sometimes the gardeners like to transport an interesting plant species from another site where it was already naturalized, or they allow a specific species to spread from the neighbouring plot. Some species emerge from the soil seed bank. How does the filter work, depends on the rules, habits and customs of gardening and the number and diversity of the gardeners. Hence, the gardening practices determine the community of spontaneous species at the site together with the species pool. The species pool includes

the set of species of the surrounding landscape that can potentially inhabit the gardening site because of suitable local ecological conditions (Zobel 2016).

The research questions are: (1) Which part of the spontaneous biodiversity of the city can be maintained by allotment and domestic gardening? (2) What do the results tell about biodiversity performance of allotment and domestic gardening and their shared capacity of maintaining urban biodiversity on the neighbourhood scale?

Methodology

The methodology followed the principles of case study research (Yin 2013) and has selected one urban neighbourhood for an intense study, utilizing several scales, research materials and research perspectives. The case is representative of old urban neighbourhoods in Finnish conditions, even though it has some specific features as we later explain, and it also represents old industrial towns in Nordic countries.

Research area

The Pispala neighbourhood (2,000 homes) in the city of Tampere (225,000 inhabitants) in Finland has been somewhat isolated from the rest of the city centre because of its history, communal spirit and biophysical location (Jokinen *et al.* 2011). It was originally built by industrial workers without any town planning rules. The southern part of Pispala (Fig. 1) was built during 1900–1930. Most buildings were small wooden houses, but gentrification has gradually diminished the historical features of the area. Detached houses with domestic gardens can be now found in Pispala from different periods of time. Ornamental plants dominate the gardens, but small vegetable patches can be found in some of them.



Figure 1: The study area: the Pispala neighbourhood in Tampere, Finland. Most houses are located on a ridge slope; the allotment area on the right side is situated on a plane between the ridge and Lake Pyhäjärvi (source: Postcard produced by Tampere-Seura).

Because the houses of Pispala are located on a slope of a ridge, the allotment area on a plane at the shoreline has been important for the residents, and it has been intensively used for gardening at least since the 1940s. Arable and pasture lands dominated the landscape already in the 18th century. Today the allotment area is embraced by the city and located only three kilometres from the city centre. The Pispala allotment area is owned by the city and consists of three hectares open gardening land divided into 250 plots (mostly 10m x 10m) leased for gardeners. Dozens of crop and ornamental species are cultivated in the area. The soil, moisture and micro-climate conditions are exceptionally good for gardening in the area.

Data and analysis

The data are based on systematic surveys of vascular plant species focusing on several scales:

1. Plots of the allotment area in 2015 (n=20, mostly 10m x 10m)
2. The allotment area as a whole in 2014 (3 hectares, including paths etc.)

3. Pispala neighbourhood in 2000 (two grid cells of 500m x 500m), domestic gardens excluded
4. Domestic gardens (total area about 3 hectares) in Pispala neighbourhood in 2014 (n=79)
5. The whole city of Tampere (127km²) finalized in 2010 based on grid cells of 500m x 500m

The last one produced a database of 210,000 observations of plant species (Ranta *et al.* 2012), coded by urban biotopes (34 biotope codes were used).

In addition, two unpublished studies were utilised, including thematic interviews with 11 allotment gardeners (Willman 2013) and 7 domestic gardeners (Ojanen 2016) in Pispala, supplemented by our own discussions with several gardeners during the fieldwork in 2014–2015.

In the analysis, comparisons were made between selected spatial entities by using species numbers, biotope codes, Sørensen similarity index (Sokal & Rohlf 1994), the number of rare species (meaning species with less than one percent frequency in the city area), and the classification of Finnish plant species according to their historical origin (natives, archaeophytes, neophytes; see Hämet-Ahti *et al.* 1998).

Results

The number of spontaneous plant species clearly increases from the scale of Pispala allotment garden and domestic gardens to the neighbourhood level and the whole city area (Table 1). The total species number of the domestic gardens was higher (211) than in the allotment area (139), considering the equal land areas. This is probably because of more diverse microhabitats and higher numbers of forest-favouring species (Table 3) in the domestic gardens. The most significant result in Table 1 is the high similarity (0.57) of the spontaneous flora between the allotment garden and the domestic gardens, and also between the allotment garden and the surrounding neighbourhood without private yards (0.62), compared to minor similarity with the whole city area (0.33). This suggests that the spontaneous flora maintained by the allotment and domestic gardens in Pispala is

not accidental, but there are socio-ecological interdependencies between them on the neighbourhood scale.

Areas	Species of spontaneous vascular plants	Shared species with the allotment (Sørensen similarity index)
Pispala allotment garden	139	—
Pispala domestic gardens	211	99 (0.57)
Pispala neighbourhood	324	121 (0.62)
The whole city area	669	133 (0.33)

Table 1: The Pispala allotment garden compared with areas of the surrounding urban landscape, including species of spontaneous vascular plants (139 species in the allotment), shared species with the allotment, and similarity index. Pispala neighbourhood excludes the allotment garden and domestic gardens.

The high capacity of maintaining archaeophytes distinguishes the allotment garden from the other spatial entities (Table 2). This is interesting, because archaeophytes are naturalized for a long time ago and nobody questions them as a valuable part of the Finnish landscape. Without doubt, many other naturalization processes were going on in the allotment and domestic gardens. Two crop species used for a long time had naturalized and strongly spread in the allotment area during recent decades: the borage (*Borago officinalis*) and the Jerusalem artichoke (*Helianthus tuberosus*). The domestic gardens include more natives than the allotment area (Table 2), which is not surprising because there are trees, shadow and sometimes small remnants of the original ridge habitat in the yards.

	Natives %	Archaeophytes %	Neophytes %	Total %
Pispala allotment garden	22	52	26	100
Pispala domestic gardens	40	32	28	100
Pispala neighbourhood	51	26	23	100
The whole city area	56	20	24	100

Table 2: Percentage of spontaneous vascular plant species in the Pispala allotment garden and in other scales of the surrounding urban landscape according to historical origin of species (Hämet-Ahti et al. 1998).

For reaching a more fine-grained comparison between the allotment and domestic gardens, the analysis was focused on ecological differences of the spontaneous plant species, based on local empirical evidence at the city scale (34 biotope codes, see Ranta *et al.* 2012). Most spontaneous species occurring in the allotment and domestic gardens find their favourite sites in the whole city area from road and street verges (Table 3). A closer examination shows that (1) these are mostly species with a wide ecological amplitude and able to utilise several other urban biotopes than only road and street verges; (2) these species are not only "common weeds", but very diverse groups of species belong to this group; (3) streets and other corridors are efficient in keeping plants moving across the urban landscape; for the species pool dynamics this means that the rate of movement may be much higher than is usually believed; (4) this probably means that high numbers of species are constantly available to be filtered by gardening practices, and therefore (5) urban gardening may be sensitive to internal and external changes, which may increase or decrease its capacity to maintain urban biodiversity, depending on the biodiversity agenda it assumes. Forest-favouring species and also garden species were more common in the domestic gardens than in the allotment garden (Table 3).

Urban biotopes	Percentage of spontaneous plant species that favour particular urban biotopes (tested in the city scale)			
	Pispala allotment garden	Pispala domestic gardens	Pispala neighbourhood	The whole city area
Urban wasteland	2,2	1,4	1,5	2,5
Road/street verge	78,5	68,8	56,5	39,6
Ditch/Shoreline	8,1	2,8	16,0	19,9
Public park	0,7	0,5	0,6	1,8
Garden	4,4	8,7	5,9	6,3
Original forest habitat	2,2	14,9	15,7	16,3
Other urban biotopes	3,9	2,9	3,8	13,6
	100	100	100	100

Table 3: Ecology of spontaneous vascular plant species found in the Pispala allotment garden and in other scales of the surrounding urban landscape. Primary urban biotopes for spontaneous plants species in Tampere were defined according to their most frequent occurrences in the city-wide data (34 biotope codes were originally used, here only seven combinations of them; see Ranta *et al.* 2012).

The final analysis uses illustrative examples of the spontaneous species that have occurrences in Pispala, but are rare elsewhere in Tampere (Table 4). These are species that reflect the old life-style and land use of the Pispala neighbourhood, and they are more typical in Finland in some old-fashioned coastal towns. These species favour unsealed soil which is nutrient-rich, warm and has high nitrogen content, but they also favour human disturbance. Although such species have diminished in Pispala because of gentrification, the fact that they can still be found in the allotment area and domestic gardens, indicates a long socio-ecological history and interaction between these sites. It seems that the allotment garden (and also domestic gardens) can serve as a bank of these species, and this is based on gardening activities that have continued in the area since the 1940s. These spontaneous species are not well known by the gardeners, but they survive as a side-effect of gardening.

Species	Occurrence		
	Allotment garden in Pispala	Domestic gardens in Pispala	Elsewhere in Tampere
Hedge-mustard <i>Sisymbrium officinale</i>	x	x	—
Good King Henry <i>Chenopodium bonus-henricus</i>	x	—	(x)
Lady's thumb <i>Persicaria maculosa</i>	x	—	(x)
Common hemp-nettle <i>Galeopsis tetrahit</i>	x	—	(x)
Flixweed <i>Descurainia sophia</i>	—	x	—
Dwarf nettle <i>Urtica urens</i>	x	x	(x)

Table 4: Examples of rare species (found in less than one percent of the grid cells in the whole city) in the allotment garden and domestic gardens in Pispala and elsewhere in the city. Occurrences: x = regular, (x) = incidental.

Discussion and conclusions

This research shows that gardening practices in urban allotment and domestic gardens complement each other in maintaining spontaneous vascular plant species, species numbers and rare species on the neighbourhood scale. These gardening activities can maintain much of the floristic diversity of the surrounding

urban landscape, including plant species that regularly exist in the city only in that neighbourhood. The positive influence of gardeners on urban biodiversity and ecosystem services was higher than expected.

The complementarity between allotment and domestic gardening is based on both similarities and differences. The shared biodiversity between allotment and domestic gardening (spontaneous; easily moving; specialized; and rare species) showed that the connection is not accidental, but is based on historically developed socio-ecological interdependencies between the allotment, domestic gardens and the neighbourhood. This historical continuance is dependent upon the high numbers of gardeners who contribute to this interaction in biodiversity maintenance. One source of differences can be found from the fact that gardening in the allotment primarily aims to crop cultivation in open circumstances, but domestic gardeners are more focused on ornamental species in more shady circumstances.

To conclude, first, the complementary capacity of allotment and domestic gardening to maintain urban biodiversity is strong on the neighbourhood scale, and therefore this capacity may have potential for local identity building in urban neighbourhoods. This was clear in the Pispala case. The neighbourhood already has a very strong identity, but gentrification gradually changes the area. Urban biodiversity maintained by the gardeners is a central part of the socio-cultural history which supports the neighbourhood's identity.

Second, both types of gardening are collective and private at the same time. The allotment gardeners participate in producing biodiversity in the whole area, even though their actual focus is on their own individual plot, which is private from the viewpoint of management and crop production. The domestic gardeners take care of their own property, but at the same time they produce urban commons – the biodiversity typical of the Pispala neighbourhood – and many ecosystem services that are available to other residents and visitors. This dynamic paradox between private and collective action blurs conventional boundaries and opens up linkages between the two types of urban

gardening, increasing their complementary power in the neighbourhood.

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Parallel Sessions 3

*** = full paper**

A3 Community gardens as spaces for knowledge, learning & action

Chairs: Bent Egberg Mikkelsen & Pernille Malberg Dyg

*** School gardens in Denmark – organization and effects of the Gardens for Bel-lies school garden program**

Author: Pernille Malberg Dyg, Metropolitan University College Copenhagen, Denmark

Seeding social capital? Community gardening and social capital

Authors: Søren Christensen, University College Zealand, Denmark / Tania Dræbel, University College Zealand, Denmark

*** Activity enhancing urban spaces – new green potentials for local action**

Author: Bent Egberg Mikkelsen, Aalborg University, Denmark

*** Agronomical and collective knowledge: comparative analysis of two urban gardens in Greece**

Authors: Vasiliki Giatsidou, Aristotle University of Thessaloniki, Greece / Maria Partalidou, Aristotle University of Thessaloniki, Greece

B3 Between bottom up and top-down: Urban gardens as laboratories for democratization in urban planning?

Chair: Mart Külvik

A new season for planning. Urban gardening as informal planning in Rome

Author: Chiara Certomà, Scuola Superiore Sant'Anna, Italy

*** Combining top-down and bottom-up gardens in Lisbon as an improved planning strategy**

Author: Maria Sousa, University Institute of Lisbon, Portugal

*** Urban gardening and democratic planning: critical perspectives on examples from Greece and Germany**

Authors: Sofia Nikolaidou, Panteion University of Social and Political Sciences, Greece / Martin Sondermann, Leibniz University, Germany

*** The emergence of urban agriculture as part of new urban governance constellation: allotments and farm gardens in Israeli cities**

Authors: Efrat Eizenberg, Technion, Israel / Tali Alon-Mozes, Technion, Israel

C3 Motivations for environmental behaviour in urban gardens

Chair: Johan Barstad

Motivations and barriers for adopting ecological gardening practices in Swiss urban gardens

Authors: Robert Home, Research Institute of Organic Agriculture FiBL, Switzerland / Stéphanie Lichtsteiner, Research Institute of Organic Agriculture FiBL, Switzerland

Urban gardening and just freedoms: Case studies from the UK and Ireland

Author: Alma Clavin, University of Northampton, United Kingdom

*** Allotment gardens in Warsaw – studies on ways of plot use & gardening practices**

Authors: Monika Joanna Latkowska, Warsaw University of Life Sciences, Poland / Monica Pauline Stępień, Warsaw University of Life Sciences, Poland / Izabela Kulińska, Warsaw University of Life Sciences, Poland

The garden is what one makes of it. Researching the environmental behaviour of urban allotment gardeners and its impact

Authors: Annette Voigt, Alpen-Adria-University Klagenfurt, Austria / Andrew Hursthouse, University West of Scotland, United Kingdom

D3 Models and scenarios for scaling up urban gardening; reasons for success or failure

Chair: Simon Bell

Critically exploring macro urban agriculture. The viability of urban farming

Authors: Michael Hardman, University of Salford, United Kingdom / Simon Hutchinson, University of Salford, United Kingdom / Paul Longshaw, Salford City Council, United Kingdom / Graeme Sherriff, University of Salford, UK

*** The challenges of Warsaw allotment gardens development**

Authors: Hanna Szumilas, Warsaw University of Life Sciences, Poland/ Renata Giedych, Warsaw University of Life Sciences, Poland

*** Urban gardens in Switzerland: current challenges and visions for the future**

Authors: Mathias Hofmann, Swiss Federal Institute for Forest, Snow and Landscape Research, Switzerland/ Simone Tappert & Tanja Klöti, University of Applied Sciences Northwestern Switzerland, Switzerland / Rebekka Weidmann, ETH Zurich, Switzerland/ Stéphanie Lichtsteiner & Robert Home, Research Institute of Organic Agriculture, Switzerland

*** Urban wastelands and their potential to deliver CICES community services**

Authors: Beata J. Gawryszewska, Anna Wilczyńska & Maciej Łepkowski, all: Warsaw University of Life Sciences, Poland

**A3 - Community gardens as spaces for knowledge,
learning & action**

School gardens in Denmark – organization and effects of the Gardens for Bellies school garden program

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Keywords: School Gardens, Community Gardening, Food Literacy, Connectedness to Nature, Community Involvement

Abstract

Studies show that school gardening helps children enhance their understanding of science and promotes their interaction with the environment gaining historical, cultural and ecological understandings (Dyg 2014; Chenhall 2010; Green 2013; Johnson 2012; Sloan 2013; McCarty 2010; Hess & Trexler 2011). School gardens are sprouting in rural and urban areas across Denmark. This case study research sheds new light on various school garden models under the Gardens for Bellies program in Denmark, including school-, community-based and central school gardens. This study aims to document the organization of school gardens, which is not studied in international research. It also analyses immediate effects according to pupils and other stakeholders. The research is based on five explorative case studies, involving observations and interviews. The findings show that school gardens open up opportunities for involving a range of new stakeholders. Garden-based learning has a number of positive immediate effects on pupils' food knowledge, cooking skills, and well-being.

Introduction

Studies and popular concern in the US, Denmark and elsewhere highlight that children and youth in general lack connectedness to nature and food literacy, including an understanding of where food comes from (Chenhall 2010; Dyg 2014; Hess & Texler 2011). As a solution to this challenge, school gardening is shown to

connect children to nature and enhance their understanding of and motivation for science (McCarty 2010). Pupils enjoy the combination of being outside, doing practical activities while learning theory (Passy, R., 2014). Studies find that school garden pedagogy promotes pupils' interaction with their environment, where they gain historical, cultural, and ecological understandings (Dyg 2014; Green 2013; Johnson 2012; Sloan 2013).

School gardens have existed in Denmark since the late 1800s. In 1928, they were common with 16 in Copenhagen alone and about 200 across Denmark: both central and school-based gardens. From 1950s, most shut down due to e.g. demands for land. (Herrik 2013) Since 2010, school gardens are spreading again across Denmark. There is no documentation of the exact number. Since 2014, 20 small and large-scale school gardens have started under the 'Haver til Maver' school garden program (s'Gardens for Bellies'). It is a gastronomic school garden concept established in 2006 at a farm north of Copenhagen. It differs from other school gardens with its focus on gastronomy, food growing and nature education. Other gardens, e.g. Copenhagen School Garden, have a stronger focus on nature education and cultivation. Coinciding with a school reform in Denmark and a general interest in health promotion, sustainability, community and social inclusion, the interest in school gardening has exploded. The school reform in 2014 involved longer schooldays, more science and demands for alternative teaching methods. Municipal authorities, politicians, schools, parents and private initiators, like farmers, chefs, teachers and others have started up school gardens in many locations around Denmark. However, a comprehensive mapping of all school gardens in Denmark has not been conducted so far. Gardens for Bellies received private funding to establish 20 gardens and for evaluation research: to study ways of organizing school gardens and the effects on children's food knowledge, taste education, connectedness to nature, academic learning, wellbeing and social competencies. Based on this, the paper will investigate the following questions:

1. How are school gardens emerging in Denmark under the Gardens for Bellies program organized?
2. What are the immediate effects on learning of the various school garden models according to the participants?

Methodology

The research is based on explorative case studies involving interviews with: decision-makers (i.e. heads of schools, city council members, heads of municipal departments etc.) (n = 9), garden educators (i.e. staff teaching in the school gardens) (n = 8), teachers (from the schools) (n = 16), schoolchildren (n = 30) as well as observations of garden activities. Interview guides included questions about the process and organization of the school garden, pedagogy and self-reported immediate effects related to food knowledge, cooking skills, tasting, nature understanding, academic learning, well-being and social interactions. All interviews with children were conducted 2 months after completion of the garden program.

Cases were selected based on these criteria:

- Geographical diversification – gardens in urban and rural areas
- Dispersion of the physical location: school gardens located on farms, in schoolyards, in community settings and in castles/manors.
- Differences in stakeholders and organization of the gardens, i.e. initiated and organized by either private farmers, the municipality, teachers/school boards and others.

Five maximum variation cases were selected, which met the criteria:

Gentofte: Centrally located urban garden in a castle park initiated and organized by the Department of Parks and Castles and the municipality.

Gribskov: Centrally located garden on a rural organic farm initiated and run by a farmer and chef.

Aarhus: Three centrally located gardens at a nature centre, an agricultural school and at a playground in Denmark's second largest city, initiated and run by the municipality.

Assens: Ten school gardens each located near a school in a rural area initiated by a garden expert and run by school boards/school heads and teachers.

Roskilde: Garden located on the school grounds, initiated and run by the teachers, pupils and school management in a medium-sized town.

Selecting maximum variation cases can reveal more information about various circumstances and outcomes and it is possible to generalize from multiple case studies (Flyvbjerg 2004), which is the reason for selecting the five cases.

In November 2015, an online questionnaire was sent to parents of children participating in the gardens in 2014-2015 with questions about their child's learning and well-being after participating in the school garden. It was distributed through teachers to 136 parents; 96 responded. Due to limited time and responses from teachers, only parents in Aarhus and Gribskov were surveyed. No distinction was made between the time of participation (2014 and 2015). Thus, the longer term effects were not analysed from the questionnaire, which might have provided interesting insight.

Findings

The original Gardens for Bellies model is the central school garden located on a farm. Most new Gardens for Bellies gardens are central school gardens located on an unused piece of land in the city or on a farm with gardening and food experts teaching (farmers, biologists, horticulturalists, chefs, nature guides or other professionals), some with a background in teaching and pedagogy. This is the case in 10 of the municipalities, who have started school garden projects: in some municipalities there are more than one school garden for which reason the total number of gardens is 20. Seven of the ten municipalities have one or more central gardens. Only three municipalities have school- or community based gardens. Two were included, as the third one had

not started yet. The school- and community-based gardens are re-emerging types of school gardens. Findings about the five cases will be presented in the following pages.

The central school gardens

The main features of centrally located school gardens cases are summarized in Table 1 and will be elaborated in relation to the three cases.

Name	Geographical location	Initiators
Gentofte	Urban, castle garden	Municipality, Department of Parks and Castles
Gribskov	Rural, private farm	Private farmer and chef
Aarhus	Urban, nature centre, agricultural school and playground	Municipality

Table 1: main features of centrally located school gardens

The Gribskov case – central farm-based school garden

This school garden is located on an organic farm in a rural area bringing children from the rural area to the farm. Each season approximately 750 children visit the garden as part of an eight visit program. They grow vegetables, have access to a haystack playground, cook in the outdoor kitchen, learn about beekeeping, construct an insect hotel, work with compost and learn about plants, insects and ecological cycles around the farm. The teaching is done by a chef, nature guide, a horticulturalist and the owner teaches animal husbandry. The program is financed by the municipality with the aim to promote health and physical activity in schools and kindergartens. The aim is for the program to become a permanent program for the municipality's pupils.

The Gentofte – central castle-based school gardens

This garden is placed in a castle park in an urban area near Copenhagen. It is part of the municipality's and the Park's strategy to continue an old tradition of vegetable growing in the park combined with new initiatives of strengthening schoolchildren's personal, social and academic development and promoting healthy living. The municipality's objective is for

the school garden to create synergy and connections between different age groups by including kindergarten children, schoolchildren and children with special needs in the garden activities. There are plans to extend this to refugee children for them to learn about Denmark, develop language skills and connections in a stress-free environment. In addition to food growing, the garden has an outdoor kitchen and a wooded area for playing. Garden experts run all the educational activities. The garden started in 2015 with 120 children in the initial year. The program is financed by the municipality with in-kind contributions from the Park.

The Aarhus case – central city school gardens

Aarhus city has three central school gardens. Due to the city's large size, the municipality is running three school gardens across the city: one at a nature center with animals and a natural fence nearby, the other at an agricultural school and the third at playground with an old farmhouse and animals. The daily activities, practical matters and planning of the educational content of the program are coordinated centrally by the project staff and garden educators. Although the eight visits are coordinated and run in parallel in the three locations, there are some unique activities in each location, such as beekeeping, chicken rearing, recycling and composting. The municipality's aim is to support the Danish education reform, including the goal of strengthening natural sciences. The municipality finances the program combined with each class paying a fee of 1,345 Euro. In 2015, 600 schoolchildren participated.

Findings show that the professional garden educators have tremendous passion and expert knowledge to teach about food, nature and cooking to children. However, this model is also costly and challenging for teachers to integrate the garden experience back in the school.

The school- and community-based school gardens

The main features of the school- and community-based cases are summarized in Table 2 followed by further analysis:

Name	Geographical location	Initiators
Assens	Rural, located on vacant spaces near schools	Local garden expert and school boards/heads and teachers
Roskilde	Rural, located on school grounds	Teacher and school board

Table 2: main features school- and community based cases

The Assens case – community-based school gardens in a rural municipality

The ten school gardens in Assens are examples of community-based gardens across the rural municipality. Rural children learn about food growing and different citizens, including teachers, garden enthusiasts, pupils, scouts, elderly and other active citizens collaborate. Teachers teach in the gardens, receiving expert advice on gardening and ecology from the project initiator; a gardening enthusiast. Subjects like science, languages and home economics are taught in the gardens and produce is brought back to schools and used at the school. Only one of the gardens received start-up funds from Gardens for Bellies. Since 2014, another nine gardens were established near schools: in a private garden, on school grounds, communal areas and playgrounds. Teachers have established a municipal network to exchange ideas, resources and practical advice. This model is useful when resources are scarce: it is an inexpensive model and a good way of strengthening teachers' ownership. However, it relies on the coordinator's willingness to volunteer and support from school management. In 2015, more than 600 schoolchildren participated.

The Baunehøjsskole, Roskilde case – the school-based garden

At Baunehøjsskole in a rural town, a 700m² garden with raised beds and a chicken coop was built by pupils in collaboration with students from a local vocational center, teaching 7th graders about carpentry, measurement and other vocational skills. The teacher, who had the school garden idea, emphasizes:

"It has been important for us that the pupils were part of it from the beginning to ensure that they feel ownership for the garden."

Pupils are also assigned as 'chicken ambassadors' responsible for taking care of the school's chickens. The school's aim is to promote healthy eating and enhance children's understanding of the seed-to-plate process. The garden has a greenhouse, insect hotel, beekeeping and compost connected to the school canteen and kitchen, where vegetables are used and waste is returned to the compost. Teachers teach home economics, languages, math, sports, science, arts and design in the garden and it is a place for relaxation and reflection. A local beekeeper is involved and teachers want to involve a local farmer, elderly or others that can help maintain the garden and expand the learning. The garden is financed by the school and additional funding from the municipality. There are 550 pupils at the school: not all use the garden yet.

Agendas in school gardens

The findings show that the school gardens are linked to multiple political agendas in the different municipalities, which decision-makers here see as important underlying objectives for the school gardens. The municipal agendas for each case are summarized here:

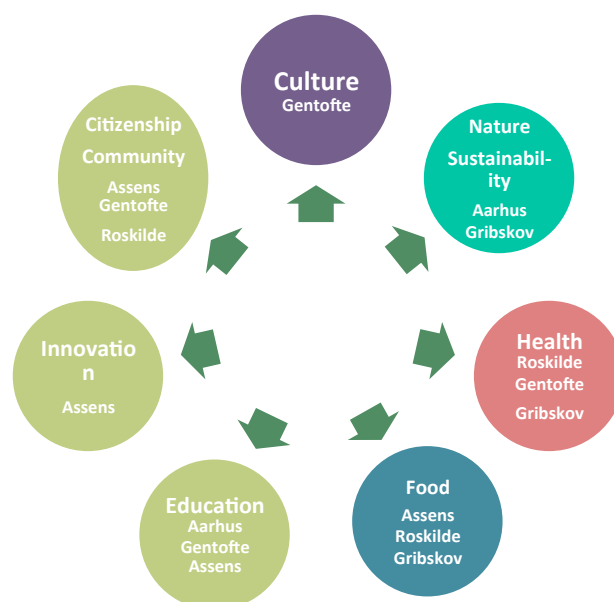


Figure 1: School gardens agendas as stated by decision-makers in the five cases

School gardens are viewed by the different decision-makers as a strategy to promote health, food literacy, connect to nature, promote sustainable development goals or contribute to change and new effective learning methods. New agendas, which were not part of the initial Gardens for Bellies project, are about fostering community action, connectedness and citizenship, innovation and new collaboration amongst several stakeholders. This is the case with the Assens, Roskilde and Gentofte school gardens, where new stakeholders are part of the school gardens, including vocational school students, scouts, elderly and refugees. The school- and community-based gardens draw in different new stakeholders to the gardens. It brings in experts and builds synergies with the local community for practical reasons and opens the gardens to other community benefits. In the central school gardens, passionate and idealistic experts want to build closer links to schools and contribute to reforming education, fostering food literacy and connectedness to nature.

Immediate effects of the various school garden models

Project initiators and garden educators all note a lack of understanding of nature, the cultivation process and vegetables as problems for rural and urban children alike. They highlight that garden projects enhance pupils' understanding, motivation and respect for the cultivation process and knowledge about vegetables. In observations and interviews with pupils, they wish to learn about more new and unknown vegetable varieties. They show clear signs of ownership of their garden and vegetables: they give their vegetables names, play with them as dolls and are proud to show off their harvest. According to the pupils themselves, being in the open space and interacting with their peers in a different way, increases their well-being and eagerness to learn. The survey amongst parents supports this finding. Interactions with peers, teachers and garden educators are filled with successful experiences, recognition and new ways socializing.

Central gardens

In central gardens, children have the possibility to reconnect with nature on a farm or in an urban green space. Garden educators work with taste development in different ways: children taste new vegetables, flowers, wild berries and plants. It increases their sensory learning and they develop courage to taste the unknown. During interviews and observations, children do not talk about or focus on pickiness: They say that they trust the food, they have cultivated themselves. Tasting new foods becomes natural to them. The same is the case for school- or community-based gardens. Yet, limited access to nature here makes trying wild plants less feasible. Chefs and nature guides in central gardens have skills and authenticity to create excitement amongst children around trying wild foods. Children perceive access to nature and beekeeping as exciting. It increases their understanding of nature and their own role in it: they show trust and familiarity with bees, plants and manure. This is more easily fostered in school gardens with access to wild plants, insects, and nature guides and biologists, who have knowledge and passion to teach about nature. Garden educators characterize their pedagogy as appreciative, emphasizing children's successes.

School- and community-based gardens

According to teachers, there is a stronger synergy between the garden and classroom here than in the central ones. Garden educators in the central gardens mention being challenged by the fact that many teachers do not know how to integrate the garden back in the classroom and leave most of the teaching up to the garden educators. According to teachers in the school- and community-based gardens, garden-based learning holds numerous opportunities for working with learning goals in practice in subjects like science, home economics, languages, math, arts and other subjects. It facilitates experiential learning. They see these opportunities more clearly than teachers, who leave the teaching up to the garden educators. Teachers in the school- and community-based gardens feel a strong ownership of the gardens and learning. A teacher explains:

"It's a wonderful 'classroom' out here. You can use it for any subject. So I don't think it's hard to use the garden."

Conclusion

Findings show that the spread of the Gardens for Bellies program opens new ways of organizing school gardens. Yet, school- and community based are garden models, which are widespread in the US and elsewhere and used to be found in Denmark as well. These gardens foster opportunities for involving teachers and numerous new stakeholders in rural and urban settings. In both garden models, there are plans to broaden the participants to scouts, elderly and refugees, to create stronger connections between schools, gardens and surrounding communities. According to children and their parents, the immediate effects of their participation include increased motivation for learning academically and improved food literacy, including cultivation- and cooking skills and willingness to taste. So far, it has been easier to link the garden learning to subjects in school- and community-based gardens due to stronger ownership by teachers. The central gardens on the other hand have the benefit of having inspiring and authentic 'experts' to teach, which pupils enjoy. Finally, the gardens in general improve children's well-being, social interactions and give them a stronger feeling of connectedness with their environment and food. Long-term effects were not studied, neither were community benefits and intergenerational- and intercultural learning, both of which would be relevant topics for future research.

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Activity Enhancing Urban Spaces – new green potentials for local action

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Keywords: School Gardens, Community Gardens, Stakeholder Approach, Urban Place-making

Introduction

Urban agriculture and gardening strategies are increasing in popularity in metropolitan areas as a mean of developing smarter and more sustainable cities. For citizens, gardening represents a way to reconnect with nature and gain more control over the local food system – a way to increase food sovereignty, food justice and food citizenship (Wekerle 2004). It also offers an opportunity to increase social cohesion in the urban neighbourhoods (Kweon *et al.* 1998). For young people in educational settings there are reports that hands-on school gardening might positively affect food intake. For instance, Ratcliffe *et al.* (2010) found an increased consumption of vegetables in schools that had gardens compared to those that did not. Also a number of studies suggest that there is a link between hands-on food activities and food literacy among young people. However, the literature that looks at how different social groups and stakeholders in the local community work together to establish and maintain gardening action is more limited. Evidence suggests that development of successful gardening initiatives in local communities is a challenging process that seems to be dependent on the resources, commitment and mobilization of multiple stakeholders (de Zeeuw & Dubbeling 2015).

Aim

The aim of this paper is to explore the role of local stakeholders and the contribution they can make in the development of ac-

tivity enhancing urban spaces. This paper use community and educational gardening program of Ellebjerg neighbourhood to study this and seeks to answer the following questions: How can seniors and children work together to build and develop the garden? What are the preferences and the needs of the two age groups, and how can the interaction between the two groups get established and developed? How can we understand how stakeholders in the local community engage, interact and cooperate in the development of the garden.

Conceptual foundation

The study builds on stakeholder theory (Mitchell *et al.* 1997) arguing that for undertakings in open social systems to be successful, a multitude of stakeholders' needs to engage and for such engagement to take place, a detailed insight into measures of power, legitimacy and urgency among these stakeholders is needed. We further apply the idea of action research and knowledge triangles in order to develop the case and to be able apply the resources of researchers and students from Aalborg University.

We build on the concept of service learning defined by Bandy (2016) as a "teaching and learning strategy that integrates meaningful community service with instruction and reflection to enrich the learning experience, teach civic responsibility, and strengthen communities" (*ibid.*). As opposed to internships and volunteering Bandy's concept of service learning uses "structured, critical inquiry" to bring about change. This facilitates establishing partnerships between the university and the communities that are mutually beneficial for both parties. The service learning approach goes hand in hand with Problem Based Learning (Wood 2003) applied at the university in the teaching about food. Problem Based Learning takes real-life problem cases as their point of departure and enables students to plan and carry out independent and self-directed research and to apply the particular theories and methodologies needed to solve the specific problems of the "problem-case".

The paper further builds on the action-research tradition (Lewin 1947). By using this approach, researchers and students engage

in a dual stranded process in which research and collection of empirical data take place at the same time as researchers and students engage in concrete actions aiming at develop the case.

Methods

The Ellebjerg case is part of the Aalborg University Campus' Community program and its civic university strategy. Due to its proximity of the university campus, the case function as a Problem Based Learning case in which students at the graduate study program Integrated Food Studies can carry out assignments in relation to food, greening and urban spaces. At the same time, it functions as a research case. Since many students have a serious interest in studying urban gardening and agriculture, the case functions as an example for action research and a knowledge triangle demonstration case.

The gardening action aims to engage different age groups from the local community in learning about gardening and growing of plant foods and as such it is aiming at developing an intergenerational link. The gardening action evolve around a green space with a small lake affiliated the Ellebjerg public elementary school. The green space serves two purposes: an educational one for the students at the school and a community one for a group of retired people and other citizens in the neighbourhood. The school shares the green space with the neighboring local senior action group that uses the neighbourhood cottage (Kvartershytten) as a basecamp for their activities. In this way, the green space although formally owned by the school acts as a community garden.

The current study has followed - and most importantly interacted - with the case over a 2 year period. By following and observing the case, we collect empirical data about the progress and by interacting we participate as action researchers in order to make the action happen. Methodologically, we study the case using individual as well as group interviews with school teachers, school management, the urban renewal initiative, an action group for the elderly local community active, Aalborg University graduate food students and researchers and an external consultant from the Ministry of Housing, Rural and Urban Affairs. The vi-

sion of the garden is to create – *to place make* – an exemplary garden, which at the same time can function as a research object for the partners in the knowledge triangle. The initial steps in the process have been reported in Mikkelsen and Jørgensen (2015). As part of building a common stakeholder platform and mutual understanding between actors, a workshop with all the actors of the garden were arranged. The aim was to build a mutual strategy and to discuss how the formal project management of the development and implementation of the garden could be operationalized in the future.

For the data collection and empirical part of the study, individual and focus group interviews with seniors, kids and teachers were used to gain insight into the different users of the shared garden. The purpose of the interviews was to represent the daily use of the garden and the relationship between kids and seniors that use the same area. The data collection was aiming at disclosing the motivation and attitudes of three important stakeholder groups. The student interviews were carried out with six young people from the 7th, 8th and 9th grade and sampled via the student council. For the interviews with the elderly, we enrolled seven women and one man from the *Kvartershytten* cottage – the local basecamp for the senior action group. For the school actors, focus group interviews were carried out with three teachers from Ellebjerg School.

Findings

The insights gained from the interviews indicate that the different stakeholders have rather different sets of attitudes and aspirations when it comes to working together on developing the green space to a valuable local resource. Interviews suggest that for action researcher and community activists it is important to take into account the power/resource as well as urgency and legitimacy aspects of the multiple stakeholders. The interviews illustrate some of the tensions that exist between stakeholders and that needs to be aligned and dealt with if a garden case as the one in Ellebjerg should be successfully developed

For the seniors, the gardening action evolving around the senior action group offers daily activities and a communal eating twice a week with around 25 seniors participating each time. Gardening of the communal green space is one of the favorite activities according to interviewees. As seniors Martha and Klara puts it:

"A lot of things happen for the elderly. I must say that I am very impressed with all the activities that are arranged. I do not join all of them but if people can walk on their own they have plenty of things to do."

"One has never had as much to do as when one retires."

However, engaging in cross generational activities was not considered as a straight forward option. One senior phrased the concern as follows:

"Sometimes we as seniors feel it is challenging to have kids running around all the time."

In the initial state, the seniors did not have a lot to do with the schoolkids and they seemed to be somewhat hesitating to engage in more interaction. As phrased by Klara:

"The kids can sometimes run around and play, but otherwise no. Sometimes they borrow our barbecue but we do not see them that much."

On the question of whether they had ambitions of developing their relations with the young people at school, most of the seniors were skeptical. As Hanne – one of the senior activists – put it

"I don't think that we have the surplus energy to do that."

The reservations seem to be due a fear of losing too much influence in the gardening practices. Or as Martha expressed it:

"Suddenly they think that you want to do it all the time and then you risk committing yourself too much."

In addition, the people at the activity house expressed the view that the teachers did not really care about the activities in the senior part of the gardening. Joan, one of the activity employees, and Gerta, one of the seniors, referred to an incident

where one of them went to a street party and were by coincidence seated next to a teacher from the school that had said:

"Oh, you are one of the people from the house at the garden! And she continued "Tell me what are you actually doing?" The teacher didn't know anything about us!"

For the students, the interviews revealed that none of the kids had a garden at home, so the fact that they were going to work in a garden was in general viewed as being a very exciting opportunity. At the time of the interviews, students were not allowed to use the garden in the breaks and the gate from the school to the garden was kept locked as a default. The students felt this as being very unfair to them and did not feel that they had anything to do with "the seniors over there". As it was phrased by the student Mads:

"Interaction? No, not at all. We are not allowed over there!"

As part of the garden, the students reported that there is a small overgrown area with benches close to the garden, which according to them are never used. They found that the benches were rotten and broken, and that the smells of rotten apples were unpleasant. They also reported that the garden – despite its obvious potentials – was barely used in classes and subjects.

"Rare", "Very rare! Last year we only went there once!"

Some of the students suggested that the garden could be a place specially reserved for the older students – the 7-9th grade students – a place without the traditional supervision of a teacher on playground watch. They would love to have more activities as for instance campfire evenings in which also food, cooking and eating could be included

For the three teachers of natural sciences subjects that gave interviews, it became clear that they primarily used the garden ad hoc in their teaching when they felt it made sense in relation to the study program. They did not use it on a permanent basis due to the logistical and planning aspects were perceived as challenging. They pointed to three important points that were perceived as constraints to further development of the garden:

The question of allocation of gardening hours; the question of student safety issues needs to be handled especially since the garden includes a small lake; the question of organizing the garden according to the need for maintenance, tools and sign-posting and organized with signs. As Lars - one of the teachers - expressed:

"When you bring the kids there to show them an oregano plant, you need to use at least an hour to find it yourself."

Discussion

The insights from the Ellebjerg program so far show that despite the fact that a broad range of local community stakeholders support the idea of a community garden that can accommodate the dreams and ambitions of the different types of users, there is a number of constraints and obstacles that need to be dealt with and overcome in order for the case to further develop into a best practice. Problems include a lack of initiative from the daily users of the garden to engage in the necessary interplay and development. Furthermore, the interviews revealed that there is a lack of communication between the involved institutions. It seems that opinion leaders, local activists, the academic partners and the municipality are some of the actors that have the necessary muscles and resources to facilitate the necessary actions.

Insights from the interviews suggest that communication and relations management between the patchworks of actors might help create mutual trust and commitment. It means that seniors, teachers, school management, municipal workers, children, university students and researchers all have important roles to play. This is especially the case for the actors that have the resources available to take the lead and show initiative. The case shows that the power, legitimacy and urgency typology provide a convenient framework for understanding the engagement of different stakeholders.

The development process in particular underlines that there is a need to discuss issues of formal ownership of the soil and land that is to be included in community garden program as the one of

Ellebjerg. There is also a need to build a mutual strategy and discuss how formal project management can be operationalized in the future. The case also shows that it is possible to create citizen and community engagement through the addition of university resources such as practice-based learning and through knowledge transfer opportunities. Here use of participatory and visually assisted methods has proven to be useful (Mikkelsen 2016). The problem based learning approach has shown to be beneficial to both students' learning as well as to the local community. It underlines that higher education and science has an important role to play in such initiatives under conceptual umbrellas such as action research, scientific social responsibility and civic university.

It can be concluded that lack of mutual understanding of the needs of different social groups, intergenerational differences, lack of agreement on the proper balance between bottom up and top down leadership were some of the impediments to successful garden development. Also disagreement on formal ownership and access rights to the garden as well as resource constraints were found to be hindrances to proper development of the case. The experiences from the program show that creation of a multi stakeholder garden is a lengthy and time consuming process that requires establishment of good relations between the partner involved and the committed effort for a long range of stakeholders in the community. It also shows that the contribution from the actors of the knowledge triangle can make a positive contribution and that it at the same time can contribute to a relevant and meaningful Problem Based Learning for graduate students. The participation in such activities at the same time is a demonstration of the potentials of service learning where soon-to-graduate students at higher education engage in action research and co-creational based types of activities that is beneficial to local communities (Bandy 2016).



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Agronomical and collective knowledge: comparative analysis of two urban gardens in Greece

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Keywords: Communities of Practice (CoP), Collective Learning, Greece, Knowledge

Abstract

Urban gardens in Greece are not only about food and coping with economic hardship. Gardeners gain also a sense of accomplishment and belonging within a community created. This paper goes on a step further to research the intangible benefits of urban gardens and especially the creation and diffusion of agronomical and collective knowledge. A grassroots community garden and a municipal allotment garden in the city of Thessaloniki in Greece were researched. We used participant observation from January 2015 to February 2016 and a structured questionnaire to 131 gardeners. The conceptual framework of Communities of Practice (Bendt *et al.* 2013) was useful in explaining the collective and learning dimensions in the gardens. According to our results, in the first garden people share the management of the commons and develop collective skills apart from agronomical ones. It is in this garden that CoP are created based on shared identity, commitment and common practices on solving problems. The challenge now lies on the cohesion of the community between old and new members and the level of their involvement in managing the commons. In the second garden, embedded in the public strategy to tackle poverty, no CoP was established. Gardeners depend on the agronomical support provided by the municipality and learning is done individually referring only to agronomical knowledge. They see the garden as their personal shelter amidst

the crisis and a means to have access to fresh-affordable food. The critical issue is the role of the municipality and the goals they will set for the garden in the future. What can be derived from both cases is that urban gardens in Greece have manifold benefits and may also serve as a tool for agronomical and collective learning but only in the case that communities embedded in trust and reciprocity are created.

Introduction and theoretical background

Urban gardens in Greece are developing since 2009 either as bottom-up civic initiatives claiming public space, or as top down public policy action to tackle economic deprivation through food provisioning. There are a handful of gardens within the guerilla gardening paradigm (Moran 2014) but the prevailing type of urban gardens is that of a municipal allotment garden in which vulnerable groups of urban dwellers (especially unemployed) grow their own vegetables on public land under the supervision and support of public servants, agronomists and social workers. Nevertheless, urban gardening in Greece is not only about food and coping with economic hardship; as one might expect especially considering the current economic crisis. Recent research (Partalidou & Anthopoulou 2016) argues that gardeners gain apart from economic benefits, a sense of self-respect, accomplishment, educational benefits and a sense of belonging within a community created. In fact, within the gardens multiple places are created amongst which places of community and knowledge seem quite important.

Sharing information about growing methods, putting them into practice through the physical activity of working in the garden during the season, and taking communal responsibility for the care and use of common tools and public area are three ways community gardening structures the social acquisition of natural human capital among community members (Macias 2008). In regards to agronomical knowledge Voigt and Leitão (2016) note for the case of Berne in Switzerland that people often grow up without learning any basic gardening skills and would benefit greatly from expert gardening knowledge and gardening educational

courses tailored to their interests and level of expertise. Towards this direction Mars and Ball (2016) also note that adults develop a level of agricultural literacy through informal knowledge exchanges that occur in settings such as community gardens, community supported agriculture etc. In Greece people still have strong links with the rural, either by having a small piece of land in their village of origin or by having someone in the extended family involved in agriculture (Anthopoulou *et al.* 2013). Therefore, the level of expertise in gardening skills amongst urban dwellers is quite common. However, little empirical evidence exists that confirms this argument especially when it comes to contemporary urban gardens and dwellers. Additionally one of our research questions, apart from the profile of the urban gardener (especially in terms of demographics and motives), was if gardeners have access to agronomical knowledge and how is this knowledge diffused. Another critical question posed by this research was if collective skills are developed as an outcome of social interaction and whether collective learning takes place in the gardens.

To answer our aforementioned questions we followed the conceptual framework of Communities of Practice (Bendt *et al.* 2013) as a suitable concept to examine the exchange of ideas, knowledge and needs, enhancing cooperation and innovation between the members of a community. According to Bailey (2014) Communities of Practice are "groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis". Looking into urban agriculture from this theoretical concept we hope to gain insight on the sustainability of the gardens in Greece and see why some gardens thrive and some others don't. Our hypothesis is that urban gardens act as CoP within which knowledge is created and diffused, both agronomical and collective one. In other words the aim of this paper is to highlight the implications of the interactions and diffusion of knowledge, the building of social capital and the cohesion of the community through a comparative analysis of two urban gardens in our case study.

Methodology

The first step was to collect data on all urban gardens in the region of Thessaloniki; an urban centre in the northern parts of the city with a total of 790,824 inhabitants (2011). Through web search and personal contacts with all municipal offices and other local organizations we elaborated on a map of all the gardens in the region presenting basic figures (year of establishment, location, number of gardeners, type of garden etc). As we can see (Fig. 1) there are ten gardens in the city with different profiles and motivations out of which we selected two case studies: one is representing a public initiative (top down) and the second one is representing a civic initiative (bottom-up) of urban gardening. The main characteristics of the two case study gardens are presented in Table 1.

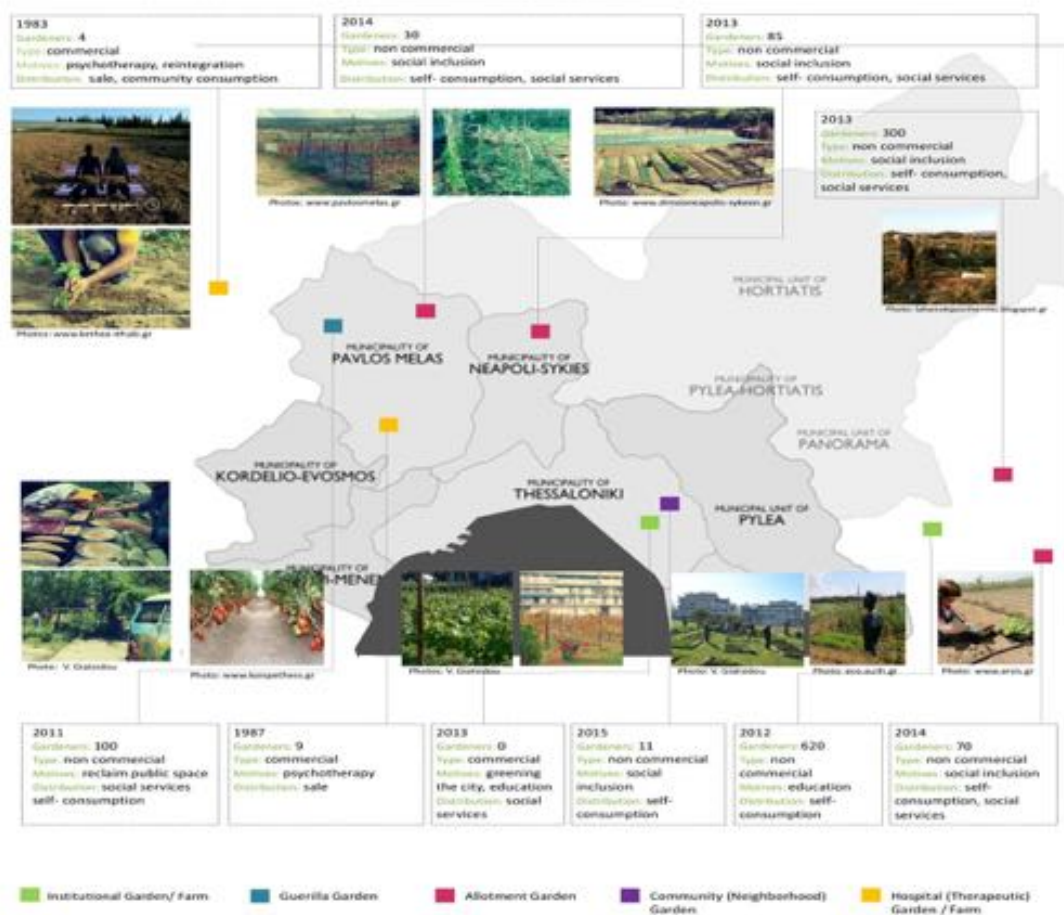


Figure 1: Urban gardening initiatives in the Region of Thessaloniki, Greece which formed the basis of the case studies selection.

	Municipal garden	Community garden
Year of establishment	2013	2011
Number of Gardeners	85	100
Total area	0.5 ha	1 ha
Strategy /aim	Tackle poverty and enhance social inclusion of vulnerable groups	Claim the right to fresh, affordable food and reclaim public space
Configuration of space	3 different parcels 2 or 5 Km far away from each other	7 different smaller parcels where the most distant ones are up to 200 m
Ownership of the land	Municipal	An abandoned military encampment (Public –State)
Distribution of food produce	Self- consumption and voluntary contribution to the social grocery	

Table 1: Description of the two case studies

Using on site participant observation from January 2015 to February 2016, in depth interviews with key-stakeholders and a well-structured questionnaire to 131 gardeners we collected data from both gardens in order to elaborate on motives for engaging in the garden, personal characteristics of gardeners but above all to answer to our basic research questions that remain unanswered for the Greek case: How do gardeners choose what to grow, where do they find the seeds, how much time they spend in the garden, what tools do they use, do they feel in need of technical support, how do they learn how to grow, what technical or other collective problems do they face and how do they solve them? Do they have social contacts with co-gardeners in and outside the garden? Hence the main objective of the research was to shed light to the creation and diffusion of agronomical and collective knowledge.

Basic statistical descriptive analysis (SPSS version 22) was used for the profiling and motivations of the gardeners whereas personal notes from the observation were recorded, transcribed and analyzed using discourse analysis and a grounded theory approach (Farges 2015).

Results

Profile and motivations of gardeners

The results of the frequency analysis of the quantitative data obtained from the 131 questionnaires from the two gardens are summarized in Table 2. The majority is married male gardeners in their early 50ies and 28% hold a University degree. In regards to the motives the need to "grow my own food" (fresh-organic) motivated a 27% of the gardeners, "economic hardship" due to current economic crisis motivated a great percentage of 37%, whereas "re-connection with nature" 26%.

Sex	Male	62%
Origin	Thessaloniki	57%
	Other parts of the country	28%
	Abroad	15%
Marital status	Married	67%
Gardening activity done with	Family	47%
	Friends	13%
	Individually	40%
Motives	Grow my own food	27%
	Economic hardship	37%
	Re-connection to nature	26%
	Socializing (get out of my home, make friends etc)	4%
	Several	7%

Table 2: Profile of the gardeners in the two case study gardens

Agronomical knowledge and gardening skills

Results of the descriptive statistics from the questionnaires showed that 63% of the gardeners have previous experience in gardening, mainly from their home village garden. Interesting enough is the fact that 55% of the urban gardeners have also a farmer next in kin and the majority (78%) has followed short-term seminars. In the case of the municipality it was at the beginning of the season or throughout the year organized by civil servants and for the case of PERKA by volunteers and PELITI (a seed bank in Greece with traditional preserved seeds). The topics of the seminars referred to good practices based on ecological agro-technical means e.g. composting, promotion of beneficial animals on site.

In regards to how to decide what to grow, gardeners do not put a lot of thought into what to choose. 44% of them decided on the mixture of the crops to plant according to the family's preferences and dietary needs. 4% were advised by a fellow gardener, 10% were advised by the agronomist whereas 25% were just given some crops for free. The rest 17% either experimented or followed the seasonal calendar to choose the plants randomly. When it comes to the origin of the plants they use, there is a clear difference between the two gardens. In the municipal garden all of them were given commercial seedlings, whereas in the PERKA case the majority makes the seedlings themselves or gets them from PELITI.

Some of the gardeners (21%) overcome everyday agronomical problems through interaction with other gardeners, some others through the internet (2%), books (12%) and agronomists (44%). In the case of the municipal garden, the agronomist is a civil servant appointed to support the gardeners by physical presence for about 6 hours per day. In the civic garden there are some member gardeners with a degree in agriculture (either by a university or technical school) that others turn to for advice.

To sum up, between the gardens lies a different approach to agronomical skills and ways to have access and diffuse technical knowledge (Fig. 2). In the civic garden people trust their fellow gardeners to advise them on options to protect the plants and also books on permaculture and organic growing. The majority of them doesn't trust the mainstream agronomical knowledge provided in schools of Agriculture due to the fact that it is perceived as depended on chemicals, heavy inputs and not consistent to a sustainable environmental approach. Most of the gardeners on the municipal garden trust the agronomist in charge and their own personal experience. Finally, a crucial role in this difference plays the fact that there is a greater level of interaction amongst gardeners in the PERKA garden which is not found in the municipal garden.

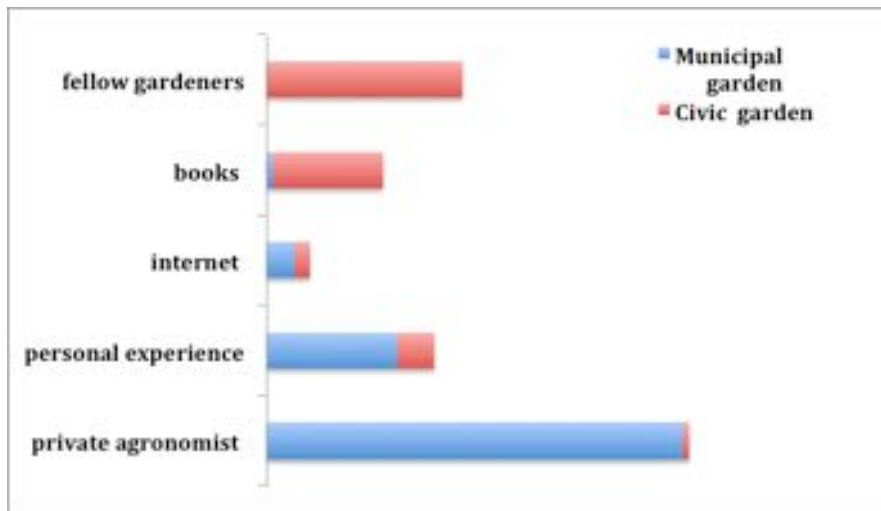


Figure 2: Selected technical means for access to agronomical knowledge in the two urban gardens

Collective learning and social cohesion

Most of the gardeners (60%) perceive urban gardening as a collective activity among family members, friends etc. Towards this direction cultivating tools are communal (64%), in an effort to enhance cooperation among the gardeners and not only for practical or economic reasons. 88% of the gardeners have a peaceful co-existence with neighbors and only in few cases they have reported problems such as bad use of the irrigation water or lack of respect towards privacy. For the case of PERKA the general assembly was responsible for finding solutions whereas that role was played by the agronomist in charge, in the case of the municipal garden.

The creation of communities that share, not only food but also experiences, ideas, feelings and knowledge is highlighted in the outcomes of our research and appreciated as of great importance but there was a clearly different perception between the gardens. The PERKA garden is a meeting place for friends and families during the day and everyone is welcome to just walk around the gardens, talk to the gardeners and connect to nature. High level of social interaction in PERKA garden can be explained by many factors such as scheduled activities and events, no gate hours, the openness of the community to the public access to the gardens. Whereas in the municipal garden the lower level of social interaction can be partially explained

by factors such as the great distance between parcels, spatial structure and the rules regarding the opening of the gate as well as the presence of an agronomist.

Finally another very interesting outcome of this research was the fact that in the municipal garden we found a group of migrants; those identified previously as Greeks from former ESSR and migrants from Albania, Armenia, Georgia etc. It is a distinct group amongst the gardeners with different needs and attitudes, as noted from our participant observation. They are more restrained and have a great lack of trust towards any other gardener. They have their own way of solving problems and clearly state their differences and opinions even with the agronomist in charge of the garden. They brought their own seeds and agronomical techniques from their places of origin and only interact socially with each other. The lack of trust is clear towards both the other gardeners and the municipality.

Discussion

In regards to the motives and general profile of the urban gardeners (which was our first research question) the results of this study confirm previous results in Greece by Partalidou and Anthopoulou (2016). In regards to access and diffusion of agronomical knowledge and the development of collective skills and learning in the gardens this research has provided some interesting findings to discuss.

Many gardeners have a rural background and some kind of technical knowledge for growing vegetables but the use of virtual communities of sharing knowledge (on the internet) and mostly the physical interaction in the garden and the everyday socialization provide the framework for all types of information to be channeled even to those with less experience and skills. Newcomers seek for experienced gardeners, others are learning by doing and collective tacit knowledge is created along the way, besides the technical knowledge. People share the management of the commons, norms, personal experiences, memories and develop collective skills apart from the agronomical ones. This however happens extensively only in the one case study garden; the PERKA civic initiative which is characterized as a Community of

Practice. It is in this garden that a shared identity is created, commitment is high and common practices are adopted on solving problems. The challenge now lies on the cohesion of the community as the old members keep loading themselves with more initiatives in leading and moderating despite the fact that new plot members enter the garden. The latter are not eager in taking part in the management of the commons or expressing any new initiatives thus eliminating the creation and diffusion of knowledge among core members and newcomers putting the cohesion of the community in jeopardy.

On the other hand, the municipal garden embedded in the public strategy to tackle poverty does not work as a CoP. Gardeners see the garden as their personal shelter amidst the crisis and a means to have access to fresh-affordable food. They depend on the agronomical support provided by the municipality and learning is done individually referring only to agronomical knowledge. There is no shared identity and a lack of community building. Especially for the ethnic group that takes part in the municipal garden, the community gardens might enhance the sense of belonging by creating a connection to the new community (Agustina & Beilin 2012) however this takes time and in our case it is too early to fully understand such a process. It goes without saying that collective learning in the urban gardens is a dynamic process that results in the production of knowledge and social cohesion but after a period of time and under specific conditions. Nevertheless, a high level of social interaction and learning processes is not only a privilege of bottom-up initiatives but can be reached in the municipal context too in order to bring gardeners together into a community of practice.

In conclusion, what can be derived from this research is that the collective learning that takes place in the gardens, the bonding and building of social capital and the shared rules are according to Bendt *et al.* (2013) a benefit of urban gardening also found in our case studies either in a great extent or in sole examples. Urban gardens in Greece have manifold benefits and serve as a tool for both agronomical and collective learning

but only in the case that communities embedded in trust and reciprocity are created.

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B3 - Between bottom up and top-down: Urban gardens as laboratories for democratization in urban planning?

Combining top-down and bottom-up gardens in Lisbon as an improved planning strategy

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Keywords: Combination Strategy, City Planning, Urban Management, Participation, Community Projects

Abstract

This paper compares two concepts of urban agriculture (UA): a) top-down allotment gardens and b) bottom-up participative gardens. The example studied for the former are: 3 Parques Hortícolas of Lisbon city council (LCCHP), which are horticultural parks that include playgrounds, bike paths, etc., on public land. The case study for the latter is Horta do Baldio (HB), a participative garden on private land. The goal is to identify the advantages of a possible combination of the two concepts for planning. This study includes two methodologies: applying a questionnaire and comparing other characteristics of LCCHP and HB such as waiting lists, costs and the motivations of the gardeners. The data gained was analysed by using the following indicators: social characterization of the gardeners, their opinions about the garden's role in city life, their reasons for participation, cultural initiatives, waiting lists, access to general public, time consumption and costs. The questionnaire led to similar answers in both garden types except that only HB gardeners included participation and communitarian spirit as important factors. The conclusion is that both types of garden have their strengths but the bottom-up initiative has relevant advantages: participation and communitarian spirit caused "hands-on" implementation and maintenance of the garden, encouraging cultural activities. There are no waiting lists and the garden also costs less than those in the top-down projects because more human resources were involved in the creation and maintenance. On the other hand HB is more time consuming since

volunteers are involved in the planning and management, which can cause conflicts e.g. when planning the future of the garden. The integration of urban gardening bottom-up initiatives on city planning, on both public and private land, could catapult Lisbon UA to a higher level of sustainability. Promotion of bottom-up initiatives or combining both strategies could increase participation, optimize community initiatives and costs, decrease waiting lists, create different public access experiences and increase gardening areas which better support the continuity of the city green structure (CGS).

Introduction

History of urban gardening in Lisbon

The history of UA in Lisbon can be traced to several land donations from the King to the Church that created farms until the 15th century. In medieval times these farms were integrated within the city limites (Folque 2000; Ramos 2011) and supplied the city with food until the 20th century (Marat 2015; Niza *et al.* 2016). However, only during the second half of the 20th century urban planning included agriculture inside the city green structure (CGS) (Telles 1997). This structure merges most of the green areas of the city including now 11 horticultural parks (Fig. 1) – *Parques Hortícolas* (LCCHP).

Simultaneously, in the 20th century public and private land was often spontaneously occupied by people who wanted to farm. Even marginal lands, like freeway buffer zones, were occupied. The implementation of LCCHP in areas where such occupation occurred gave rise to problems once people realized that they had to pay for the space requalification and the public water. Especially in eastern Lisbon, where using water from sewer or small storages is common in gardens, there were some incidents; e.g. the city council technicians had to be accompanied by the police and even to resort to coercive action on one occasion when citizens refused to evacuate the community garden *Horta do Monte* in Graça (Fig. 1, nr. 8), in an attempt to save it from subsumption into LCCHP (Boaventura 2013; Ramos 2011). However, in general LCCHP seem to be well accepted by the population, as

the long waiting lists for plots prove. These gardens provide citizens with an increased quality of life by including walkways, bike-lanes, scenic views and improving the landscaped city.

Meanwhile several bottom-up community projects, done by citizens on an independent basis, popped up without support from the city council. These include: *Horta do CNN*, *Horta do Braço de Prata*, *Horta de Benfica*, *Horta do LNEC*, *Horta do Baldio* and *Horta da FCUL* (Sousa 2012). This study highlights advantages of bottom-up and top-down projects to promote the integration of both approaches. This integration already happens in different ways at many projects around Europe and sustainable results are shown in most of the cases (Petersen 2014; Sousa 2016; van der Velden 2012).

Methodology

Two concepts of urban gardening are studied: allotment gardens – 3 LCCHP and *Horta do Baldio* (HB), which is one of the bottom-up gardens popping-up in Lisbon. This study compares previous work by Gonçalves (2014) on 3 LCCHP to HB, by applying the same methodology in order to create indicators based on main characteristics of both types of garden. A questionnaire was conducted in order to collect data. The questionnaire consisted of the same content as that used by Gonçalves (2014), where the social characterization and motivations of gardeners from 3 LCCHP were investigated. We applied the same questionnaire to HB gardeners and compared the results to those acquired by Gonçalves (2014). Additional data from the gardens was gathered. Information about the costs was acquired from public hiring sites, from interviews with city council technicians and with those responsible for the installation of HB, and from HB meeting minutes regarding maintenance costs. Other types of sources were used, such as description of the projects (Gonçalves 2014; Madeira 2015; Sousa 2014) to confirm and supplement information gathered via the questionnaire. Data collection allowed the comparison of the two types of gardens and the creation of specific indicators to highlight advantages of bottom-up and top-down gardens.

Findings: Comparative study

Questionnaire

Data extracted from the questionnaire is presented below for the following gardens:

Top-down LCCHP gardens on public land:

1. Parque Hortícola da Granja (Fig. 1; nr. 1); includes bike/pedestrian path on the side
2. Parque Hortícola de Campolide (Fig. 1; nr. 2); includes a bike/pedestrian path on the side
3. Parque Hortícola das Telheiras (Fig. 1; nr. 3); includes a bike/pedestrian path on the side and a playground

Bottom-up participative garden on private land:

1. (HB) - Horta do Baldio (Fig. 1; HB), a garden on private wasteland, about 5000m² in Campo Pequeno that began as an artistic project (Madeira 2015). The garden was created as a place for an artistic event and the volunteers that helped create it decided to continue to take care of it after the event ceased.



Figure1: LCCHP - horticultural parks of Lisbon city council (*Parques Hortícolas*) as part of the City Green Structure (CGS) and Horta do Baldio (HB) (source: Câmara Municipal de Lisboa)

Tables 1 and 2 register the data extracted from the questionnaire:

Description		Gender		Age Group			Household				When it comes to Garden		How many Hours/days working in the garden			Refers to the Use		Seeds	
Location	Number of Respondents	M	F	20 - 40	40 - 60	> 60	<= 2	3	>= 4	Unemployed	Week	Weekend	<= 5	>5 a <= 8	>=10	Chemical fertilizer	Manure/ Compost	Purchase/ Guard	Exchange with Neighbors
Telheiras	16	9	7	0	11	5	5	4	7	1	15	14	16	0	0	0	16	16	2
Campolide	11	6	5	0	7	4	8	2	1	4	9	11	11	0	0	0	11	10	0
Granja	22	15	7	1	7	14	14	4	4	3	21	21	18	3	1	4	21	20	3
Sub-Total	49	30	19	1	25	23	27	10	12	8	45	46	45	3	1	4	48	46	5
Horta Baldio	7	2	6	3	4	1	4	2	1	3	5	7	3	5	0	7	7	7	7
Total	56	32	25	4	29	24	31	12	13	11	50	53	48	8	1	11	55	53	12

Table 1: Characterisation of gardeners

Gardeners are mainly middle age and 20% were unemployed, having 2-3 family members on average. Gender changes from mainly males at LCCHP to mainly females at HB. About 86% of the respondents work an average of 5 hours in the gardens, that is, for a week of work of 35 hours, corresponds to approximately 14%. Education was not included in the table but was probed by the questionnaire: education was higher at HB than LCCHP gardens. The LCCHP garden with similar levels of education to HB was Telheiras.

Description			Main motivations and opinions of the gardeners													
Location	Number of Respondents	Working with the Nature	Economic				Exercise/ Relax	Likes Agriculture	Eat Better Quality products	Occupy Free Time	Practicing Organic Farming	Help preserve biodiversity	Beautify the city	Teach the Younger about rural culture	Create spaces of Conviviality Among the elderly	Do something Productive
			Sale of Vegetables	Save on the purchase of Vegetables	Increase the Consumption of Vegetables of family	Help Family Members										
Telheiras	16	8	0	3	1	0	6	11	9	5	7	3	8	7	5	5
Campolide	11	2	0	3	0	1	2	7	9	3	6	0	5	2	2	6
Granja	22	2	1	4	0	0	3	17	9	7	3	0	10	11	4	3
Sub-Total	49	12	1	10	1	1	11	35	27	15	16	3	23	20	11	14
Horta Baldio ⁽¹⁾	7	7	3	3	1	0	7	7	3	7	3	4	7	7	7	6
Total	56	19	4	13	2	1	18	42	30	22	19	7	30	27	18	20
(1) Other reasons:																
Participation	7															
Community Spirit	7															
(1) All reported the two motivations.																

Table 2: Motivations and opinions of gardeners

The questionnaire led to similar answers in both garden types except that only HB gardeners included participation and communitarian spirit as important factors (see discussion).

Further data

Data gathered was supplemented by interviews with city council technicians as well as with those responsible for setting up HB and by consulting the HB meeting minutes in order to generate selection of other indicators to enable cross comparisons:

Waiting list: at LCCHP there are waiting lists for plots as opposed to HB where gardeners decided that everybody can take part. This is possible because there are no individual plots;

Access to general public: through pedestrian and cycle paths in the vicinity, citizens enjoy the scenic aspect of LCCHP, (Fig. 2-4). Citizens are typically not supposed to enter these gardens. At HB everyone is allowed to enter the garden. HB is less known by the public but all users report having a very pleasant and relaxed experience there (Fig. 5-6).



Figure 2, 3: Parque Hortícola Quinta da Granja (source: Quinta da Granja)



Figure 4: Parque Hortícola Quinta da Granja (source: Quinta da Granja)



Figure 5: Horta do Baldio (source: Sousa)



Figure 6: Horta do Baldio (source: Sousa)

Level of shared equipments, structures and tools: the two types of garden share tool houses, water faucets and composting piles. LCCHP plots are individual. At HB everything else is shared too: harvested vegetables, seeds, plants, cooking for events using the garden vegetables, tasks of all type. The volunteers also meet outside the garden for social or garden management related reasons. All these tasks imply a higher level of volunteer work.

Other uses of the garden: Only HB includes cultural events and workshops for the public (parties, courses, workshops, art events).

Management: LCCHP is managed by the municipality, leaving to gardeners same logistics and materials management; at HB all management work is done by volunteers and this can be a lengthy and sometimes confused process as decisions must be made communally.

Water distribution: Water is paid for LCCHP where as it is free, but precarious, at HB.

Other uses of the garden: only HB gardeners answered the questionnaire "further coments" where they unanimously highlighted the importance of participation and community spirit. Garden meetings and informal conversations confirmed the importance of this, to the extent that the gardeners saw their project as a meaningful social experiment.

Land ownership: At HB land is private owned and there is a contract that borroughs it. At LCCHP the land is public and there is an individual contract signed between gardeners and the city council allowing gardening under certain rules.

Costs: these were analyzed for the implementation phase and maintenance phase.

Implementation phase

HB implementation costs were at 3.25 € (Table 3). Usually LCCHP hires external services for this phase as opposed to HB where the work was done by volunteers. HB data for implementation costs were collected through an interview with Julio Correia who set up the project. Table 3 shows the costs for *Parque Bensaúde* of 20€. This is another LCCHP garden No data was available on public hiring sites (nor known by interviewee) for the 3 LCCHP gardens where the questionnaire was conducted. It is assumed that the costs for the 3 LCCHP are similar to those of *Parque Bensaúde* given their similarity. This cost was used as reference for comparison to HB costs.

Economic evaluation criteria are analyzed for the two concepts, but at this stage it has not been possible to obtain detailed data on the costs of public urban gardens. We have chosen to work with overall unit costs to ensure consistency in the analysis.

Maintenance phase

The maintenance is done by gardeners at HB whereas at LCCHP only the common parts are maintained by the city council. It was not possible to establish maintenance costs for LCCHP (not known by interviewee), so we have used costs from a city council garden

in Guimarães similar to LCCHP (interview to Hugo Torrinha). Costs were at 1,20€, whereas at HB they made up 0.4€ (Table 3).

Management

Management is transversal to both phases. Implementation management costs at HB consisted only of expenses for Julio Correia (500€ for 3 months work) from the artistic events company that started the project. Implementation work was undergone by volunteers, so there were no costs. There are no maintenance management costs at HB because the gardeners do all the work. As at LCCHP, management costs are included in salaries paid by the institution to several technicians involved in the process for implementation and maintenance, so it seems likely that they are cheaper at HB for both phases.

III. Comparative cost analysis: bottom-up gardens vs top-down gardens			
ITEM	Designation	Year	Cost per unit €/m ²
Installation of urban gardens, other green spaces and mixed projects	2. Instalation of urban gardens (Parque de Bensaúde)	2012	20,00 €
	4. Instalation of community gardens (Baldio - HB)	2014	3,25 €
Maintenance of green spaces	3. Horta do Baldio	2015	0,40 €
	4. Horta Pedagógica de Guimarães	2014	1,20 €

Table 3: comparative cost analysis: bottom-up gardens vs. top-down gardens

Indicators

In order to analyze the data, the most relevant axes for comparison were extracted as indicators. Table 4 compares both types of garden across these indicators:

Description		Questionnaire			Other records of the projects			Costs	
Indicators	Social characterization	Opinions	Motivations	time consumption	Other uses/Cultural initiatives	Access to general public	Waiting lists	implementation ^{b)}	maintenance ^{a)}
LCCHP	Similar	Similar	Similar	< 5	Non existing	No access; cenical experience present	yes	20,00 €	1,07 €
HB	Similar	Similar	Similar except for adding participation and community spirit	< 5	Cultural initiatives and social experiment	Access to general public	No	3,25 €	0,40 €

Table 4: Summary of indicators; a) data extracted from Guimarães Project of allotment garden b) data extracted from Parque Hortícola Bensáude; part of LCCHP; not including other green space areas

Questionnaire indicators are important for the distinction of participation and communitarian service as outstanding factors, since all the other indicator showed same results (only for education which is included in the social characterization differences between LCCHP and HB were found: the latter has higher levels of education only similar at *Telheiras Parque Hortícola*, for LCCHP.

The importance of other indicators and the costs is to highlight differences on the characteristics of the projects that could be considered to be advantages or not.

Discussion

Discussion is based mainly on indicators:

The comparison across questionnaire indicators (Table 4) shows that gardeners of the two types of projects have similar views. Only one difference is noted: HB gardeners included participation and communitarian spirit as important (Table 3). HB gardeners highlighted this in the 'further comments' section of the questionnaire. The importance of participation and communitarian spirit is corroborated by other considerations discussed below.

A difference between the two garden types is that cultural initiatives and alternative uses of the garden only happened at HB, on privately owned land. The contract made by each individual with the city council only allows gardening on public land, so this can be one of the causes for the non-existence of alternative uses. This can be complemented with differences in education levels between gardeners at LCCHP and at HB. As noted, education at HB is much higher than at 2 of the 3 LCCHP gardens. Both reasons could explain why at *Parque Hortícola de Telheiras*, where gardeners had the most similar levels of education to HB gardeners, showed no cultural uses of the garden since they did not feel the garden was their's to use for other ventures, although the project is on public land. At HB, due to the importance of communitarian spirit noted by the gardeners, they not only interacted more with each other which aids development of joint endeavors, feeling entitled to use the whole of the garden, even on borough land, for alternative purposes.

Another difference between the two types of garden is that HB was significantly more cost effective than top-down gardens. Table 4 shows that the costs for implementation are cheaper for HB bottom-up garden in comparison to LCCHP. Maintenance costs were not possible to obtain from an interview with a technician at Lisbon city council, because further investigation is needed. However in an interview with a technician from Guimarães city council, costs were ascertained for *Horta Pedagógica de Guimarães*, an allotment garden project similar to LCCHP. The comparison shows lower maintenance costs for HB (Table 4) as compared to the Guimaraes garden. The technician mentioned that 90% of the maintenance costs are spent on human resources. Lower costs are likely due to the greater volunteer work that took place at HB

compared to LCCHP gardens. Other factors can influence costs such as the level of shared resources which is higher at HB; this may be directly connected with the decrease in costs¹. Political and social awareness is present at HB as interviews and conversations show. HB gardeners are more politically and socially aware and this is linked with more social participation and proactivity. This may influence the costs indirectly (Madeira 2014; Sousa 2016) because they:

- Help create the garden
- Want the project to continue even after the initial time frame
- Socialize during other times rather than gardening hours, (events, courses, planning meetings etc.)
- Feel strong about having free access for everyone
- Share more tasks including management
- They also share all the production factors and garden produce and services

Management costs are transversal to both phases for both types of projects. Implementation work was done by volunteers; thus there are no management costs for this phase except for the implementation management costs that were paid for the cultural events company starting the project. There were also no management costs at the maintenance phase at HB due to the gardeners doing all the work. As at LCCHP the management costs are included in the salaries for implementation and maintenance.

It is clear that the higher level of volunteer work at HB lowered the overall costs of the project compared to LCCHP. The question arises whether the higher level of volunteer work is connected to the unanimously reported values of participation and communitary spirit. Could the intrinsically communitary nature of HB garden have motivated volunteer work?

It seems plausible that HB gardeners have a greater stake in the garden as a whole which motivates them to contribute more time and effort to its implementation, maintenance and management. HB gardeners' responsibility seems to span wider than LCCHP gardeners,

¹ The projects are very different. Thus it is likely that there are other factors beyond the scope of this study, such as different criteria for expenses as well as probably smaller funds at HB that came from donations and selling of products and services. Nevertheless this does not seem to influence on the importance of volunteer work in the decrease of costs.

whose responsibility putatively spans little further than their individual plot. This greater stake or span of responsibility may explain HB gardeners' greater commitment and investment in the garden. The fact that HB gardeners unanimously highlighted the importance of communitarian spirit is of utmost importance. The gardeners' responsibility is not only more widely spread in terms of square metres, but also in that they owe each other hard work and commitment given their common goal and communitarian distribution of harvests. Working towards a common goal on a project that has collective rather than individual ownership seems to be highly motivating to the volunteers. Furthermore these projects types could stimulate participative processes. This are advantages that top-down initiatives could benefit from. The institutional support would allow bottom-up projects to flourish faster and more widely. Other advantages that bottom-up projects generate are:

Access: Only at HB does the public have full access to the garden. At LCCHP non-participants can enjoy scenic experiences when they walk or cycle on nearby paths. Full access to the gardens could increase the quality of life of the population by enabling a more interactive and eco-therapeutical experience.

Inclusion: Waiting lists exist for LCCHP but not for HB. These could decrease if the city council decides to help implementing participative bottom-up gardens, such as HB. Waiting lists could decrease by adopting a participative approach to gardens since more people are allowed to access per square.

Space optimization: The municipalities are struggling with an increasing scarcity of space for gardens. Participative gardens provide a useful framework for optimizing space as they allow more people per square meter.

Conclusions

If participative bottom-up gardens were to be adopted by city planning, it is likely that there could be several advantages for both types of project that could increase the quality of UA in Lisbon. The questionnaire, as confirmed by other data, shows the existence of participation and community spirit which is likely to encourage volunteer work that seems to be related to lower costs of the bottom-up project. At the same time, this type of garden enables the

participation of the gardeners in decision-making processes, from the conception and implementation to the maintenance phase. The likelihood of decreasing costs seems possible because there is a higher level of volunteer work in bottom-up initiatives. The increase of volunteer work in municipal initiatives will help, certainly, to relieve internal resources, whether human, financial or otherwise. This potential should be given attention to by city planners.

Further advantages of bottom-up gardens may include the increase of inclusion through the decrease of waiting lists, space optimization for gardens and increased accessibility to gardens. Thus, when minor problems are controlled, such as management issues, it seems worthwhile for bottom-up initiatives to be supported on an institutional basis. The elaboration of further urban garden models and similar green spaces will largely depend on future research.

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Urban gardening and democratic planning: critical perspectives on examples from Greece and Germany

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Abstract

A wide range of new collective forms of urban gardening are broadly emerging worldwide via alternative citizen-led practices and public participation. This illustrates the increasing significance of the role of civil society in urban governance mechanisms and poses questions on the democratic dimension of urban planning and development (Adams & Hardman 2014; Ernwein 2014; Nikolaïdou *et al.* 2016; Rosol 2010). Based on research on urban gardening initiatives in Greece and Germany, this paper analyses in a comparative perspective various aspects of practices that emerge in different governance settings. The purpose is to highlight forms of cooperation between civil society and political-administrative actors and critically examine the democratic potentials, limitations and opportunities of cooperative urban development. The focus of analysis is on governance-settings and practices.

In conclusion it is shown that despite different socio-economic and political contexts similar conflicts arise in both countries: The traditional state-centred forms of decision and policy-making processes are challenged by the recent urban gardening movement that prioritises civic engagement encompassing innovative and experimental practices in urban development. In Germany the decentralised planning system and a longer tradition in communicative planning facilitate the development of cooperative planning cultures in urban greening on local level. In Greece, by contrast, urban planning is much more centralised with a deficient practice of collaboration. Corresponding

with the recent rise of urban gardening initiatives and a stronger movement towards direct democracy in Greece, planning cultures in both countries currently seem to change towards an active role of civil society and a more democratic urban development.

Introduction and research design

Across Europe recent urban gardening movements symbolise socio-ecological alternatives in urban development with a variety of social, economic and ecological functions and benefits (Guitart, Pickering & Byrne 2012). It is considered a social and political movement, a form of green (or ecological) activism and a reaction to actual crisis, respectively (Ioannou *et al.* 2016; Partalidou & Anthopolou 2016). In its political dimension urban gardening represents new kinds of citizen-led practices and public participation in urban development. This illustrates the increasing significance of the role of civil society in urban governance mechanisms and poses questions on the democratic dimension of urban planning and development (Adams & Hardman 2014; Ernwein 2014; Nikolaidou *et al.* 2016; Rosol 2010).

Especially community gardens are different to other forms of urban gardening as they are explicitly oriented on community, collectiveness or communing (Ioannou *et al.* 2016; Colding & Barthel 2013). This orientation corresponds with a cooperative understanding of urban development and planning, which is described by a shift from government to governance (Rosol 2010) hence a 'communicative turn' in planning theory. However, a theoretical shift towards a more cooperative understanding of planning does not necessarily lead to corresponding practices. In fact, a variety of practices can be observed as well as a continuum of top-down and bottom-up approaches in the governance arrangements (Ioannou *et al.* 2016). Using governance as analytical framework draws the focus to the actors, their specific ways of thinking and acting, their relationships and contexts of action (Nuissl & Heinrichs 2011). Thereby the normative basis of the analysis is democracy as a mode of spatial governance and planning (Healey 2011; Ioannou *et al.* 2016). The analysis will accordingly focus on two main questions:

1. What kinds of governance-settings facilitate or obstruct cooperation between civil societal and state actors (structural dimension)?
2. To what extent political negotiations and land-use planning processes are democratic (procedural dimension)?

To answer these questions the paper is structured as follows: Based on empirical research on urban gardening initiatives in Greece and Germany, a macroscopic analysis of different governance settings and practices is provided in a comparative perspective. The purpose is to highlight existing and potential forms of cooperation between civil society and political-administrative actors and critically discuss the democratic potentials.

The empirical study is based on qualitative interviews with civil societal and political-administrative actors as well as site-visits, memos, documents and internet publications from the gardening initiatives, political councils and public administrations in Greece (Athens and Thessaloniki) and Germany (Düsseldorf and Hannover).

Urban gardening and governance-settings in Germany and Greece

Classical top-down approaches are challenged by gardening activists as they use properties for gardening which are not originally planned for this purpose. Moreover, the activists are taking over responsibility for their neighbourhood development questioning the role of the state in that field. The responses from politics and public administration to this movement and concrete projects are considerably diverse (Adams & Hardman 2014; Ioannou *et al.* 2016; Rosol 2010). In general, two observations can be made: Firstly new forms of spatial governance can emerge in terms of actors from civil society and public administration that cooperatively plan, implement and maintain gardening projects. On the contrary there are cases where activists are confronted with hurdles and problems due to bureaucratic procedures and neoliberal policies (Ioannou *et al.* 2016). Looking closer at Greece and Germany reveals, however, a more precise and differentiated view.

Planning regime and objectives: absence of urban gardening from the urban agenda?

In opposition to the long German tradition in urban gardening, Greece has a recent experience that emerged since 2011 in the aftermath of the financial crisis (Anthopoulou *et al.* 2012) encompassing bottom-up

and municipal initiatives. In Germany, along with allotments ('Kleingärten') originating in the 19th century, a recent gardening movement derived in the mid-1990s ('Gemeinschaftsgärten') including mostly social oriented projects (Appel, Grebe & Spitthöver 2011; BBSR 2015).

In a comparative perspective two main forms of urban gardening are illuminated in both countries showing similar characteristics:

- a. Allotment gardens are formally accepted forms of urban gardening. In Greece they are municipal top-down conceived initiatives ('Dimotikoi lahanokipoi') that derived as a spontaneous socially-oriented answer to the crisis and urban neo-poverty through subsistence gardens for self-production of fresh organic vegetables. In this regard they have similar origin as the German 'Kleingärten', however, they are smaller in size and not organised according to general land-use plans or strategic orientations. In Germany they are highly institutionalised, regulated and mostly protected on the long-term as a special form of green use within the municipal zoning plans. Both types create new places for social interaction, recreation, meeting spaces, social cohesion and solidarity links etc. (Appel et al. 2011: 24-34; BMVBS & BBR 2008; Partalidou & Anthopoulou 2016).
- b. Community gardens are part of bottom-up movements and not officially regulated on national level, but mostly accepted or supported by local administrations. In Germany 'Gemeinschaftsgärten' are recognised as social projects which contribute to (intercultural) communication and integration as well as to community building on neighbourhood level based on an ecological and/or political agenda (Appel et al. 2011; BBSR 2015; Rosol 2010). In Greece they are self-governed guerilla/community gardens ('Aytodiaheirizomenoi lahanokipoi') claiming green space, usually located without authorization on unoccupied public and vacant land in the city fringe, such as in abandoned military camps, former airports and other urban brownfields. In both countries these gardening projects encompass political practices claiming for more democratic and alternative uses of space.

In both countries we can observe a lack of national or local legal frameworks covering the contemporary urban gardening movement. New initiatives are often established as interim-uses and are not intended

to be protected in terms of planning. However, on municipal level local politics and administration tend to become more supportive over the last years, by providing suitable-sites, legal regulation (e.g. through leasing contracts), financial and material support for gardening, social and educational activities (BBSR 2015; MLSS 2012). In particular, municipalities in Greece started to co-fund gardens since 2013 as new 'Social Structures Against Poverty' (MLSS 2012) in order to alleviate socioeconomic and psychological problems of urban dwellers, showing an increased sensitivity to vulnerable social groups affected by the crisis impacts (low incomes, unemployed, pensioners, singles parents, etc.). Similarly, in Germany, community gardens are administratively and financially supported in neighbourhoods with deficiencies in social structures and collaboratively organised within the framework of 'Soziale Stadt', a national urban renewal programme (BBSR 2015; Sondermann 2016).

Barriers, synergies and power relations between civil and public actors

The constellation of actors mainly encompasses several groups: Actors from civil society (garden activists or non-profit organisations), owners of the properties and local political bodies (councils) and public administration. The latter are responsible for the general policies as well as for the actual formalisation of land use and the provision of informational, financial and material support for the gardening projects. In Germany the development of urban green spaces is mostly considered as a cooperative field of action (cf. Bläser et al. 2012; BMUB 2015). There are many institutionalised organisations all over the country, which are engaged in the development and protection of green spaces from national to local and even project level. In the field of urban gardening there are about 15,000 allotment gardening associations ('Kleingartenvereine') and about 400 urban gardening projects to mention, which are also mostly organised as associations. The synergies between the actors from civil society, politics and administration can be observed in various forms of cooperation, initiated both bottom-up and top-down (Appel et al. 2011; BMVBS & BBR 2008; BBSR 2015; Sondermann 2016).

In contrast to the increasing importance of collaborative practices in Germany, urban gardening in Greece establishes less synergy between public and civic actors. This lack of collaboration reflects a duality between municipal and self-governed initiatives which is visible

through a rather clear ideological distinction: Top-down municipal gardens, are mainly oriented to combat austerity and social exclusion, and their governance is considered to be highly centralized in terms of provision of infrastructure (land access, water, technical support), land management and design that is not participative. Grassroots initiatives are mainly oppositional towards controversial state's neo-liberal policies on land and development issues. However, in some exceptional cases activists "seek to create a consensus among central actors—involving municipalities" (Mayer 2009) and gardens are often temporarily accepted in agreement with local authorities as long as there is not another competitive interest for land use on the specific gardening site (Anthopoulou *et al.* 2016). These interactions are not limited negotiations over land access but in some cases they have effects in policymaking urban governance and planning by supporting wider coalitions among interested stakeholders through formal and informal arrangements.

Governance in practice

Spatial governance regarding urban gardening is a very heterogeneous field. In our comparison of German and Greek cases two aspects appear central in regard to democratic potentials and limitations in the spatial planning and development of urban gardens: Firstly, the access to land and the regulation of land-use are central issues in negotiations between activists and state-actors. Secondly, we observe that learning and adaptation processes are essential to meet the needs of cooperation in terms of improving organisational structures and procedures.

Land access, availability and regulation: increased informality and temporality?

One of the most essential questions in urban planning is the availability of suitable land for urban gardening and its legal regulation. Especially in the cases studied questions of informality and temporality are addressed, as gardens often started as informal and/or temporary land-uses with an unclear long-term perspective. Moreover urban gardens might be "contested spaces" in spatial and planning conflicts over land-use resulting from diverging interests (Adams & Hardman 2014; Ioannou *et al.* 2016; Schmelzkopf 2002).

In Germany the regulation of urban gardening, either on a temporary or long-term basis, is mainly achieved via cooperation among actors from civil society and public administration: thereby shared objectives and orientations (such as: liveable and green urban areas, social cohesion, intercultural integration) are the essential drivers to overcome hurdles. Thereby the degree of informality is comparatively low as gardening land-uses are mostly regulated by public authorities. Projects in Germany are initiated from both sides; although they are mostly bottom-up (Sondermann 2016). In Greece there is a strong divide between public and civic initiatives in terms of objectives or cooperation. While municipalities in Greece create gardens for social purposes spontaneously on empty public spaces (constructible or not) due to real estate collapse, bottom-up initiatives claim the right to 'open space' and valuable public resources. The latter are rather a critical protest against austerity, privatisation, further construction and large-scale strategic investments that has a symbolic and political meaning especially in times of crisis (Arampatzi 2016; Kavoulakos & Gritzas 2015). This emerging trend is illustrated by two emblematic examples ('Agros Hellenikon' in Athens and 'PerKa gardens' in Thessaloniki): Both of them are unauthorised land occupations on neglected public brownfields pending construction. They derive from grassroots citizen movements and are based on local self-governance, voluntary work-groups, non-profit and social solidarity actions. In their derivation they are perfectly comparable to German projects (such as 'Ökotop Heerdt' in Düsseldorf). However, the German projects are considerably different concerning their long-term perspectives as they are often regulated as public green spaces and therefore protected from commercial interests (Sondermann 2016).

Learning processes

Bottom-up projects often raise conflicts or are confronted with bureaucratic hurdles in order to get land-use permission or to receive financial support. In this regard learning processes are of central importance as they can lead to an adaptation of organisational structures and procedures and cooperation challenges local institutions and their relation to current civil society movements.

In the cases of Düsseldorf and Hannover local politics and administration responded positively to the emergence of new community gardening activities by clarifying responsibilities within public

administration and appointing contact persons for bottom-up gardening initiatives. Moreover they started to search for suitable properties and accelerated approval procedures, for instance by developing easy-to-handle leasing contracts. Meanwhile, activists developed clear organisational structures, professionalised and institutionalised their engagement. Most importantly, both sides developed a mutual understanding for the guiding principles and scopes of actions: after an 'approaching phase' where the actors learned about the needs and logics of the other side and also learned from problems and conflicts, 'cultures of cooperation' developed in both cities. Such a development, however, is dependent on a certain common ground, mostly encompassing constructive and open-minded attitudes of all actors concerning cooperation as well as shared attitudes and orientations, e.g. following a socio-ecological agenda (Sondermann 2016).

Changing planning cultures can also be observed in the examples of PerKa (Thessaloniki) and Helleniko (Athens): After years of contested struggles they gradually gain public recognition by municipalities and are subject to joint statements and actions for their promotion as sustainable practices of urban greening. In particular, PerKa initiative evoked a powerful movement that claims the public character of all former military camps across the city proposing their inclusion into a metropolitan network of green spaces. However, this is against central state's future development plans of all military sites for commercial purposes. Therefore, coalitions were built between the city Council and PerKa protest groups in order to co-devise and support demonstrations, rallies and various events and actions under municipal auspices (Cultural Association of Karatassiou 2013). Similar conflicts and confrontational practices are identified in the former Hellenikon airport. Despite the support of the adjacent municipalities and the strong public mediation by local movements, the academic and research community and political parties, the overall process of privatization of the public asset has been completed in order to pay the national debt (Encounter Athens 2014).

Discussion and conclusion: Towards a democratization of planning?

In this paper it is shown that despite the different socio-economic and political contexts new alliances between civil societal and state actors are emerging in both countries challenging traditional state-

centred forms of decision- and policy-making processes. The emerging practices signal a shift from 'classical' top-down planning rationalities towards more innovative, creative and experimental practices. However the analysis sets off general differences between initiatives in Greece and Germany depending on variations in societal demands, levels of institutionalization and overall objectives, already highlighted by other comparative studies in this field (Ioannou *et al.* 2016; Prové *et al.* 2015).

In Greece urban gardening arises as a spontaneous reaction to austerity measures, food insecurity, neo-poverty and social exclusion and is connected to the increasing vital role of civil society and informal citizen-led practices with a general protest character for the 'right to the city' (Arampatzi 2016; Leontidou 2010). However, movements towards more direct democracy are locally disempowered vis-à-vis the state and stand in flagrant contrast with central state neo-liberal reforms – their success depends to a large extent on central government political decisions. These conflicting interests make cooperation among civic and public actors more difficult reflecting intolerance of the state towards civic groups deemed blocking national development plans. In opposition, German case studies reveal broad collaborations between public and civic stakeholders that are enabled through participatory mentalities and practices in urban planning and development. This is also due to a structural difference between the two countries in the degree of centralisation: As the national government in Germany has no direct impact on municipal decision making over land-use, conflicts might only arise on local or even project-level depending on the local planning culture, which can become a 'culture of cooperation' depending on shared mind-sets, learning and adaptation processes (Sondermann 2016).

Recent democratic planning practices regarding urban gardening represent a shift from top-down to cooperative planning, which can be observed in Germany since the 1980s. In Greece a similar shift from opposition to cooperation (cf. Mayer 2009) can be observed as power relations between public actors and the civil society are changing in a radical way. Hence, in both countries current forms of cooperation between civil societal activists and state actors are clearly marking that the scope of action towards an active role of civil society and hence a more democratic urban development is possible. A future

research task is to analyse the long-term effects of these cooperative practices today on a more general democratic turn in urban planning.

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The emergence of urban agriculture as part of new urban governance constellation: allotments and farm gardens in Israeli cities

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Abstract

While North America and parts of Europe have a long standing tradition of urban agriculture, in other places allotments and farm gardens are an emerging phenomenon and provide new perspectives regarding landscape forms and planning dynamics. This is also the case of Israeli cities where urban gardening dates only one decade back after many years of separation between the urban and the rural realm. These new sites of urban agriculture can be understood as part of the growing capacity of municipalities to initiate untraditionally productive as well as non-productive land uses within their jurisdiction. They are also a result of the growing role that various NGOs play in producing urban space, fulfilling (as many claim) the voids created by the withdrawal of the state. Based on interviews with municipal and civil organizations' representatives and analysis of secondary materials on urban agriculture initiatives in two cities in Israel – Rishon LeZion and Bat-Yam – this paper examines two different manifestations of this new phenomenon; one shows municipality initiated and managed allotments, and the second shows NGOs initiation and management of allotments and farms. The results suggest that while both models progress without a policy guiding their development, urban agriculture in Israeli cities emerges in a top-down form, through the collaborations of various stakeholders. While urban space is allocated to enable allotments and farms gardens, there is no grand vision that may sustain their future and the potential development of additional

sites. Thus, contemporary urban landscape is constructed and organized through temporary constellations by provisional stakeholders.

Introduction

The modern city that evolved out of the industrial era gave rise to planning and development of green spaces and new agriculture practices. Living and work conditions within the industrial city called for intervention; the creation of green open spaces (around the middle of the 19th century) and somewhat later, the development of fresh produce cultivation areas. In 19th century urban food production sites were developed in the form of allotment gardens in Europe, and in the form of community gardens for immigrants and school gardens in US cities. In a way, these actions begun to reinstate the connection between the urban and the rural that was broken by industrial development (Vejre & Simon-Rojo 2016). They were considered as organized social reforms for correcting some of the new difficult conditions of the urban working class (Keshavarz & Bell 2016; Lawson 2005; Moore *et al.* 2015). Others suggest that these developments are part of the Anglo-Saxon bourgeoisies' fear of diversification imposed by immense number of immigrant workers (e.g. Gandy 2003 on urban parks and Bassett 1979 on food production sites). According to the latter, the Central Park, for example, was planned as a site for bourgeoisies and their recreation culture but was appropriated by other users as a public space. In the same vein, community gardens in the US were set up as a melting pot mechanism to teach the 'Other' the American (i.e. Anglo-Saxon bourgeoisies) way (Bassett 1979).

Food production sites in both the US and European cities have changed and developed with time and needs. Today, community gardens and farms that are organized and managed by the community are the more prominent form for developing urban food production sites whereas the impressive colonies of allotment gardens in Europe lose ground in the struggle against redevelopment forces (Eizenberg *et al.* 2016; Keshavarz & Bell 2016).

Although the form and many of the functions of urban food production sites have changed since the industrial city, the debate on their social meanings still rings in similar tones. On the one hand these sites are perceived as manifestation of democratized and socially empowering and environmentally sustainable forms of urban space produc-

tion (Corcoran & Kettle 2015; Eizenberg 2012; Ioannou *et al.* 2016), on the other hand the same practice is suggested as reinforcing neoliberal urban development and thus social inequality and spatial injustice. The claim is that while offering a false impression of a struggle against neoliberalism, in fact, neoliberal working principles are internalized in these spaces (Eizenberg 2012; Eizenberg & Fenster 2015; Ghose & Pettygrove 2014; McClintock 2013; Reynolds 2015).

Urban agriculture (UA) is implemented through policy in the Global South to redress poverty and malnutrition (see examples from Peru, Kenya, Ghana and others in Redwood 2012). It is also being formulated as a planning strategy in the Global North to address problems of urban deterioration (e.g. Detroit, Michigan) and urban maintenance (e.g. Berlin, Germany) where municipalities are unable to apply market or public resources (Rosol 2010).

This paper examines the role of urban agriculture within the context of urban planning and governance of Israeli cities. It demarcates the challenges of this emerging practice through an inquiry of the UA vision of the state and municipalities and its applications through planning and policy (or their lack). The empirical data was collected through interviews with municipal representatives (from Rishon LeZion and Bat Yam), representatives of NGOs that are involved in allotment and farm gardens and secondary material from multiple resources (NGOs and municipalities' websites and reports).

Urban agriculture in Israel

Background

Israeli society has a very dominant agricultural ethos that is attached directly to establishment building of the state and creating the new Jewish Israeli subject (Bar-On 2008; Zerubavel 2002). UA is not new in Israel: in the 1930s, small urban farms dotted the landscape of Zionist urban settlements, serving as a means to help the new immigrants with fresh produce, and considered a temporary training phase before settling the countryside (Alon-Mozes 2015). The establishment of the state of Israel in 1948 saw a massive boom in industrialized agriculture, and the importance of UA decreased. In parallel, mass immigration made the transformation of agricultural lands into residential areas, particularly in urban centres, a pressing concern.

But in the 21st century Israel, UA is a newly emerging practice. It is practiced by old-time Israelis in allotments, by new immigrants from Ethiopia in urban farms, by middle-class families in more than a hundred municipalities, by young hipsters on Tel Aviv's rooftops and by some enthusiastic entrepreneurs experimenting with urban commercial farming. UA is spreading quickly growing from approximately 30 sites in 2004 to more than 300 in 2014 (Alon-Mozes forth.). Like other UA initiatives all over the world, the Israeli case is very diverse in purpose, organization and modes of production (Table 1). The allotments and urban farms, which are at the focus of this paper, are prominent in food production.

<u>Type of site</u>	<u>Definition of community</u>	<u>Land ownership</u>	<u>Goals and character of gardens</u>	<u>Number</u>
Community gardens	Open to everyone/ Specific community	Public	Agricultural/ educational, community	178
Allotment gardens	Open to everyone based on leasing	Public, private	Agricultural	6
Community gardens in public institutions	Specific community	Public, institution ownership	Educational-community	59
Urban community farms	Everyone	Private	Agricultural/educational, comm.	2
Therapeutic gardens	Specific community	Public	Therapeutic	46
Private land under community care	Open to everyone/ specific comm.	Private	Educational community	20
Unique gardens/municipal nature Site	Open to everyone/ specific comm.	Public	Nature care	4
				Total: 315 ²

Table 1: Typology of urban agriculture sites in Israel (based on several datasets documenting UG in Israel)

² Since the database of urban food production sites is compiled voluntarily, the numbers presented here are considered as an underestimation of the number of such sites. Some have suggested to us that it is actually double this amount.

UA in Israel is established within a challenging context. First, it is practiced in a very densely populated state in which more than 90% of the population inhabits the urban areas. Second, conditions of water scarcity necessitate irrigation for most of the year. Third, agricultural produce is relatively cheap, with available variety year-round and in short distance.³ Nevertheless, UA is growing through both bottom-up and top-down efforts due to its perceived personal, communal and national contributions (Eizenberg & Fenster 2015; Alon-Mozes & Amdur 2009). To understand the workings of the phenomenon and its governmentality with divide the discussion into three aspects: involved stakeholders and planning approaches: organizationally, spatially and socially.

Stakeholders

According to a recent research on UA in Europe, three types of stakeholders are involved in UA practices: government, civil society, and market (Ortar & Ma'oz 2015). In Israel, the first group consists mainly of urban municipalities, as there is no national policy for UA. Israel's ministry of agriculture is focused mainly on agribusiness and the prosperity of semi-agricultural settlements, and not on projects within cities. Furthermore, none of Israel's cities developed a municipal policy for UA. However, the Bat-Yam municipality, much like Jerusalem, initiates various programs to initiate and support farms and community gardens for special groups (like the poor and the immigrants).⁴

In the local arena, civil society plays the most prominent role. It includes a plethora of supporting NGOs, nonprofit farms, and educational institutions. Generally, UA is supported by environmental organizations promoting urban sustainability on the one hand, and by social organizations assisting immigrants, the elderly, and other disadvantaged communities on the other (Eizenberg & Fenster 2015). They often collaborate on specific projects, but their dominance in establishing and managing food production sites entails their control over the agenda and vision for the sites (Eizenberg & Fenster 2015). For these organizations, UA is both a vocation and potential funding re-

³ http://www.perot.org.il/English/fruits/Israel_Agriculture_Booklet__2013_s.pdf

⁴ Interviews with representatives of community welfare unit, Bat Yam municipality (Oct. 2010) and Jerusalem municipality (March 2013)

sources.⁵ Their intensive involvement also releases the government from being a more responsible actor in this regard.

The third component of stakeholders in UA is market entrepreneurship. A number of individual entrepreneurs are currently at work to make their projects economically viable, mainly by lobbying to change municipal and state laws that deny them the privileges of traditional agriculturalists in taxation and especially in water prices, but these efforts are relatively limited.

Planning for urban agriculture

Planning for UA around the world includes organizational planning, spatial planning, and social planning. However, since no single policy to support UA in Israel was formulated, there is no distinct model for planning and maintaining UA. Rather, UA projects are the outcome of a unique constellation of partnerships among stakeholders, budget considerations, and the local conditions. Nevertheless, we would like to review two instances of UA in two cities in Israel – Rishon LeZion and Bat-Yam based on three planning aspects: organizational, spatial, and social. These two cities share a municipal border on the Mediterranean seashore, right south to Tel Aviv-Jaffa. Rishon LeZion, with quarter of a million in population is rated 6 of 10 in social-economic status whereas Bat-Yam, to its north, with half of the population, is rated 5 of 10.⁶

Organizational planning. After reviewing the barriers to UA projects in Israel, Alon-Mozes & Amdur (2009) proposed an organizational model that emphasized collaboration between state institutions and civil society organizations. According to the model, the organization will be responsible for acquisitioning or renting the land, establishing infrastructure, and managing the financial aspects as well as on-site guidance for gardeners on daily basis. Fig. 1 presents the relations between the different components of the model.

⁵ Interviews with representatives from The Joint Distribution Committee, JDC (December 2010), Israeli Society for the Protection of Nature (January 2011)

⁶ Israel Central Bureau of Statistics December 2014.

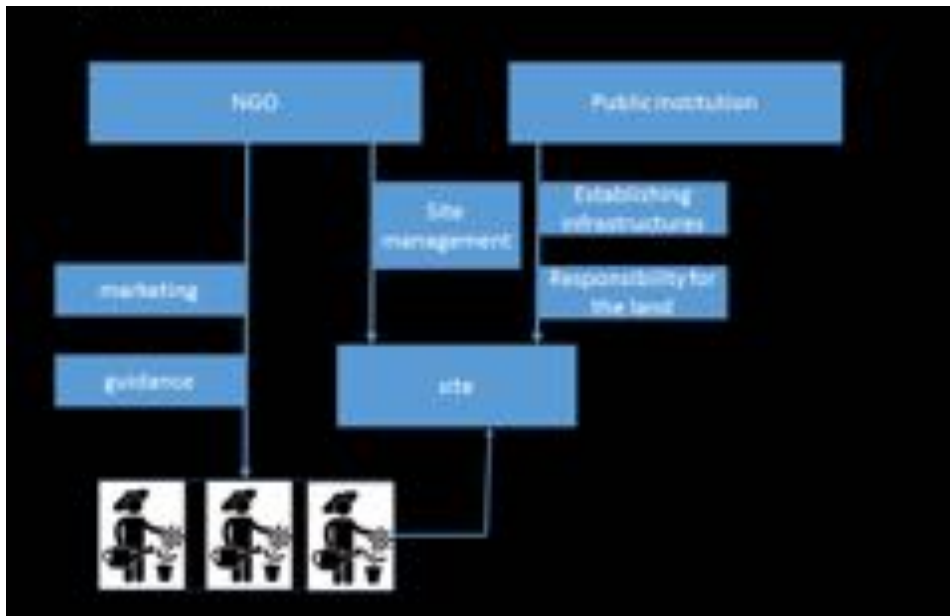


Figure 1: Urban Agriculture organisational model (source: Alon-Mozes & Amdur 2009)

Allotment gardens in Rishon LeZion somewhat follow this organizational model. The municipality established subsidiary company (Rishon Lezion Culture, Sport and Recreation) to promote and manage the allotments. In Bat-Yam, the municipality was persuaded by funding NGO to establish a 'round-table' in order to operate the farm and community gardens for immigrants from Ethiopia. The group's guides are sponsored by an NGO through the municipality community welfare unit. According to the NGO representative, although the organization brings the investment money it is not easy to instil organized collaborative relations with municipalities. This was associated both with work practice of the public sector as well as the lack of municipal focus on UA.⁷

Spatial planning. Spatial planning includes allocation of projects and site design. It primarily determines which sites are appropriate for UA, whether temporarily or permanently. Site design is the product of budget considerations and mode of operation. Since most of such projects are considered modest, they are characterized by minimal investment in spatial planning. Rishon Lezion municipality had allocated two big sites for allotments in relatively central locations. Both sites were divided into plot (100m²) and fenced off. In addition, amenities such as central storage shed and meeting area as well as providence and management of the irrigation system were put in place. In Bat-Yam, the municipality "took over" a major portion of its educational farm

⁷ Interviews with representatives from The Joint Distribution Committee (December 2010)

in the outskirts of the city and allocated to a group of male immigrants from Ethiopia. The space is also gated and locked and the group has a nearby room to sit after work. However, the group has to negotiate on the space with the manager of the educational farm who every once in a while runs their rows with a tractor.

Social planning. Two distinct sectors practice UA in Israel: The first are affluent groups who establish gardens in a bottom up process driven by the desire for a better community and pro-environmental ideal. The second are underprivileged groups, including new immigrants, elderly, and disadvantaged communities, who participate in gardens and farms that were established in a top-down process. The affluent groups require very little social planning and in most cases they prefer neither help nor intervention. They rely on their own resources (Eizenberg & Fenster 2015). The Rishon LeZion allotments display little to no social planning. Each gardener works his own plot and it took the gardeners a decade to establish a reprehensive committee. For less affluent communities, social planning is crucial, and an orchestrated collaboration between the municipality's welfare departments, NGOs, and the community is needed in order to establish, and more importantly to maintain the gardens. The Bat-Yam farm demonstrates the network of collaborations between a strong NGO that is concerned with new immigrants and several municipal units that support immigrants and the project.

Conclusion: Urban Agriculture in Israel

UA is becoming increasingly popular as part of Israeli urban centres among residents, civil society organizations, elected officials and local media. It reminds the journalists of their visits to Berlin, Amsterdam, or other less dense and more peaceful cities. Municipalities promote the idea as a trendy green agenda, since it is relatively cheap and easy to establish. Social and environmental NGOs embrace such projects since UA is a fertile arena for pursuing various agendas. And gardeners, they enjoy the numerous advantages of practicing UA.

However, alongside the applauding voices, considering UA in Israel vis-à-vis the debate between a transformative versus reification of neoliberal space production, some new insights on the debate may be offered. Understanding UA in the Global North as a radical or reform-

ist trend suggests it as an alternative to agribusiness, to contemporary food deserts, and to the lack of food security. It is perceived as a "civic agriculture" connecting people to the process of producing food, and not just consuming it. While the economic rational of self-production might be self-evident in many European and American cities, in Israel there is no economic reasoning for growing food at one's own expense (Alon-Mozes & Amdur 2009).

For less affluent communities, UA is not an alternative food network but rather a supplementary one, enabling, for example, immigrants from Ethiopia to grow traditional herbs that are uncommon in the local markets, as well as to develop no-less important networks within the community and with others.

Critique of UA as part of the neoliberal mode of production emphasizes privatization of public space, which awards only a privileged few access to public amenities. Recently, the neighbours residing around the Rishon LeZion allotments complained against the "private club of key holders", while they themselves were deprived of public recreational space. In Rishon LeZion, the 4th largest city in Israel, in which each resident has about 2.3m² of open space whereas the suggested Israeli standard is at least 10m², 100m² for a family is indeed an extremely wasteful use of land.

The privatization of space has another dimension which concerns municipal investments. As urban agriculturalists pay annual rent and cover all their irrigation expanses, it is extremely cheap for the municipality to hold such a garden instead of a public park, for which average construction expanses are about 100\$ for 1m². UA also reduces expenses for management compared with conventional parks. Finally, the Rishon LeZion allotments, and similar projects all over the country, primarily serve affluent individuals who can pay between \$300-400 rent per year, in addition to the payment for water. Underprivileged communities certainly cannot afford to pay this sum.

As such, projects of UA in Israel as they are currently progressed are mainly spaces for community building for the poor, and semi-public spaces of recreation for the better off. Without organizational, spatial and social planning for UA that will emphasize fare distribution of sites, right to access that is not dependent on payment, and a vision of UA contribution within the Israeli context, UA will remain

sporadic adventure and will eventually disappear in the face of development forces.

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C3 - Motivations for environmental behaviour in urban gardens.

Allotment gardens in Warsaw – studies on ways of plot use and gardening practices

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Abstract

Allotment gardens (AGs), with their share of ca. 2.3% in the city area, are an important element of Warsaw's green infrastructure. By offering several ecosystem services they play an important role in the life of city inhabitants. Their functions and use have changed over time, from mainly food production, in the past, to recreation – nowadays. Paper presents current state of use of the selected Warsaw's AGs. Users' groups, ways of plot development and usage, cultivation practices and plants grown in the gardens, were studied in 6 AGs colonies, located in different city districts. Semi-structured interviews were carried out in 2013 with 180 plot holders (30 per colony), as well as on-site observations. Users over 40 years old were in predomination in all AGs studied. In all gardens both ornamental and edible plants were grown, but ornamental species (over 70% of all cultivated plant species) dominated over the other groups. Cultivated part and lawn had similar share in garden area. Plots were used all over the year. In the high season (spring-early autumn) in most of the AGs over 50% of the users visited them every day, whereas in the winter most of them do that once a month (from 30 to 60% of users). In all AGs both chemical and natural means were used for plant protection and fertilization. Usage of chemical pesticides predominated slightly over the natural preparations, whereas organic fertilizers were more

often used than the chemical ones. Compost was produced in all AGs, as users were obligated to recycle organic wastes from their gardens. Incorporation of natural methods of fertilization and plant protection indicated some ecological consciousness of their users.

Introduction

Urban gardening has a long tradition in Europe. First gardens were created in 18th century to help the poor city inhabitants in the era of industrialization. During both world wars and depression in the 20th century, urban gardens served as important places of food production. After slight post-war decline in some countries, they have been facing revival from the 1970s to the present times (Acton 2011; Keshavarz & Bell 2016). Allotment gardens (AGs) are a unique combination of productive, recreational and social space which provides several ecosystem services for the city inhabitants. AGs improve the quality of their life by provision of food, medicinal and ornamental plants, local climate regulation, improvement of air and soil quality, biodiversity maintenance, serving as places for recreation and relaxation, physical activity, contact with nature and social cohesion (Langemeyer, Latkowska & Gomez-Baggethun 2016).

AGs, with their almost 120-year old tradition, are the most popular type of urban gardens in Poland. Their functions and ways of use have changed over time, similarly as in other European countries, from mainly food production in the past to relax and active recreation nowadays (Duś 2014; Pawlikowska-Piechotka 2010; Szkup 2013). In the mid-19th century, the idea of AGs creation for the poor inhabitants of industrial towns appeared in Poland among the local authorities, private landowners and charity organizations (Pawlikowska-Piechotka 2011). These gardens played mainly provisional function, serving as sources of cheap and fresh vegetables and fruits, but provided also better living conditions and space for recreation in a healthy surrounding. The first Polish AG colony, established in 1897 in Grudziądz, included both individually owned gardens and places for common recreation and education (Gawryszewska 2006). Since their beginning, AGs have played not only the economic role but they also have provided the social-educational function for working class (Zych 2013). During the war-times AGs provided food and shelter for the

people in need and conspirators. After the II World War the main functions of Polish AGs were related to improvement of health and economic situation of the city inhabitants (Pawlikowska-Piechotka 2010).

According to the legal act from 2005 (Ustawa o ROD 2005), in the 21st century Polish AGs (Family Allotment Gardens) had to serve as healthy surrounding for the inhabitants (salutogenic function), places for rest and recreation (recreational function), space for plant cultivation for own needs of plot holders (provisioning function), as well as for protection of natural environment (ecological function). They are still significant elements of urban greenery and recreational system in Polish cities and towns. In 2013 there were appr. 4,950 AG colonies in Poland with appr. 1 million plots and almost 90% of them were located in the cities and towns (Wycichowska 2013).

Kujawska (2009) distinguished in Poland five types of AGs playing different functions for their users. They include recreational, recreational-ornamental, ornamental, ornamental-productive, and purely productive gardens. In the survey carried out in Poland in 2011 most of the plot holders declared use of their plots for both recreation and plant cultivation (58.7%). Recreation as the main motivation was indicated by 21% of gardeners; similarly was food production -20% (KR PZD 2011). The survey conducted in Łódź revealed that over 65% of the interviewed AG users declared the need for relaxation and recreation as the most important motivation for having a plot (Szkup 2013). Strong reduction of food production in AGs and increase of their recreational use was observed also in Katowice conurbation over last years (Duś 2014).

Studies presented in the paper were carried out in the period of the important debate on the future of Polish AGs, just before the introduction of the new law on AGs in January 2014. There is a strong pressure to use the land occupied by AGs (especially in attractive parts of the cities) for the new housing estates and commercial buildings or to replace gardens by the public parks (vast majority of the AGs in Warsaw is closed for visitors) (Giedych & Poniży 2013; Kosmala 2013; Wycichowska 2013). Thus there is a strong need to carry out the studies on the functions of AGs for their direct users and other city inhabitants, to raise the awareness of the public and city authorities about the importance of AGs as an inevitable part of the

sustainable cities, and to protect these valuable elements of urban green infrastructure.

The aim of the study was to identify and analyse ways of plot use and cultivation practices to describe current state and functions of the selected Warsaw's AGs. Research was focused on the plot development and usage, plants grown and gardening practices. The study was carried out within COST Action TU 1201 'Urban Allotment Gardens in European Cities', Working Group 3 (Ecology).

Methods and objects of the study

Studies were carried out in the summer-fall 2013 in Warsaw - the capital of Poland (area: ca. 517km²; population: 1.7million) with a long tradition of allotment gardening. The first AG colony in Warsaw was established in 1907, and is still in use, although its area has been reduced in the last decades. In 2013 there were ca. 176 AGs in Warsaw covering an area of about 1,170 ha (with their share of 2.3% of city area, and 58.2% in urban greenery), managed by the Polish Association of Allotment Gardeners (PZD). AG colonies are located in all districts, except the central one, mostly on the western bank of Vistula river (Giedych & Poniży 2013). Six colonies of 'Family Allotment Gardens' (ROD) located in 3 districts of Warsaw (Bielany, Bemowo, Mokotów) were studied:

AG 1 – "Sady Żoliborskie" (area of 16ha, 461 plots, established in the current location in 1969);

AG 2 – "Lotnik" & "Piaski" (area of 16.9ha, 501 plots, established in 1961-1974);

AG 3 – „Bemowo II" (area of 23 ha, 659 plots, established in 1981);

AG 4 – "Obrońców Pokoju" (area of 6.5ha, 285 plots, established in 1907);

AG 5 – "Rakowiec" (area of 19ha, 520 plots, established in 1927);

AG 6 – "Pod Skarpą" (area of 3.5ha, 96 plots, established in 1958).

In each of 6 AGs colonies 30 plots were randomly selected for the study (they were marked randomly on the AGs colony plan). The survey was carried out by means of the semi-structured interviews with the plot owners and on-site observations for plant species inventory, to collect data on the plot users and garden usage, plants grown and cultivation methods (180 plots in total were studied). Results were elaborated by means of Microsoft Excel, and presented on graphs. From

each of 6 AG colonies answers obtained from 30 respondents were used (n=30). **Results and discussion**

results from the study of 6 AGs located in 3 city districts gave interesting insight into current state of allotment gardening in Warsaw: age of plot users, plot development and plants grown, crop usage, frequency of visits in high and low season, as well as gardening practices (fertilization, plant protection against pests and diseases, environmentally friendly practices). They were compared with the results from the studies on AGs in other Polish cities (Katowice, Łódź, Poznań) and available data from other European countries.

Share of three age groups in the total number of plot users (3 age ranges) was analyzed in the study: users of 40 years old or less (40 years is the beginning of middle age); between 41 and 65 years (age of 65 years is the beginning of retirement in Poland), and 66 years or more. Users over 40 years old were in predomination among the study participants in all AGs studied, whereas the youngest gardeners (≤ 40 years old) were in minority. There were similar groups of users of 41-65 and over 66 years old (Fig. 1). Our survey did not confirm results from the studies already carried out in Warsaw, where elderly, retired people were the main group of AGs users. However, our sample group was relatively small (180 respondents) and did not allow to draw general conclusions. In the studies carried out in 2008-2010 in Warsaw seniors were the main group of the gardeners. It was however observed that young and middle-age people became quite often new plot users (Pawlikowska-Piechotka 2011). Similarly, in the nationwide study carried out in Poland by PZD, users of 51 years old and more dominated among the respondents, whereas the ones in the age < 35 were the smallest group (KR PZD 2011). Generation change among the plot holders was observed in Łódź, with predomination of younger, professionally active users (Szkup 2013). In Salzburg (Austria) AGs most of the respondents were over 60 years old and retired, whereas only a minority of the gardeners was under 40 (Breuste & Artmann 2015). People 65-74 years old were also the majority of allotment gardeners in Germany (the average age of gardeners was almost 60). However the biggest group of new gardeners was in the age of 45-55 (28%), followed by 35-44 (23%) (BMVBS & BBR 2008).

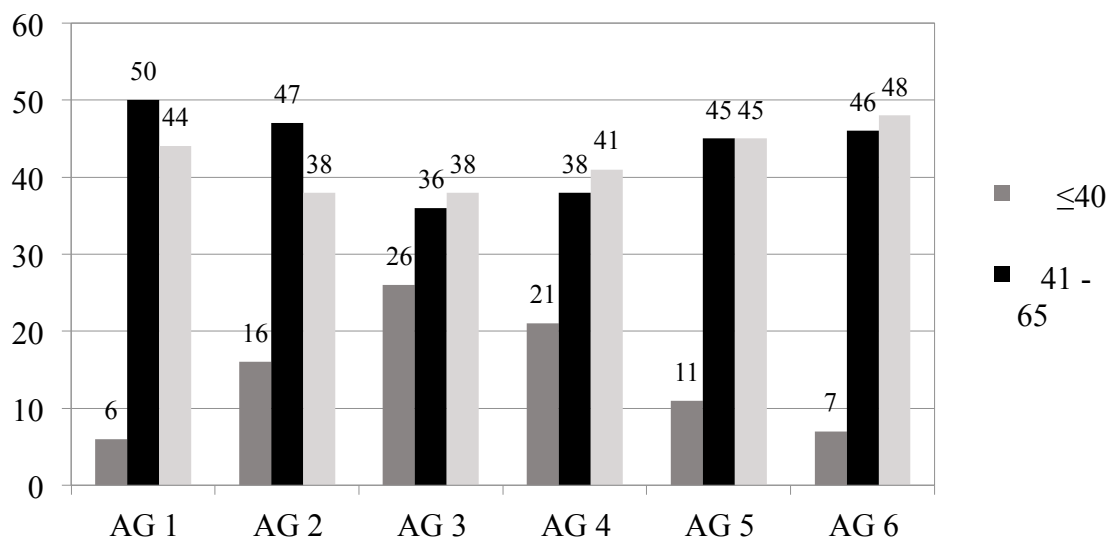


Figure 1: Age of the plot users (% of respondents; n=30)

In the AGs studied mean plot usage period was ca. 20 years (plot usage period is not limited in Poland). Some plots were used by their holders for over 30 years (data not shown). Similarly in Salzburg, about one-third of the gardeners have rented their plots for over 30 years, and about 23% – for ca. 20 years (Breuste & Artmann 2015). According to the Polish law on AGs (Ustawa o ROD 2005), in use during our study, plot in AG in a town could have an area of 300–500m², and the garden house with a terrace could cover 37m². Mean area of the plot in the AGs studied was from 308m² (in AG 1) to 374m² (in AG 6) (data not shown). Cultivated part (with flower beds, vegetable patches, trees and shrubs) covered similar part of the plots as lawn (share of 41–48%) (Fig. 2). Relatively big share of lawn in the plot area can suggest its use for recreational purposes (Kujawska 2009). Enlargement of lawn area was also a common change in the plot development in AGs studied in Poznań, as indicated by the 58% of the respondents (Voigt *et al.* 2015). Lawn was a dominating element in over 20% of the plots studied in Łódź (Szkup 2013). Similar trend was observed in Salzburg, where lawn covering 41–50% of the plot was observed in over 25% of the gardens (Breuste & Artmann 2015).

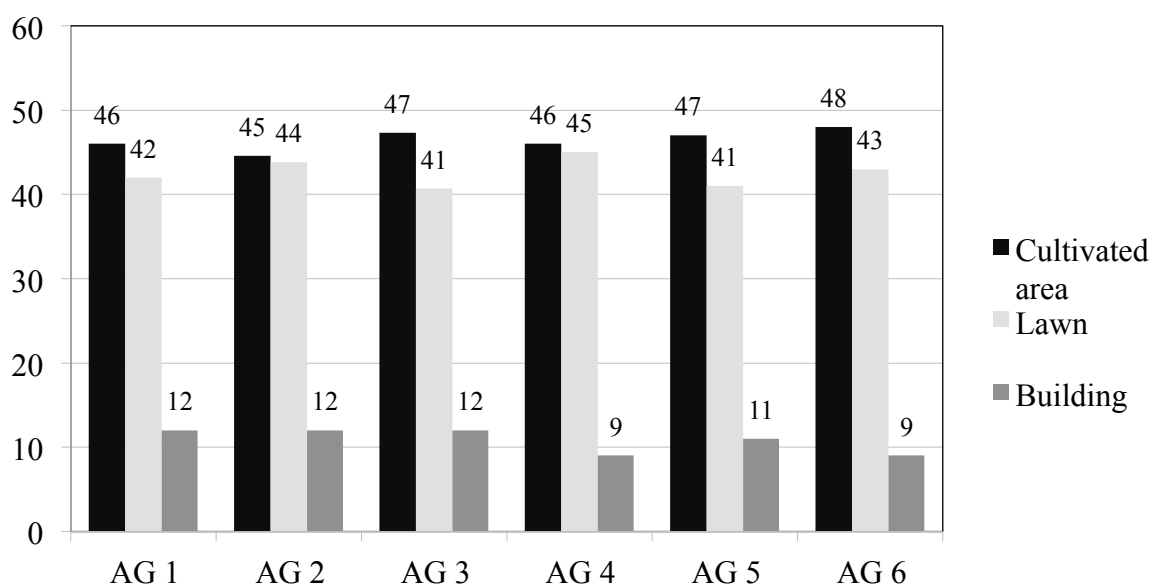


Figure 2: Plot development (% of plot area; n=30)

In all plots both ornamental and edible plants (fruits, vegetables and herbs) were grown. However, in all AGs studied, the number of ornamental plant species dominated over edible plants, reaching from 70–79% of all cultivated species (Fig. 3). Among them herbaceous species (mainly hardy perennials), were more popular than the woody ones (data not shown). Similar trend was observed in other Polish cities (Katowice, Kraków, Wrocław), where ornamental plants were gaining popularity, grown for garden decoration and to be used as cut flowers (Kujawska 2009). Moreover, cultivation of ornamentals requires less maintenance than fruit plants and vegetables, resulting in a reduction of work load in the garden. Similar tendency was observed in AGs in Łódź, where fruits and vegetables were often replaced by the lawns and ornamental plants, cultivated by over 75% of respondents (Szkup 2013). Fruit species were more numerous than vegetables and herbs in the AGs studied (Fig. 3). Fruit shrubs slightly dominated over the trees. Among the vegetable species those with edible fruits (mostly tomatoes and cucumbers) were in predomination (data not shown). As the users declared, all of them used fresh products from their gardens, and 60–83% also processed them (data not shown). Changes in economic situation in Poland and better financial conditions of the citizens led to changes in usage of AGs and plants

grown. As fresh plant products in a big variety can be bought relatively cheap in many stores or market places, plots no longer have to serve as places of food production, and their main function changed into recreation and contact with nature (Duś 2014; Pawlikowska-Piechotka 2011; Szkup 2013). Food production in AGs was more popular in Salzburg, where 76% gardeners from the AGs studied still cultivated edible plants (fruits and vegetables), which were important part of their diet and annual consumption (Breuste & Artmann 2015).

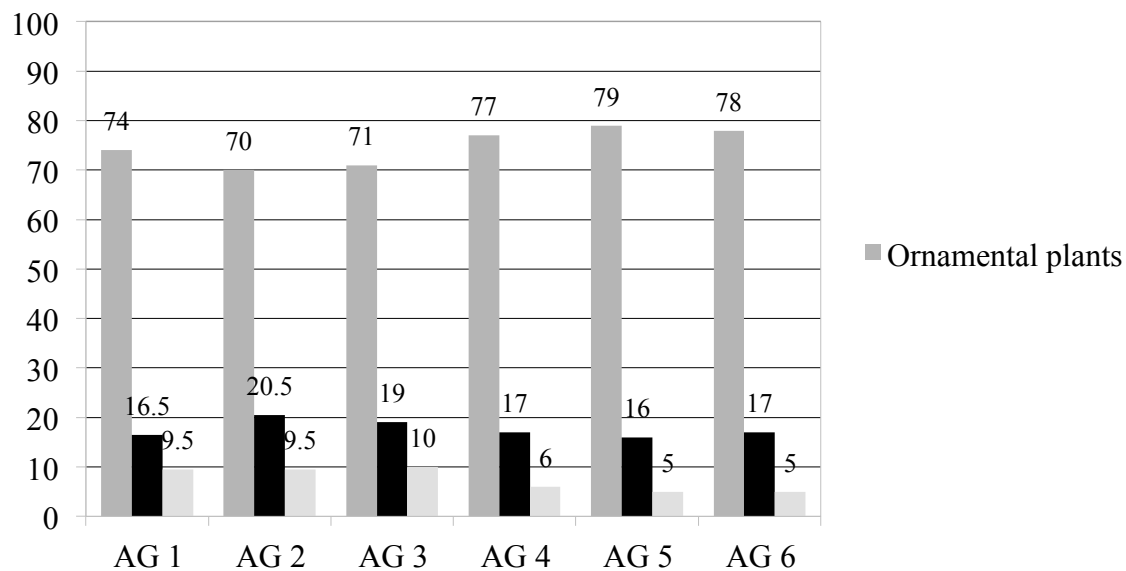


Figure 3: Plants cultivated (% of plant species; n=30)

Motivation for gardening was not studied in our survey, but as revealed in other studies, recreation was an important motivation for having a plot for the majority of AGs users interviewed in Warsaw (82%), Poznań (80%) and Salzburg (80%), whereas self-supply with fruits and vegetables was indicated only by 24.7%-45.9% of respondents (Voigt *et al.* 2015). Most of the plot holders taking part in the nationwide survey carried out in Poland in 2011 declared usage of their plots for both rest and recreation, as well as for plant cultivation (58.7%). Recreation or food production were the motivations declared by the similar groups of respondents (21.2% and 20.1%, respectively) (KR PZD 2011). In the study carried out in Katowice conurbation, respondents most frequently (24.3%) mentioned leisure as the reason of having a plot (for 39.7% of them it was the

main motivation) (Duś 2014). Recreation and relax was also the main motivation for plot gardening in Ljubljana (Slovenia), and production of healthy food was more important there than food production to reduce living expences (Bukvič 2010). Opposite to the trend observed in some Polish cities, self-supply with fruits and vegetables was the most important motivation for allotment gardening in the AGs studied in Lisbon (Portugal) and two towns in the West Scotland (UK) (Voigt *et al.* 2015). This finding might be related to the ways of AGs development and usage, local rules, plot size and equipment. Food production was the motivation most often mentioned by the users of urban gardens in Paris (France) and Montreal (Canada), from quantitative and qualitative point of view, and it supported other garden functions (Pourias, Aubry & Duchemin 2016). Similarly, in Latvia (Riga and Cesis) AGs users indicated growing food, to support the household budget and provide fruits and vegetables for consumption in winter, as the main reason for having a plot (Eizenberg *et al.* 2016).

Despite the climatic conditions in Poland, AGs can serve as places for rest and recreation during the whole year (Duś 2014). They are usually used by the plot holders and their families, as most of them is still closed and unavailable for the other city inhabitants. However three from the AGs colonies studied (ROD "Sady Żoliborskie", "Obrońców Pokoju" and "Rakowiec") are valuable exceptions, as they are open for the local community, serving as recreation areas. AGs are especially important for the elderly people, and inhabitants with the low income, who cannot go out of the city for the weekend and holidays, nor use the recreation facilities in the city. AGs offer contact with nature, physical activity and social interaction, important for all city inhabitants, but especially for the elderly (Hawkins *et al.* 2013; Latkowska 2013). Plots studied in Warsaw were used all through the year. In the high season (spring-early autumn), in most of the 6 AGs studied, over 50% of the users visited plots every day, whereas in the low season (late autumn-winter) most did that once a month (from 30-60% of users). There were also some gardeners who visited them during winter more frequently – even once a week or every day (Fig. 4-5). Visits in the high season were strictly connected with the recreational use of plots and care for plants, whereas in winter users come usually for a walk and to feed animals living in AGs (wild-living

cats, birds), as they declared in the interview. AGs in Łódź were the most intensively used in the spring-summer period (end of April-middle of September). In the summer (July-August) plot users spent there ca. 19 days a month. Elderly, retired users visited gardens more often and spent there more time than the younger and professionally active plot holders (Szkup 2013). Similarly, in Salzburg the majority of gardeners (59%) used the plots in the summer few times a week, or even every day (36%) (Breuste & Artmann 2015).

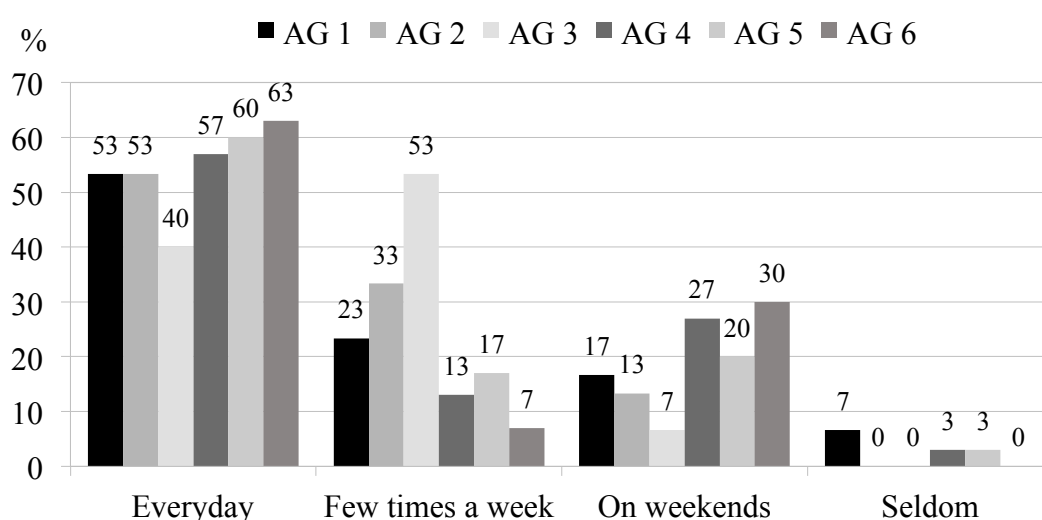


Figure 4: Frequency of visits in high season (% of respondents; n=30).

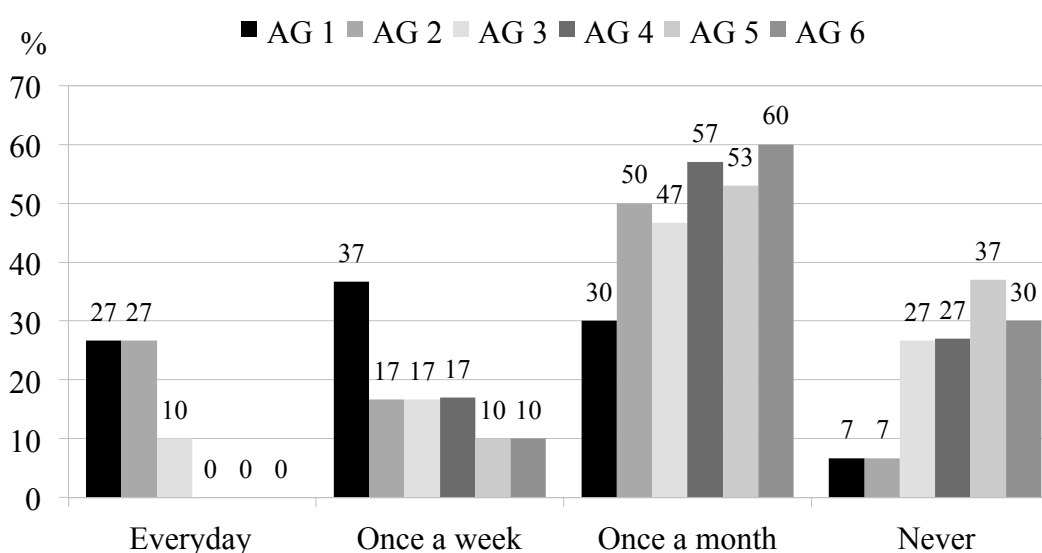


Figure 5: Frequency of visits in low season (% of respondents; n=30).

In all AGs studied, both chemical and natural products were used for plant protection and fertilization. Slight predomination of chemical pesticides and fungicides usage over natural methods was declared by the respondents (Fig. 6-7). This can be explained by the better availability and effectiveness of chemical products. Polish plot holders are obligated to use pesticides approved by the Polish Association of Allotment Gardeners, which are less harmful to people and environment than other chemicals. Natural fertilizers were more often used than the chemical (mineral) ones. As it is obligatory to recycle and reuse organic wastes from the garden, compost was produced on all the plots studied (data not shown), and used for plant fertilization as the main organic fertilizer. Another study carried out in Warsaw revealed that pesticides were used regularly only by 6% of respondents, whereas 42.2% of them used them occasionally, and 51% - avoided chemical plant protection against pests and diseases. Similar trend was observed in Poznań, Lisbon and Salzburg (Voigt *et al.* 2015).

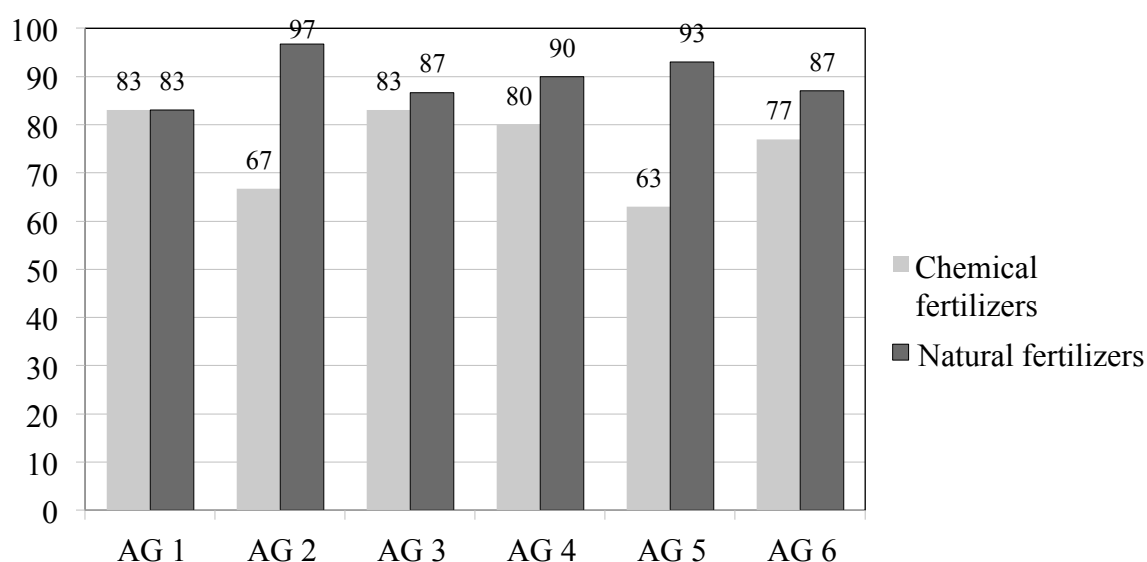


Figure 6: Fertilization (% of researched plots).

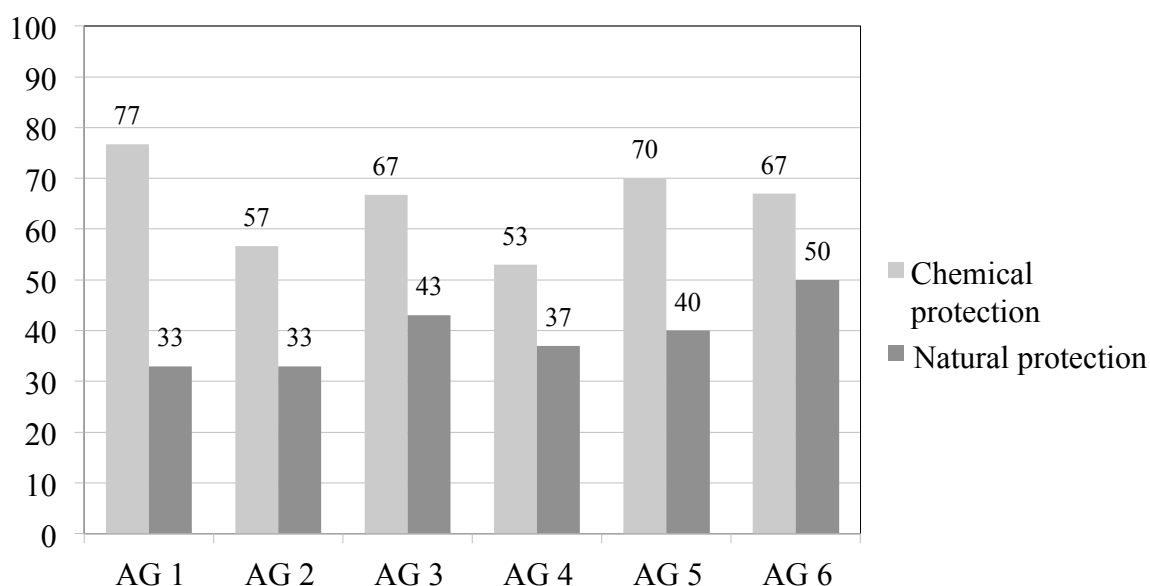


Figure 7: Plant protection (% of researched plots; n=30)

Gardeners from the AGs studied took care of the wild-living animals by feeding them and providing shelters. Care of birds was the most common activity, including establishment of nesting boxes and providing food in the winter, whereas care of beneficiary insects was of less popularity (special plants, insect hotels) (data not shown).

Conclusions

AGs studied in Warsaw were important places for relax and recreation for the plot holders and their families, used all through the year, even during the winter. In the high season over 50% of the users visited their plots every day. Although in all plots studied both ornamental and edible plants were grown, ornamental species dominated over fruits and vegetables. Moreover, enlargement of lawn area was observed on the plots. Lawn covered similar parts of the gardens as its cultivated parts (with flower beds, vegetable patches, trees and shrubs), what can suggest recreational purposes of plot use. However, plots were also used for some food production, providing plant products which were used fresh and processed.

Changes in plot development and selection of plants can be related with some generation change observed in the AGs studied (within a sample group of 180 gardeners), where significant group of users were middle-aged people (41-65 years old). The elderly, retired gardeners

were no longer the majority, although they were still one of the main groups of users. Public and city authorities should be aware that AGs are especially important for the elderly people, usually with the low income and often living alone, providing them space for the cheap relax in the green environment and physical activity improving their health status, as well as social contacts. Gardening is a popular form of leisure time activity among Polish senior citizens. It was the second favorite form of leisure, highly valued as form of active recreation especially by the elderly people (Mogiła-Lisowska 2010). This finding was confirmed by the later nationwide Polish study, where gardening was the most popular physical activity (64.6%) among the respondents over 65 years old (Rowinski, Dabrowski & Kostka 2015).

Some of the AGs colonies studied were open for the public, thus they served also as green recreation areas for the local community. This action fulfills Warsaw inhabitants' expectations and AGs functions included into the new legal act, which encourages AGs managers and plot holders to increase the accessibility of AGs for the local communities. The main goal of the new Act on Family Allotment Gardens (Ustawa o ROD 2013), which came into force in January 2014, is to provide protection and development of AGs in Poland. The present objectives of AGs include: leisure and recreation for the users, cultivation of plants, social integration, healthy environment, green space for local community, environment protection (Drilling, Giedych & Poniży 2016). To make AGs more environmentally friendly places, it is important to raise the gardeners' ecological awareness by increasing their knowledge on organic gardening methods (eg. natural fertilization and plant protection, companion planting), care for the beneficiary animals (insects, amphibians, reptiles) and ecological garden behaviour. We addressed the ecological issues of allotment gardening in our further studies.

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**D3 – Models and scenarios for scaling up urban gardening;
reasons for success or failure**

The challenges of Warsaw allotment gardens development

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Abstract

Allotment gardens constitute a significant element of Warsaw green structure. They account for almost 20% of all green areas of the city and occupy a larger area than parks. Despite more than a century of history of AG in Warsaw and obvious benefits of their presence in the city structure as providers of a variety of ecosystem services, their presence is threatened (Barthel, Folke & Colding 2010; Buckingham 2003; Speak, Mizgajski & Borysiak 2015). It is due to relaxation of law on AG, urban pressure and lack of will to treat AG as development target. The main aim of this study is to identify different possibilities of development of Warsaw allotment gardens using the scenario method, also known as alternatives futures. The scenarios are based on analysis of country- and municipality-level rules and procedures, which support the development of allotment gardens. These include: legislation on allotment gardens, municipal spatial policy as well as the power of different stakeholders in relation to allotment gardens development (Scheromm 2015; Spilková & Vágner 2016). The analysis revealed that allotment gardens in Poland are supported by many acts of law and regulations. However their position in the city development framework is dependent on many factors, e.g.: land ownership, supply of areas for grey and green infrastructure development, the attitude to allotment gardens in public discourse (Spilková & Vágner 2016). In the case of Warsaw the main drivers of AG development are: claims for the land nationalised after World War II, plans of the municipality to change allotment gardens areas into public parks and the ambiguous perception of allotment gardens by the

municipality and AG users. Given the above analysis we developed four scenarios of AG development, depending on willingness of Warsaw municipality to cooperate with AG associations and public demand for AG growth. In response to these problems, the scenarios present: an optimistic model where the city council cooperates with AG associations and there is a high demand from the potential users; two conservative models characterized by either low cooperation of AG associations with the city council or a lack of interest in AG from their potential users; and a pessimistic one where there is both low cooperation and moderate interest from the potential users to become a gardener. For each of the scenarios, conditions for its implementation are developed and presented as a possible future of AG in Warsaw.

Introduction

Allotment gardens in Warsaw constitute an important part of all green and open areas in Warsaw. Scientists argue that their existence has a positive effect both on the ecological system of Warsaw and local inhabitants as a place for leisure and active recreation in inner city (Barthel, Folke & Colding 2010; Buckingham 2003; Kronenber, Bergier & Lisicki 2013; Pawlikowska Piechotka 2009; Speak, Mizgajski & Borysiak 2015). However, due to their complicated legal position and negative perception, caused mainly by the low aesthetics and association of AG as relic of socialist times in Poland, allotment gardens in Warsaw have nowadays many problems and their future existence depends mainly on two factors: decisions of the city council if and where they can exist and public demand for them (Drilling Giedych & Poniży 2016; Kosmala 2013; Wycichowska 2013). At the same time the problems of allotment gardens in Warsaw are not universal for Poland. Although their bad image among society is common in the whole country caused by associations with Polish People's Republic times (when many of them were established on nationalised private land), claims for the lands of AGs in the inner city, which were nationalised after World War II and given to Polish Gardeners Association, and the current policy of the city to treat them as land for urban development are major problems mainly in Warsaw. Currently, due to the new Family Allotment Gardens Act of 2013, there is still a chance for new directions of development, despite the Warsaw Allotment Gardens' difficult situation. However it requires cooperation between different groups of

stakeholders (Drilling et al. 2016). Family Allotment Gardens Acts of 2013 was mainly released to protect existing allotment gardens but also allowed to establish new ones by the new Allotment Gardens Associations. The basic right of these Associations is to get fundings from local municipalities for their recultivation and development (Chancellary of Sejm 2014). It seems though, that without interest of the City Council to cooperate with those organisations, the law will fail to give effects. Using the scenario method also known as alternatives futures, in this research, authors try to answer the question what can be a possible future of AG in Warsaw and what are the main challenges of the development of AGs in this city.

Allotment Gardens in Warsaw- legal bases and future challenges.

Legal bases of future allotment gardens development

Analysis done by examination of policy documents of Warsaw City Council has shown that there is a lack of information about the future development of those areas. As it happened to many post East Bloc Countries neither city council of Warsaw or Polish Gardeners Association has ever developed any strategy for maintenance of Allotment Gardens in Warsaw (Spilková & Vágner 2016).

Municipal Study of Spatial Pre-conditions and Directions of Development for Warsaw of 2010	Environmental Protection Programme of Warsaw for years 2009-2012
• Reorganisation of allotment gardens into arranged greenery or arranged greenery with sport and recreation facilities; • Reorganisation of many allotment gardens or parts of them into public parks;	• Recommendation for using allotment gardens only for recreation and to avoid cultivating as the soil is highly polluted in many of them; • Allotment gardens are agricultural land however they should be perceived as recreational base of Warsaw; • reorganisation of some of the allotment gardens into public parks

Table 1: General premises for allotment gardens in Warsaw according to Municipal Study of Spatial Preconditions and Directions of Development for Warsaw of 2010 and Environmental Protection Programme of Warsaw for years 2009-2012.

There is only basic information about general plans for the city development and about allotment gardens, which are contained in two documents: Municipal Study of Spatial Preconditions and Directions of Development for Warsaw of 2010, and Environmental Protection Programme of Warsaw for years 2009–2012 (see Table 1 for the main premises for allotment gardens which are presented in those two documents).

Although presented documents show that there were plans for terminating of allotment gardens and rebuilding them e.g. into parks, as it was mentioned in the introduction, Family Allotment Gardens Act of 2013 put a demand on all municipalities in Poland to support existing allotment gardens, and if there is a need to terminate some – to establish new ones in return (Drilling *et al.* 2016). According to this regulation the legal situation of allotment gardens in Warsaw is again not prejudged. Allotment gardens associations in Warsaw can still demand land and financial support for allotment gardens from the local authorities. However it may be difficult without both introducing a general strategy for development of green infrastructure with allotment gardens and providing good spatial management plans of existing allotment gardens and establishment of new ones it may be difficult (*ibid.* 2013). Good example of this kind of action was done in Lisbon, where the city council made a decision of creating the Green Plan for development of all green areas including allotment gardens. According to that decision their position in the spatial planning of the city is now much stronger (Matos & Batista 2013).

Current problems of allotment gardens in Warsaw

At the same time Allotment Gardens in Warsaw have several problems connected to: claims for the ownership of the land where they currently exist (currently about 100 AG in Warsaw are those which were established on nationalised grounds during the times of Polish People's Republic), high pressure for commercial use of this land, ideas of replacing some of them by parks (according to the Municipal Study of Spatial Preconditions and Directions of Development for Warsaw of 2010), low aesthetics of plots, conflicts between stakeholders (City Council, different Allotment Gardens Associations, gardeners), low quality of the soil which is highly polluted in many allotment gardens and negative perception of allotment gardens by the society (Giedych & Poniży 2013; Kosmala 2013; Malinowska & Szumacher 2008; Wycichowska 2013; Statement of the National Council of Polish

Gardeners Association n.d.). In a sense of spatial planning of these areas there is also a big problem with identifying the number and localisation of all allotment gardens.

Future of allotment gardens in Warsaw – scenario method development

Nowadays over 150 allotment gardens exist in Warsaw (Mazowiecki PZD n.d.). Fig. 1 presents areas where they were identified during the study using data from Allotment Gardeners Association.

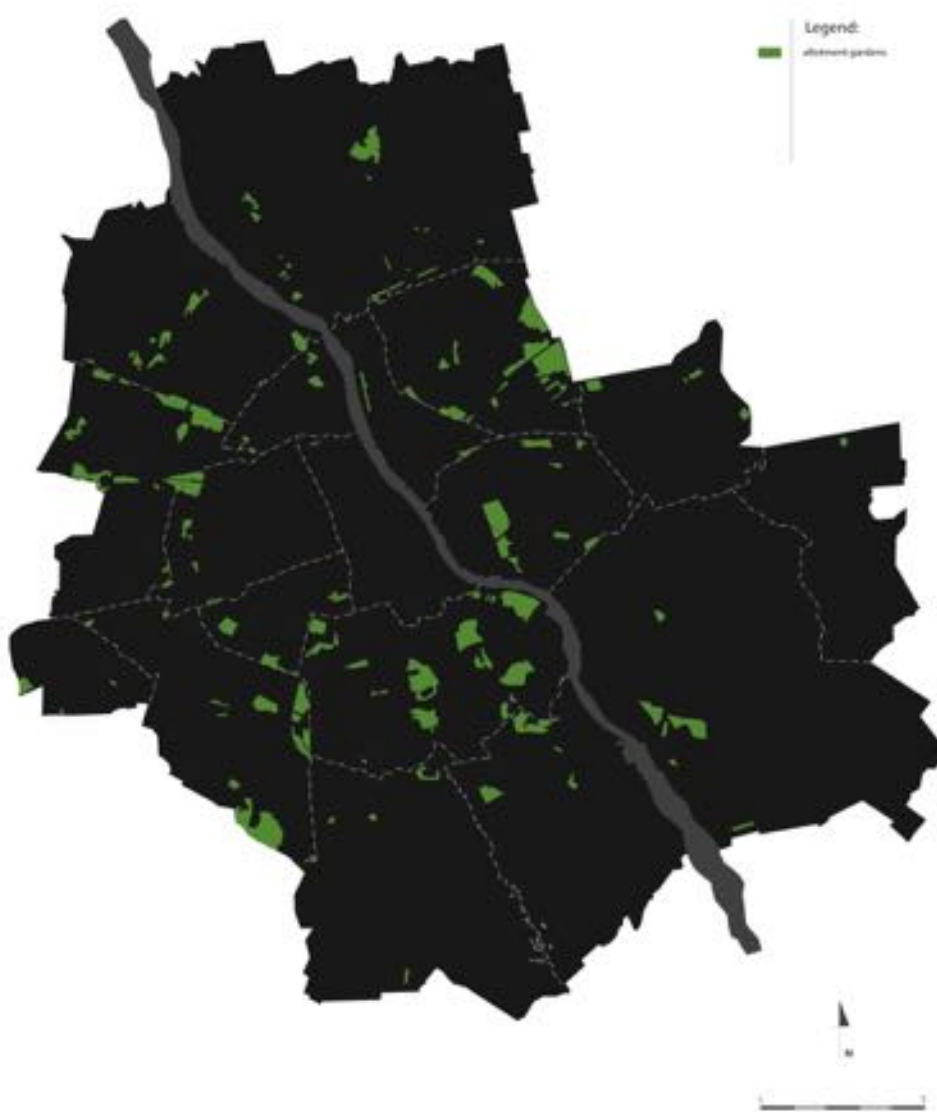


Figure 1: Arrangement of Allotment gardens in Warsaw in 2015 (source: Szumilas)

Allotment gardens nowadays cover many big areas and they constitute an important part of the structure of the city. However due to current legal problems of AG in Warsaw and especially claims of ownership for the nationalised land in PPR times many of them might disappear. Moreover in some districts there is even higher pressure to reprivatize lands of AGs because many of them were established in areas which are nowadays very attractive for commercial development (Malinowska & Szumacher 2008). Another problem, which was mentioned before, are plans to rearrange allotment gardens into public parks. Fig. 2 presents data about allotment gardens which are currently in danger of termination.

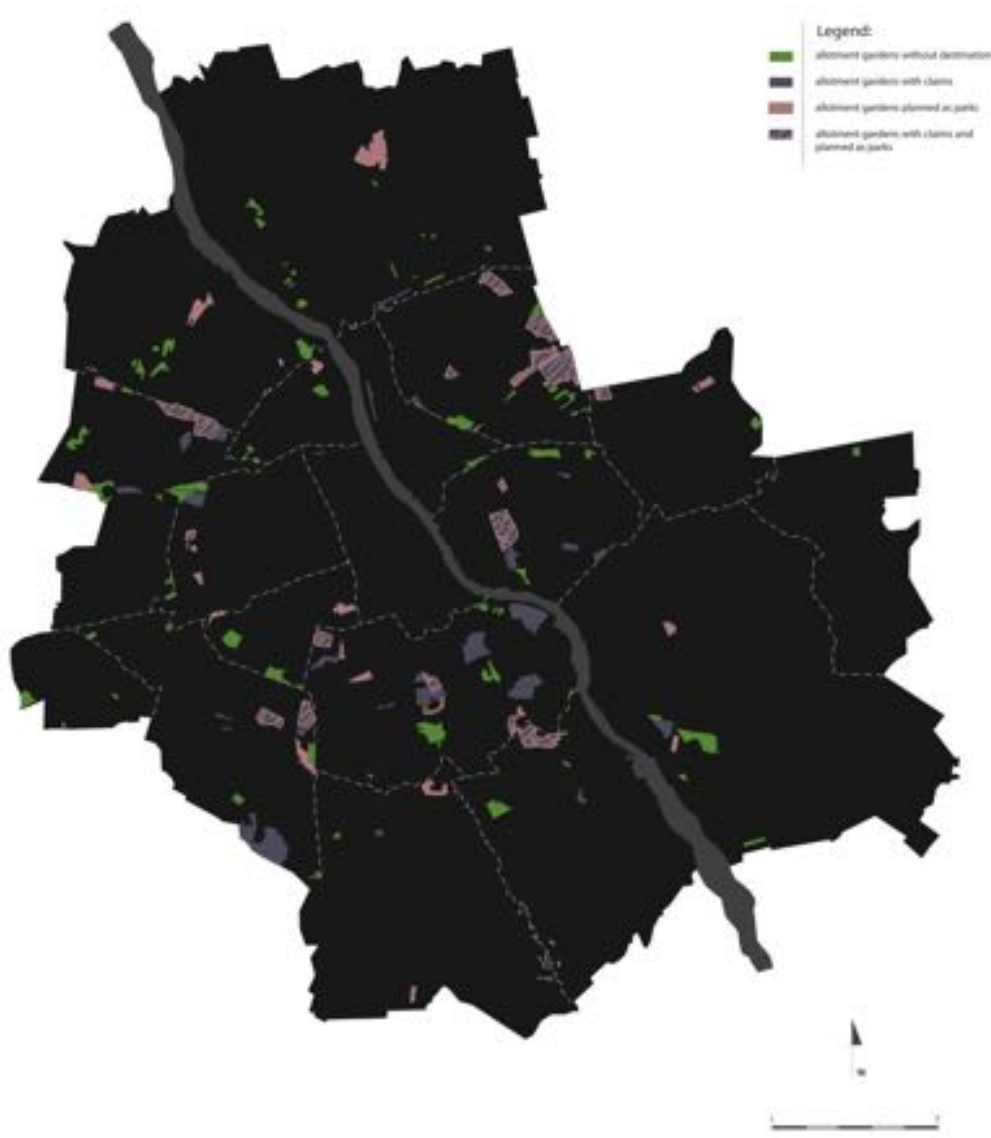


Figure 2: Allotment gardens in Warsaw: allotment gardens with claims to reprivatize the land, planned by the city council as a park, and without plans for the future (source: Szumilas)

Nowadays over 100 allotment gardens exist on land with claims or are planned to be turned into a public park by the city. Without the support from the city about 60% of allotment gardens can be terminated (Statement of the National Council of Polish Gardeners Association n.d.). At the same time in the Municipal Study of Spatial Preconditions and Directions of Development of the Capital City of Warsaw there is information about all arranged green areas planned in

Warsaw. As it was mentioned before there is no direct information about the way how these areas will be managed in the future. It means that due to high public demand for allotment gardens and good cooperation with the city some of those areas could be preserved for the allotment gardens. Figure 3 presents areas where new allotment gardens could develop.



Figure 3: Areas where allotment gardens could still develop on the land planned as arranged greenery according to the Study of the Municipal Study of Spatial Preconditions and Directions of Development of the Capital City of Warsaw (source: Szumilas)

To examine the possible future directions of AGs the development scenario method was used (Kosow & Gaßner 2008). According to this method the authors developed four scenarios (see Figure 4).

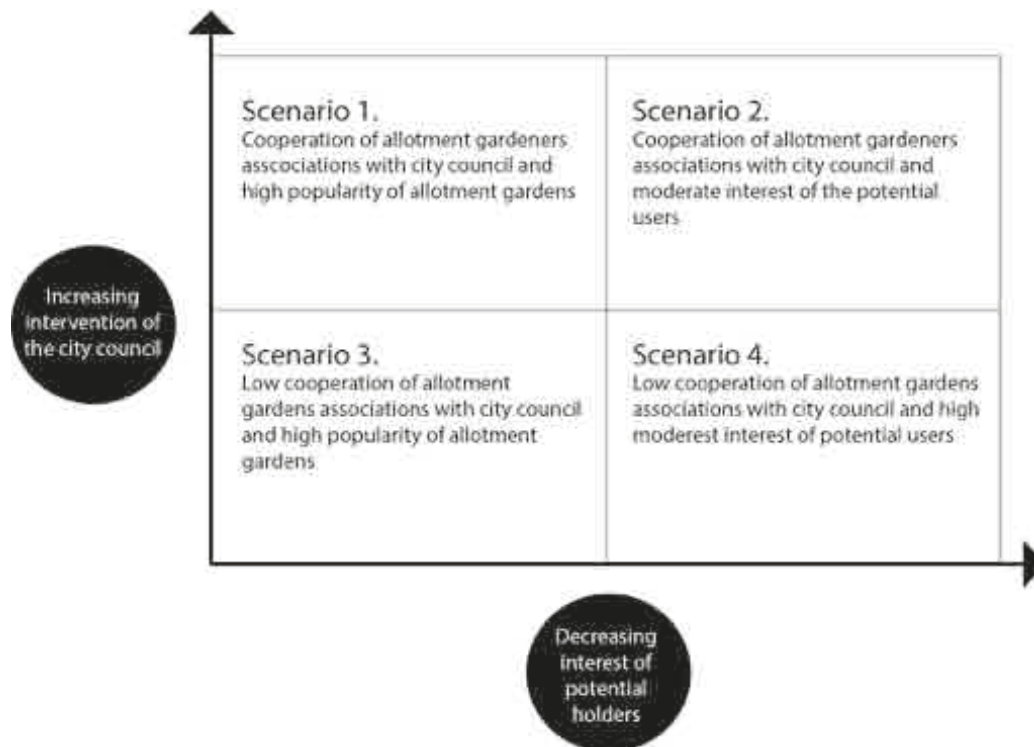


Figure 4: Scenario Matrix

Each scenario presents an alternative version of future development of allotment gardens in Warsaw. Scenarios are based on different but most possible directions of cooperation between the city council and AG Associations with potential users. The matrix constitutes relations between increasing intervention of the city council and decreasing interest of potential holders.

The first example describes an optimistic scenario with good cooperation between Gardeners Association and the city council with high interest of potential users. In this scenario the city council is responsible for creating a strategy or masterplan for development of allotment gardens to improve the quality of green infrastructure of the city. At the same time associations of gardeners should work on promotion of allotment gardens to improve popularity of AG in the city. However the biggest problems of developing this scenario are the lack of area which may be used as an allotment garden or at least a

temporary allotment garden and the fact that the city would be able to offer land only far from the city centre and users would be forced to travel far to reach their plots.

The second scenario is also based on the good cooperation between city council and AG Associations. Again city is active in building the strategy for AG and maintains their existence in the city structure. However there is a moderate interest of the potential users and plots are not used by a sufficient number of people to create complex network of AG in the city. In this scenario it is important to consider problems like: lack of potential new gardeners in the allotment gardens and degradation of the land which was given from the city council for development of allotment gardens.

The third scenario describes future where city is still not interested in good cooperation between AG associations. City will be against providing land for AG close to the city centre to have the possibility to sell this land for the commercial development for higher income. However, in this scenario there will be a high pressure of the potential users to create allotment gardens in any wasteland to own a plot. There is also a high risk that most of those gardens would be illegal and only temporary.

The most pessimistic one is the last scenario. This scenario describes the situation when, due to claims, city is obliged to give back the land and is not interested in providing new places for allotment gardens. Those, which are without claims but planned as parks, will change into this type of green area. Low interest of inhabitants of Warsaw in having own plots in AG will also intensify the process of termination of allotment gardens. This scenario is also very dangerous for the sustainable development of the city. It may seriously damage existing green infrastructure of the city. There is also a big question what happens if there will be no land preserved for future urban development of the city if allotment gardens will be terminated in a short time. The biggest problem of this scenario is in fact the decreasing quality of living in Warsaw due to termination of allotment gardens. Today they are an important part of the green structure of the city and they provide many ecosystem services. Without them Warsaw may have serious problems with the ecology of the city.

Conclusion

The future of AG in Warsaw is today perceived as rather unstable. It is still a huge challenge to convince people that allotment gardens are a common good for each resident of Warsaw and that their existence should be protected. Currently most people in Warsaw are not aware of the problems which may cause the termination of allotment gardens. Negative perceptions of AGs as places with the image of a relic of socialist times, often low aesthetics, without access for non-gardeners (sometimes reason of envy of those who are not having their own plot in inner city) are causing people to not defend them from the commercial pressure to build on those green areas. At the same time the City Council seems not to understand that a decreasing number of AG, specific green areas with high biodiversity, may cause serious problems and can seriously reduce the quality of living in the city. Four scenarios of development of Allotment Gardens in Warsaw, which were based on the most probable courses of events, are an attempt to deal with this problem. Undoubtedly allotment gardens in Warsaw need a general strategy of development and good promotion to survive. Solving the problem of ownership of the land where AGs exist by the Warsaw City Council and improvement of the perception of allotment gardens by the city inhabitants should be a priority to maintain AG in Warsaw. It seems that without cooperation between the Warsaw City Council, different allotment gardens associations which started to appear after the change of law (Family Allotment Act 2013) and potential new users of allotment gardens this will be impossible and their termination will be inevitable.

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Urban gardens in Switzerland: current challenges and visions for the future

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Abstract

The nature of urban gardening is constantly changing. A number of driving factors are becoming increasingly apparent which herald rather fundamental changes for urban gardening in Switzerland in the next few decades; especially to its most prevalent form: allotment gardens. Foremost among them are the increasing compaction of cities and the consequent changes in land use; but demographic changes, a decreasing readiness to volunteer for management positions in allotment garden societies, and demands for different forms of urban gardening are also included. This contribution is based on expert interviews conducted with city officials and urban gardeners in management positions of allotment gardens. The interviews were used to gather and order the current and foreseeable challenges. Building on these interviews, two workshops were conducted in which important gardening stakeholders used scenario techniques to identify and evaluate visions for the future of urban gardening in Switzerland. The results of these

interviews and workshops are presented and discussed, and the present and future challenges are named. The consequences of future developments of these factors are presented qualitatively and the developed visions for the future are described.

Introduction

Background

It is expected that by 2050, about two thirds of the world's population will be living in urban areas. From 3.9 billion today, the number of people living in urban areas is forecasted to increase to 6.3 billion by 2050 (United Nations 2014). Although much of the growth in population is projected to take place in Asia and Africa, all parts of the world may experience considerably larger city populations due to global migration. To attain and safeguard a high quality of life for a sharply increasing number of city residents, the living conditions within cities are crucial. Considering the long time needed for deliberation, democratic decisions, planning processes and implementation in the form of construction projects, it is important to realize that the foundations for the livable cities of 2050 are literally being laid today.

Gardens within cities can significantly improve the quality of life for city residents. They serve as spaces for recreation, they can provide their users with locally grown, high-quality, fresh food, and they help improve the urban climate. It thus seems advantageous for cities to include gardening activities in long-term strategies for their future. For that, a number of far-reaching choices have to be made, for example regarding the locations and the organization of the gardens within a city. It thus seems worthwhile to take a step back and consider the basic functions that gardening shall assume, as well as the expected future conditions under which gardening will operate.

Research approach

This paper presents a brief overview of a study which aimed at generating knowledge addressing these issues. Based on literature research to establish the current state, interviews were conducted with experts in the field of urban gardening to gain insight into current and expected factors influencing urban gardening. The process

was concluded by two scenario workshops. There, based on the previous results, visions for the future were developed and evaluated.

Research methods

Expert interviews

Fifteen structured interviews were conducted in the cities of Basel, Luzern, and Zürich. In each city, one representative of the municipal administration and three to five presidents of allotment garden societies were interviewed. The interviews took place from October 2015 to February 2016, each at a location chosen by the interviewed person. The interviews followed a guideline which comprised six topics. The first three topics ("strengths and weaknesses of the current organizational form of urban gardening", "demographical structure of the tenants and their motives for renting a plot", and "demand and new tenants") made up the major part of the interview, followed by three shorter blocks ("further difficulties and solution approaches", "possible alternatives to the current organizational form", and "perceived importance of gardening within the municipal open space planning"). On average, the interviews lasted 63 minutes (range: 40 to 98 minutes). The audio recordings of the interviews were transcribed and later categorized using RQDA (Huang 2014).

Scenario workshops

In spring 2016 two workshops were conducted in the cities of Lausanne and Olten. In Lausanne, eleven people participated in the workshop, all of whom were involved with gardening in Lausanne. In Olten there were twelve participants from different cities of the German-speaking part of Switzerland. The participants were involved with different aspects of urban gardening and consisted of representatives from city administrations, allotment garden societies, community and intercultural gardens, architecture, landscape architecture, and art.

The workshops followed a predefined course: After a recapitulation of traditional roles of gardening within cities, the participants were asked to each collect driving factors relevant for the future of urban gardening (e. g. migration processes or the superannuation of the population). These were then cooperatively sorted to form clusters of driving factors (e. g., demographic changes). The participants then formed groups to devise scenarios for urban gardening based on the different possible developments of these driving factors. Each group

was asked to focus on not more than three factors simultaneously. The last step consisted of collecting and discussing the steps to be taken to reach the most desired scenarios.

Results

The following section briefly describes the most important insights gained from the literature research, the expert interviews, and the scenario workshops. While many of the remarks concern all forms of urban gardening, some are specific to non-private gardens (e. g. to allotment gardens).

Past and present roles of urban gardening

Gardening has always been an important constituent of city life, constantly adapting to changing circumstances and, over time, serving qualitatively very different purposes. During times of crisis, the produce from urban gardens represented a crucial **food source** for city dwellers when imports of food into the cities could no longer be relied upon. In times of peace and prosperity, **recreational functions** became more important than the mere provision of nourishment.

Consequently, urban gardens may also have a **socially balancing function**. When cities or large companies offer allotments for rent to their citizens or employees, they alleviate some of the unequal distribution of wealth and income within society, because these gardens can serve as a space for recreation and a means of self-subsistence to people who may otherwise be deprived of both. From a psychological point of view, offering gardens to less-affluent people may be a means to stabilize society: providing spaces to these people which they can shape to their liking means meeting the human need for control (Grawe 2007) in people who otherwise may have only little control over material possessions or over their life in general.

Urban gardens may further be a source for **social networks** because they constitute a space for communication and cooperation for people with at least one common interest. From talking to each other, lending out garden equipment to each other, or spending time together in the evenings and on weekends, a mutual liking and trust may evolve which can grow into reliable friendship and, on a larger scale, into social networks where people support each another.

Urban nature in general, and urban gardens in particular, are also a means of improving **physical and mental health** (Honold *et al.* 2015;

van den Berg *et al.* 2010). It is assumed that vegetation cover is beneficial to our physical health because it filters the air, provides shade, and moderates extreme temperatures (cf. Shanahan *et al.* 2015). Regarding the mental benefits, it is assumed that urban nature can provide these because it facilitates physical activity, social contact, and stress relief via psychological restoration (Hartig & Kahn 2016). There are a number of other direct and indirect benefits of urban nature to human city life (e. g. the provided ecosystem services, or the contact to nature it provides for inner-city children) which shall not be extended here. (cf. Haluza, Schönbauer, & Cervinka 2014; Hartig *et al.* 2014.)

Taking all these benefits together and assuming a city planning perspective, gardens can be viewed as a **location factor** for cities or neighbourhoods. For urban parks, a positive correlation between park proximity and house selling prices was found (Troy & Grove 2008). A similar relation was found for allotment gardens and achievable rental prices for apartments (Krause *et al.* 2009). This reflects an increased attractiveness of neighbourhoods with gardens.

Current challenges and driving factors relevant for the future of urban gardening

The following description is based on the expert interviews and the discussions during the workshops.

Compaction of cities: During the last decades, the ideal of the “compact city” has experienced increasing popularity. In an attempt to combat the negative effects of urban sprawl, such as the sealing of previously unpaved soil or the increasing traffic, urban planning currently tries to provide more functions of cities on smaller footprints. This is not only achieved by increasing building heights but also by making use of previously unused land – or making “better” use of previously “underused” land. For urban gardens, this may turn out to be both blessing and curse: on the one hand, urban gardens will be needed to provide recreation areas for an increasing number of urban dwellers, while on the other hand the land used or available for gardening is under threat of being used for purposes that are seemingly more lucrative.

Demographic changes: Important demographic changes are expected to occur during the next decades. For example, it is expected that both

the proportion of elderly people will grow and climatic changes (IPCC 2014) may lead to more international migration. Both may have impacts on different aspects of urban gardening. Currently a considerable share of gardeners is approaching retirement age, meaning that during the change in societal age structure may soon lead to an alternation of generations within garden users. An increase in gardeners from abroad may mean different crops being grown or different usage patterns for the gardens to emerge.

Changes in lifestyles and gardening motives: Along with the aforementioned trends come changes in dietary and health behaviors towards healthier, more conscious lifestyles. This may result in more interest in ecological gardening. At the same time, changes in personal economic goals, priorities, and necessities may lead to more environmentally-friendly consumer behavior. In times of constantly expanding offerings of high quality produce in supermarkets, the social aspect of gardening, and with that community gardening approaches may become more popular. These developments are all but certain. Nonetheless they were viewed as having disruptive potential for urban gardening.

Challenges specific to allotment gardens: In Switzerland, allotment gardens are a prevalent, traditional, and very important form of urban gardening. Nonetheless, a number of challenges have surfaced which point to future changes. One challenge for allotment gardens may be the expected alternation of generations among the tenants: many are approaching retirement age and will give up their allotment within the next few years. Not only will these allotment garden societies lose tenants, but also skilled garden neighbors and experienced volunteers for the administrative work. Emerging differences in opinion regarding the design and usage of the gardens and regarding the quantity and quality of volunteer work within the garden societies are making it more complicated to find new candidates for vacant presidencies of allotment garden societies. Problems like these let some of the interviewed experts doubt the future of the two-stage model which is currently implemented in many cities, and which involves societies (Vereine) as intermediaries between cities and individual gardeners. (For more details on the current state and future conditions of allotment gardening in Switzerland, see Weidmann 2016.)

Further points: More challenges and driving factors were explained by the experts than can be described in this paper. Some of the additional factors shall at least be mentioned briefly: They comprise changes in the environmental conditions, changes in attitudes toward environmental protection and sustainability, alterations in commuting behavior, the need for privacy and self-expression, the chronic lack of time due to high work load and other leisure-time activities, the growing inequality in income and wealth, problems in knowledge transfer in a more individualistic society, and changes in decision-making procedures on different levels of society.

Goals in the scenarios developed by the workshop participants

In the workshops, different scenarios were developed by small groups of participants. This workshop phase shall briefly be described: Despite the workshop instructions, most scenarios seemed not to be devised along possible different developments of selected uncertain driving factors. Rather, they appeared to reflect a consensus of goals the participants held previously. Hence, these scenarios had many similarities: Most comprised combinations of goals like autonomous food supply, more social justice, increasing biodiversity and ecological quality, strengthening of the community aspects, recreational purposes and therapeutic applications, and the importance of education.

Discussion

In this study, the past and present roles of urban gardening in Switzerland as well as driving factors for the future were collected. Building on both, scenarios were to be developed which illustrate different possible developments.

Methodological considerations

The scenario building phase of the workshops did not yield the alternative ideas for the future of urban gardening that were aspired. Rather, the assembled workshop participants seemingly projected forward the currently effective and foreseeable trends to create plausible, not entirely unrealistic scenarios based on common goals. This may be the result of a process called "groupthink" (Turner & Pratkanis 1998) where a number of experts in the same field reinforce each other's ideas. To avoid this, it may be useful to invite more diverse participants to future workshops. Also, the method may have

been too unusual for the participants so that the workshop situation did not unleash their complete creative potential. In future workshops, it may be worthwhile to practice the method beforehand on a different topic so the participants are enabled to create more visionary scenarios.

Possible future roles of gardening within cities

In the discussions following the scenario-building phase, very valuable ideas emerged for new roles which urban gardening may assume in the future. Three of them shall be described briefly:

Places for ecological and food-related education: Because currently much of our everyday food originates from supermarkets, many children have become estranged from the processes of food production. Gardens may be a means to change that by offering hands-on experience of how food grows and how it is embedded in other ecological processes, such as the decomposition of organic waste on compost piles or the life cycles of flora and fauna during the course of the year.

Places for the integration of migrants: Due to their low-threshold access, gardens may generally have a socially inclusive function, allowing for societal integration of people of different social standing. Above that, gardens may also play an important role in the integration of immigrants because they provide a place for a common activity which people from all places in the world can relate to. Through common goals and reciprocated helping, it may become easier to understand and accept one another.

Catalysts for societal change: Urban gardens may not only be a part of possible societal utopias but also a catalyst for societal change itself. One could argue that urban gardens tend to reproduce the present economic system by filling the gap caused by unequal distribution of resources. Taking a more optimistic perspective, one could argue that because gardening allows for self-subsistence and contributes to deceleration of the daily life, it may also be a way for people to practice and advance a change towards a society not centered on economic growth.

Conclusions

Gardening can play a valuable role in coping with future challenges to cities. Changes may be necessary to the current model of allotment

gardening to address changing lifestyles and decreasing readiness for volunteering. For example, to compensate a decreasing readiness of tenants for volunteer work, cities may consider adjusting the role of the gardening societies by complementing or replacing them with professional, paid services. Also, changes in official regulations and administrative practice may be useful to facilitate new forms of urban gardening such as community gardening or the use of smaller patches of arable land closer to the homes. Such changes may turn out to be relatively easy to implement in reaction to particular future situations. However, to ascertain the known and potential new benefits that urban gardening may provide for the long term, it seems most critical that cities incorporate urban gardening into their long-term strategies, so that their priorities will be clearer when decisions have to be reached in situations of conflict about the future of particular patches of urban land.

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Urban wastelands and their potential to deliver CICES community services

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Keywords: Cultural Ecosystem Services, Urban Wastelands, Community Gardens, Public Goods, CICES-Be, CICES, Creative Attitude

Abstract

The main assumption of this paper is to consider urban wastelands (UW) as part of the cultural ecosystem services in cities, providing physical and intellectual interactions with landscapes by social cohesion, creative behaviour, physical, social and mental well-being, as well as spiritual and symbolic interactions with biota. The benefits of those services are identity, sense of place, sense of possession of skills or willingness to preserve nature. The authors have researched wastelands that are localised closely to residential areas in order to see, if the residents use them for recreation by developing them as a part of their inhabited space. Wastelands appeared to be in various stages of indwelling, and indicators for it were territorial markers: spontaneous paths, handmade constructions for leisure, gardens or even informal parks maintained by the community. Research methods were based on the comparative method of case studies, confronted with the Common International Classification of Ecosystem Services (CICES Version 4.3 2013; Turkekboom *et al.* 2013). Case studies of nine bottom-up and grassroots initiatives located in European countries (Poland, Estonia, Germany, Spain) were researched. To study the cases presented, the authors have conducted: inventories of main components, territorial markers, functions and values of landscape, qualitative interviews and an aesthetics

preference survey to describe the profiles of users, their preferences and needs.

The authors have noticed that in modern cities there seems to be a lack of places for spontaneous creation and, paradoxically, the main feature of UW is their "freedom of use" for human and non-human users which leads to the creation of community centers. Thus, UW may be treated as complementary to functions and benefits of urban greenery. Grassroots and bottom-up initiatives are characterised by more informal places. They imply territorial markers made by inhabitants in the process of creation and so supply the structure of inhabiting landscape and comply with conditions of cultural ecosystem services. UW, full of bottom-up and grassroots initiatives, enrich the CICES classification and improve tools for identifying and evaluating urban green areas as a potential of cultural ecosystem services, which is especially visible in the creativity of users.

Introduction

The aim of the paper is to show a potential of urban wastelands (UW) to deliver cultural ecosystem services and to complement urban greenery functions and benefits. What is the exact meaning of an urban wasteland? The Oxford Dictionary gives only a general definition of a neglected and abandoned space. The authors, who are interested in the natural and cultural potentials of wastelands, strongly refer to Clement's *Third Landscape Manifest* (Clement 2003) that describes them as urban space left overs, not maintained, where natural processes develop freely and recreate the basic feature of nature - biodiversity. That's why Clement perceived them as a "genetic reservoir for the future" and as aesthetic phenomena in design.

Biological remarks from the beginning of 21st century were confirmed by contemporary urban ecologists Ingo Kowarik (2011). During his analyses of the successive stages of the ecosystems development, he described the *Fourth Nature Theory*, in which the *Fourth Nature* is a mixture of species from different regions, creating new ecosystems, resistant to high anthropic pressure and urban conditions (e.g. heat island). Although this process entails the loss of native ecosystems, it also creates "new wilderness" described as *the novel ecosystem*. Therefore, UW are perceived as a resilient and self-sustainable nature

in the era of anthropocene (Tredici 2014). The main factor of the formation of novel ecosystems is control renunciation, which manifests itself in the freedom of use (for plants, animals and humans).

According to the authors, UW are often perceived as dysfunctional. Apparently, they always seem to have an environmental and sociological function, which enhances people to act spontaneously in inhabitation processes (Łepkowski et al. 2016). The inhabitation theory assumes a common image of landscape consisting of a front yard, a main garden and an undeveloped zone – the substitute of “natural” landscape, whose equivalent in urban context may be a wasteland (Gawryszewska 2013).

In approaching UW use issues in an ecosystem services context it is crucial to integrate values and meanings (e.g. sense of place, territoriality, inspiration for culture, and design), which are inevitably connected with human experiences with nature (Rottenbacher & Cassidy 2014). MEA and CICES methodologies are suitable for the assessment of ecosystem services, either in terms of quantity or cultural and mental states of people. The comparison of both assessments shows that CICES allows adjusting local conditions (Turkekboom et al. 2013). The Belgium CICES report (2013) goes far more into detail, by defining not only single cultural services but also direct benefits (activities: e.g. walking the dog), intangible benefits (e.g. spiritual development, identity) as well as examples of units (e.g. park, fallow land).

The authors would like to answer the question, if urban wastelands are the one and only chance for inhabitants to stay in everyday relation with ‘wild’ nature, how do these places influence inhabitants and how do inhabitants influence them?

Material and methods

The structure of the research is based on the comparative method of case study. Different kinds of UW in Warsaw and Europe have been researched in 2015–2016. (Case study fields and chosen methods are shown in Table 1). All examples were chosen according to the following criteria:

- lack of municipality control;
- free access, open areas;

- existences of different territorial marks - from less to more intense;
- different forms of activity - from illegal through informal to legalized;
- existence of free vegetated and uncultivated plants.

Certain case study fields have been visited personally (1-6) and others were treated as comparative examples (7-9) in order to have a bigger picture of trends and processes in European countries. The main methods for case studies were:

- inventories - to show main components, territoriality markers, values of landscape and evaluate the stages of development;
- observations - to show a model of using the places;
- qualitative interviews - to show the profile, approach and needs of users;

Country	Town	No	Place name and characteristics	Methods
Poland	Warsaw	(1)	Fort Służew - appr. 1ha wasteland accompanying former military fort, behind residential area semi-detached and terraced buildings.	Inventory, qualitative interviews, observations.
		(2)	Kozłowski Park - 1.5ha, former not legalized allotment gardens, rebuilt by municipality to a 'wild' public park. People protested against removing wild plants and fruit trees, forced officers to compromise between regular park and unordered green.	
		(3)	Railroad in Żoliborz - appr. 0.5ha old railway siding localised aside new residential area of multifamily block of flats, activists try to convert it into community line-park.	
		(4)	Kazurka Hill - appr. 4ha urban wasteland with a high hill in the biggest of Warsaw's multifamily block-of-flats residential area -	

			Ursynów.	
		(5)	Kindergarten in Sielce - appr. 0.25ha abandoned kindergarten plot on the yard of multifamily buildings.	
		(6)	Jazdów - app. 3ha social activity center, NGO's and community garden area built in former private family garden settlement of Finnish wooden houses in the center of Warsaw.	
Estonia	Tartu	(7)	Supilinn - 48ha quarter with social activity center and family gardens located in settlement of wooden houses.	Inventory, Observations
Germany	Berlin	(8)	Prinzessinnengarten - 0.7ha community garden and social activity center abandoned square aside Moritplatz, in east Berlin (Kreutzberg)	qualitative interviews, ex-situ observations
Spain	Barcelona	(9)	L'espai Germanetes - 0.5ha wasteland in the highly populated district of Barcelona, the Recreant Cruïlles collective with local inhabitants transforming it into social activity center with community garden, scene, meeting places etc.	ex-situ observations

Table 1: Specification of case studies and data collection methodologies

In order to define the processes being held in UW authors have compared different case studies (Table 3) according to:

- Distance from inhabited spaces - straight line from the closest inhabited buildings to the border of UW (researched in order to describe space dependency between residential areas and UW formation).
- Territorial marks - inventory of signs created by users marking their existence in particular space (*researched in order to define users' preferences and needs*).

- Activities of users (researched in order to define what kind of activities are distinctive for UW).
- Initiative type (*in order to check who is the initiator of the activities and basic characteristic* (Table 2));
- Types of plants - according to phenomenological approach and simplified typology (*researched in order to define determine relation between activities and types of plants*):
 - o natural (image of natural ecosystem by natural species),
 - o semi-natural (natural species but cultivated by man),
 - o ruderal,
 - o semi-ornamental (ornamental species, but in more informal and irregular patterns),
 - o ornamental (regular, garden type patterns),
 - o edible (utility gardens);
- Results confrontation with Common International Classification of Ecosystem Services (CICES) and CICES-Be (according to diagnosed features and values, places and ways of usage were assigned to group, class and class type of CICES as well as to benefits defined in the CICES-Be approach).

	<i>INFORMAL (I)</i>	Supported / run by NGO (or other institu- tionalized entity) (N)
<i>Spontaneous (S)</i>	+	-
<i>Purpose, disposable (PD) systematic (PS)</i>	+	+

Table 2: Initiatives types matrix

Results and discussion

All case studies (Table 3) are located near residential areas. The average distance is 39 meters. Almost all come from informal initiatives and present different forms of inhabitation: from disposable, informal actions to systematic and even formal ones.

To summarize Table 3 leading territorial marks were extracted:

Informal paths make the UW accessible for activities like walking with dogs, nature observation or sports. This basic territorial mark is usually connected with natural, semi-natural and ruderal vegetation types. It is also associated rather with - informal / spontaneous, informal/ purpose types of initiatives. It seems to vanish in more institutionalized initiatives.



Figure 1: Żoliborz, informal path (source: Wilczyńska)

Fireplaces are forbidden in Polish cities, so the UW are treated as the only place where one can organize one, with a very small risk of being penalized. Additionally, as fireplaces are associated with natural, semi-natural and ruderal type of plants there is no problem with fuel. Likewise in the case of paths, fireplaces disappear in more institutionalized initiatives - purpose systematic supported by NGO or other entity.



Figure 2: Fireplace, Służew strong hold (source: Wilczyńska)

Handmade furnitures are present in almost all cases. They may be a next step in the use of UW in order to stay comfortable for a longer time. They prove a sense of ingenuity and self-sufficiency, which is visible even in informal and spontaneous actions such as creation of very simple furniture from surrounding objects.



Figure 3: Handmade furniture and fireplace, Bema stronghold (source: Łepkowski)



Figure 4: Kazurka hill, handmade furniture (source: Wilczyńska)

Meeting places may be treated as level up from spontaneous furnitures – more advanced and durable. It is connected with a very popular UW activity which is the consumption of alcohol (forbidden by law in Polish public spaces). Meeting places will not be found only in informal and spontaneous initiative types.



Figure 5: Meeting place, Służew stronghold (source: Wilczyńska)



Figure 6: Bike truck made in grassroots initiatives (source: Wilczyńska)

Private or semi-private gardens, a next step in UW inhabitation, require a much greater investment of time – pioneer transformations by planting, mowing and trimming lead to creating a sense of place. Usually, semi-natural, semi-ornamental and edible vegetation types can be observed here. Concerning types of initiative, these gardens are associated rather with informal purposed, systematic actions.





Figure 7a,b,c: Służew stronghold (source: Wilczyńska)

Community gardens - give users a sense of cooperation, mutual education and a sense of being part of a community. A shift from activities connected with more individual sphere to more social ones could be observed. It is associated mostly with purpose, systematic initiatives supported/run by NGO (or other institutionalized entity). An interesting feature which appears on this stage is the attempt to legalize that activity. The vegetation type is transformed from natural and ruderal to semi-ornamental and edible.



Figure 8: Jazdów Settlement (source: Wilczyńska)

Social activity centers are on the highest level of organization. The unstable character of UW and the freedom of use trigger the energy of civil disobedience and free-thinking. In such moments political issues come in first place, which is associated with the concept of the 'right to the city' (Harvey 2012). Equally, just as in the community garden stage, semi-ornamental and edible vegetation types dominate.



Figure 9: Jazdów settlement (source: Wilczyńska)

Case	Dis- tance	Territorial marks	Activities	Plants type	Initi- ative /type
1	appr. 30m	- paths, - planted plants, - meeting places (eg. bower) - fireplaces, - hand made furni- tures, - information boards, - bird and cat feed- ers, - flower beds	- mowing - trimming - planting - bonfires - rest and re- laxation - alcohol drinking	- natural - semi- natural - semi- ornamental	IPS
2	appr. 40m	- informal paths - fireplaces, - fruit trees and other garden plants (former allotment gardens) - private gardens	- gardening - walking the dog - nature ob- servation - alcohol drinking	- semi- ornamental - edible	IPS
3	appr. 20m	- informal paths - fireplaces - empty bottles and other garbage	- walking - bring the dog without a leash - alcohol drinking - neighbour- hood cleaning actions	-ruderal	IS IPD
4	appr. 40m	- informal paths - handmade furniture - meeting places - fireplaces - bike downhill tracks	- walking, - sunbathing - nature ob- servation - walking the dog - picnicking, - bonfires, - alcohol drinking - downhill biking - paragliding - other sport activities - building slopes for bi- cycles	- ruderal - semi- natu- ral - semi- ornamental	IS IPD IPS

5	appr. 35m	- informal paths - fireplaces - bottles and other garbage	- walking - bring the dog without a leash - nature observation - alcohol drinking	- natural - ruderal	IS
6	appr. 20m	- informal paths - handmade furniture - meeting places - permacultural utility gardens - ornamental gardens - bird feeders - beehives	- walking the dog - planting - community gardening - recreation - education - celebration - socio-cultural events	- semi-natural - ornamental - edible	NPS
7	0m	- handmade furniture - utility, ornamental gardens - murals, paintings on walls	- Planting - Gardening - Sport and recreation - Living area - festival of district	natu-ral/ornamental/ruderal/edible	IPS NPD NPS
8	appr. 50m	- handmade furnitures - utility gardens - meeting places (eg. bower) - beehives - birds feeders - art installation/ sculptures - cafeteria	- community gardening - education - recreation - celebration - art initiatives	- ruderal - semi-ornamental - edible	NPS
9	appr. 50m	- handmade furnitures - utility gardens - meeting places - art installation/ sculptures	- local community meetings - community gardening - <i>right to the city</i> events - education - recreation - celebration	- ruderal - semi-ornamental - edible	NPS

Table 3: Case studies analysis

The presented case studies comparison shows different uses of UW in cities. It can be treated as a kind of stage or image of development. This phenomenon may depend on the needs and unity of a local community: 'wild' space for freedom use, informal meeting point with some handmade furniture and fireplace or centre for social activity (Fig. 10). On the horizontal line two directions with extremes can be observed: the more 'wild', natural UW, where man is only a 'guest' or observer and another one, where culture and social services are more visible. What is also noticeable, are two different ways through which wastelands are in constant inhabitation process. First is the grassroots action being marked by the high emergence level, while the second is a structured landscape, which could be defined as bottom-up activities.

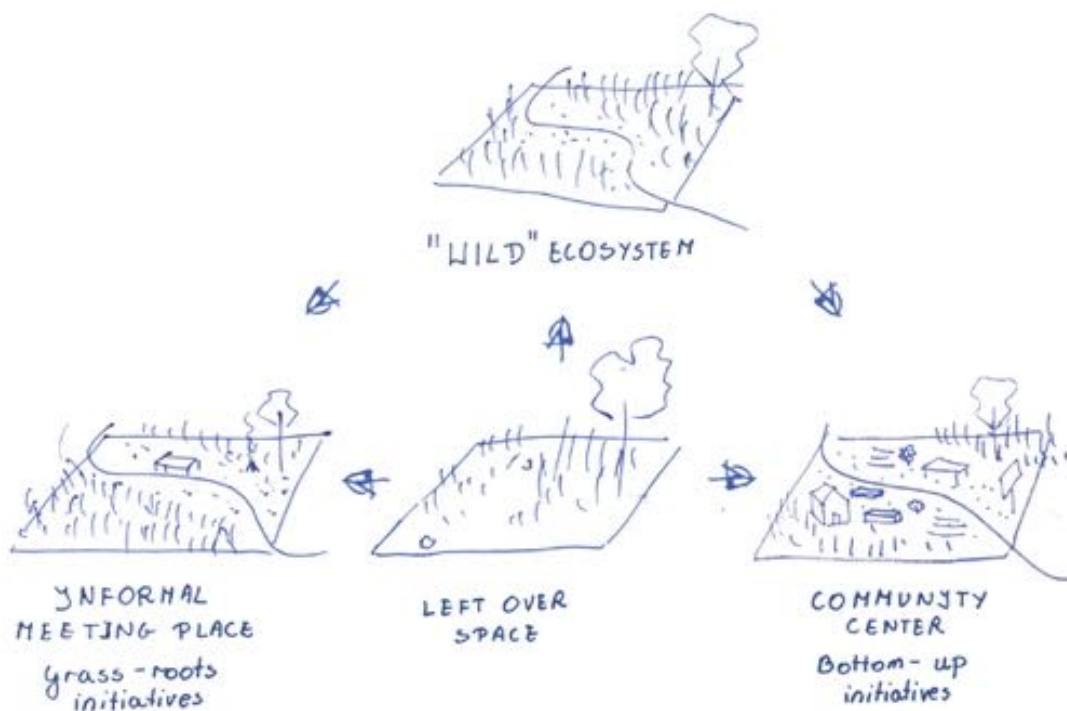


Figure 10: Stages of urban wasteland development (source: Wilczyńska)

According to different uses of UW they can be value by different ecosystem services and benefits, which are the consequence of active coexistence of man and landscape. According to the CICES assessment cultural aspects of environment are part of ecosystem services. In the researched UW the following could be observed: both physical and

experimental use of landscape e.g. walking the dog, gardening, intellectual and representational interactions such as: education by observation or gardening, as well as entertainment and heritage, spiritual and symbolic values (old houses, gardens, artefacts). What is visible in the CICES assessment is a "bequest service" which means the "willingness to preserve nature for future generations". These aspects in the UW context can be proved by the SBE survey (Łepkowski et al. 2016) in which authors have evaluated different types of urban landscape. Scenes preferred by respondents mostly presented semi-designed areas where some basic infrastructure elements, such as dustbins or dirt paths, were gently introduced into wasteland. It shows that people seem to want to keep UW as natural as possible - the reason may be not only their own well-being but also the well-being of next generations.

According to the Belgian CICES assessment, UW seem to deliver an even wider range of benefits: *Physical, social and mental well-being* - by being with nature; *motoric and creative development* - space and freedom for creation according to needs; *Inspiration* - e.g. parks which are an imitation of 'natural' succession of ruderal plants; *Cognitive and spiritual development by observing of nature and relation between man and environment* connected with other benefits: *better understanding of our dependency and relationship to nature* as well as *nature awareness* through creative use of UW; *Sense of possession of skills*- described in CICES-Be assesment by for example photography, however in UW context it may be equal with planting and gardening skills, recycling and handmade artefacts building, creation of artefacts according to needs; *Identity and sense of place* inseparably connected with coexistence of man in nature, building their place together.

Conclusions

In most of the Ecosystem Services assessments wastelands are mentioned not directly as part of urban green infrastructure. However, UWs seem to deliver and enrich cultural ecosystem services in urban context. What is more, they appear as kind of 'gaps' in the city structure, which actually encourages inhabitants to act freely and spontaneously, according to their preferences and needs, during inventing their own, hand formed place. Two directions of developing UWs have been observed: grassroots initiatives in more 'wild' and natural UW, where

man was mostly an observer of the nature, and other where UW was a place of localising particular 'visible' social services and a landscape was structured as a result of bottom up activities.

Authors find these observed concepts and processes as a base for creating inclusive and open city places for people, as well as other living creatures. UWs could be considered as a prototype for it, which can stimulate creativity of residents in grassroots and bottom-up initiatives. Different indwelling interventions coming from grassroots initiatives create a characteristic, authentic and reliable image of "vernacular democracy place". Bottom-up projects are, usually inclusive in their ideology, but rarely seem to define a solid foundation for sense of place, attachment and direct relation with landscape. It may be animation and education program for a while, rather than a strong connection between human and non-human actors.

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Parallel Sessions 4

* = full paper

A4 Evidence-based therapeutic gardening

Chair: Sin-Ae Park & Maria Pálsdóttir

The use of gardening and horticulture in post-stroke rehabilitation - nature-based rehabilitation in Alnarp Rehabilitation Garden

Authors: Anna-María Pálsdóttir, Swedish University of Agricultural Sciences, Sweden / Kjerstin Stigmar, Lund University & Skåne University Hospital, Sweden / Gerd Anderson, Skåne University Hospital, Sweden / Patrik Grahn, Swedish University of Agricultural Sciences, Sweden / Mikael Åström, Skåne University Hospital, Sweden / Bo Norrving & Héléne Pessah-Rasmussen, Lund University & Skåne University Hospital, Sweden

Gardening intervention for improving physical and psychological health conditions of elderly women aged over 70 years

Authors: Sin-Ae Park & A-Young Lee, Konkuk University, South Korea / Hee Geun Park & Dae-Sik Kim, Chungnam National University, South Korea / Ki-Cheol Son, Konkuk University, South Korea / Chang-Won Park, Rural Research Institute of Korea Rural Community Corporation, South Korea / Wang-Lok Lee, Chungnam National University, South Korea

Kinematic and kinetics analysis of two gardening activities for applying in a rehabilitation treatment

Authors: A-Young Lee & Sin-Ae Park, Konkuk University, South Korea / Jai-Jeong Kim, Hanbat National University, South Korea / Jae-Moo So & Ki-Cheol Son, Konkuk University, South Korea

Investigating the effect of garden biodiversity on well-being

Authors: Christopher Young / David Frey / Marco Moretti / Nicole Bauer, all: Swiss Federal Institute for Forest, Snow and Landscape Research, Switzerland

B4 Public space - contested space?

Chair: Martin Sondermann

Contested spaces of Prague allotments: Right of access and/or justice?

Authors: Petr Gibas, Czech Academy of Sciences, Czech Republic/ Arnošt Novák, Charles University Prague, Czech Republic

Municipal involvement in urban gardening and agriculture: Against contestation?

Author: Marion Ernwein, University of Fribourg, Switzerland

*** Temporal urban landscapes and urban gardening: re-inventing open space in Greece and Switzerland**

Author: Sofia Nikolaidou, Panteion Univ. of Social & Political Sciences, Greece

*** Self-organised urban green initiatives and their practices of commoning**

Authors: Lucia Wieger, University of Vienna, Austria / Christina Schraml, University of Applied Arts Vienna, Austria

C4 The role of urban gardening research - urban gardening after disasters

Chair: Chiara Certomà

Community gardening - an approach towards trans-disciplinary research

Author: Dörte Martens, Eberswalde Univ. for Sustainable Development, Germany

Growing together - A network-analysis of research-networks on „Growing in and around Cities“

Authors: Zoe Heuschkel, Univ. of Applied Sciences Osnabrueck, Germany / Darya Hirsch & Christian Meyer, Bonn-Rhein-Sieg Univ. of Applied Sciences, Germany

*** Neighbourhood self-sufficiency in Tokyo: How much can hobby farms contribute?**

Authors: Giles Bruno Sioen, The University of Tokyo, Belgium / Toru Terada, The University of Tokyo, Japan / Makoto Yokohari, The University of Tokyo, Japan

Enhancing community resilience: The role of urban community gardens in earthquake recovery-a Christchurch (NZ) case study

Authors: Naomi Shimpō, University of Tsukuba, Japan / Andreas Wesener, Lincoln University, New Zealand / Wendy McWilliam, Lincoln University, New Zealand

D4 From theory to practice (II). Exploring innovative initiatives from Europe and beyond

Chair: Runrid Fox-Kämper

*** A yard out of nothing: Building a common landscape experience and place-making in Kipos3, Thessaloniki**

Authors: Eleftheria Gavriilidou & Maria Ritou, Kipos3 project & Aristotle University of Thessaloniki, Greece

A garden for everybody

Authors: Irene Grabherr & Angela Salchegger, all: Urban Renewal Office Vienna for the 9th, 17th and 18th district, Austria

*** Urban Agriculture in Pune and Mumbai, India**

Authors: Sophia Hildebrandt & Ulrike Weiland, all: University of Leipzig, Germany

B4 - Public space - contested space?

Temporal urban landscapes and urban gardening: re-inventing open space in Greece and Switzerland

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Keywords: Green Space Governance, Open/Public Space, Social Inclusion, Collaborative Planning, City Greening

Abstract

New forms of urban gardening are gaining a momentum in cities transforming the conventional use and functions of open green and public space. They often take place through informal and temporal (re)use of vacant land "that is considered to have little market value" (Schmelzkopf 1995:364) consisting part of greening strategies or social policy. Increased adoption of such forms within urban areas underlies discussions of changing contemporary social and productive urban landscapes by raising important issues regarding new modes of land use management, green space governance and collaborative structures. This paper mainly focuses on the shifted meanings of the notion of open public space by referring to its openness to a diversity of uses and users that claim it and relates to the questions of access rights, power relations among actors, negotiations and the so called right to use and re-appropriate land (Hackenbroch 2013).

By using examples drawn from the Greek and Swiss case, this paper advances comparative research under a European perspective underlining differences and similarities in urban gardening practices, social and institutional contexts, collaborative governance patterns, motivations, levels of institutionalisation, openness and inclusiveness of space between Northern and Southern Europe. More specifically the research calls attention to the critical role of the temporary nature of these initiatives in relation to their multifunctional, spatial and socio-political aspects that affects new configurations of urban green areas and public space as well as related planning practices. Therefore it investigates: a) What are the driving factors in each context and what forms of space and governing

structures do they generate? b) How do these growing spaces influence the usability and accessibility of open/public space? c) What are the potentials, constraints, future prospects and urban policy implications of such urban gardening projects for sustainable development incentives?

Introduction

The long tradition in allotment gardens in many European countries has always been a significant element of green open space and urban landscapes. A more flexible approach to urban gardening transforms its conventional characteristics and is adapted to dense urban settings with rather small-scale and temporary interventions that diversify the use and functions of open green and public space. Deriving either from public actors, grassroots movements or more collaborative governance patterns that combine various groups of stakeholders, these contemporary forms of gardening initiatives lead to the development of a wide range of social public spaces and urban green areas challenging related planning practices and food sustainability (Nikolaidou *et al.* 2016).

Various forms of emerging practices and motivations of urban gardening across countries are subjected to the contextual effects of different social transformation processes, levels of urbanisation and industrialisation that affect the availability and use of open space in growing agglomerations as well as with restructuring policies related to crises periods and related socio-economic disparities that contributed through the years in a north-south divide in Europe. Therefore, northern European countries place an emphasis on urban greening, while southern countries focus more on the socio-economic effects of the crisis and social inclusion (Ioannou *et al.* 2016; Prové *et al.* 2015; de Sousa 2002).

The need to relate new forms of urban gardening with urban greening strategies and preservation of open spaces arises and is increasing in urbanised areas (Chiesura 2004) in order to adapt to a growing demand for housing, low open-space availability and diversified needs for open green space in inner city through the development of long-term scenarios of densification (Nikolaidou *et al.*, 2016). Hence, new flexible forms of small-scale and temporary urban gardens are gaining

popularity in green planning practices, especially within dense metropolitan centers where population and economic decline create brownfields (eds. Hula, Reese & Elmoore 2016).

At the same time, harsh political and economic conditions and globally induced economic crisis, urban poverty and food insecurity empower the importance of subsistence gardening by enhancing its contribution to healthy nutrition of cities even in developed countries (FAO 2010). This trend recalls the historically grown self-sufficiency gardens that flourished significantly during industrialisation and World wars in response to severe food crises specifically targeting the poor urban population. In particular, economic decline and negative socio-economic impacts of austerity measures in Southern Europe gave a boost to socially oriented policies regarding urban gardening and further mobilised a vibrant urban socio-political movement that symbolically re-appropriates public space.

Overall, these transformation processes re-shape contemporary forms of urban gardening by raising new concerns for planning, design and governance of urban open space. Public spaces regain their strategic importance and are re-invented and re-appropriated through multi-functional and diversified uses (Hackenbroch 2013), new modes of land use management and green space governance. Increasing alternative collaboration patterns among several civic and public actors create synergies that foster more inclusive and alternative economic and social functions of public space (Nikolaidou *et al.* 2016; Prové *et al.* 2015). Some understand these new participatory processes as an opportunity for citizens to get involved in policy making and in re-inventing urban spaces (Elwood 2002; Ghose 2005). Additionally, it is considered as a significant element in the shift from a pattern of traditional local government to one of local governance that promotes more inclusive processes in decision making (Geddes 2006; Philips & Orsini 2002).

Based on empirical research in Athens and Geneva, this paper is intended to provide the reader with a comparative macroscopic understanding of the main differences and similarities in urban gardening practices, social and institutional contexts, collaborative governance patterns, motivations, levels of institutionalisation, and how they affect new configurations of urban green areas and public space as well as related planning practices. Therefore this paper

intends to investigate: a) What are the driving factors in each context and what forms of space and governing structures do they generate? b) How do these growing spaces influence the usability and accessibility of open/public space? c) What are the potentials, constraints, future prospects and urban policy implications of such urban gardening projects for sustainable development incentives?

In order to answer these questions in a comparative way, the overall approach is selective and investigates only the case of municipal initiatives in the two contexts. The treatment is therefore focused on the analysis of general policy documents and publications that refer to urban gardening and the selected case studies and the conduction of stakeholder interviews with ten, key-informant face-to-face interviews with representatives of Municipality of Geneva (UAC, SEVE, Urban Planning), NGO 'Equiterre', Planning and Social Policy departments in Municipalities of Maroussi and Ag. Dimitrios (Athens, Greece). The interviews in Geneva were realised from August 2014 until November 2014 and in Athens, since 2013, with continuous complementary improvements and updates of data until now. Interview questions contained main information about the motivations, objectives and future prospects of the project, the actors involved and synergies (participation, organisation, decision making, funding, space), positive effects and problems faced at different phases of the project.

Emerging trends and policy frameworks of urban gardening in different contexts: Urban greening and social cohesion

Greece: Urban poverty and social inclusion

In Greece urban gardening either in the form of community or municipal gardens appears very late without pre-existing forms of organised urban farming on individual or collective basis. The great boom was noticed after 2011 with the emergence of municipal allotment gardens. Their appearance coincides with the outbreak of the financial crisis, a social demand for food re-localisation and the parallel activation of citizen movements against the privatisation of public land and natural resources. Since the onset of the financial crisis, a special emphasis was put on social and economic deprivation, food insecurity and risk for malnutrition. Apart from self-sufficiency targets in food production these initiatives also address environmental, landscape and

cultural functions and the need for quality of life in urban centers (pollution, lack of public spaces, parks and greenery).

In Athens this newly emerging movement deriving both 'from below' and from public actors, has generated innovative forms of alternative collective spaces of sociability and solidarity actions. We can clearly distinguish two main streams that frame the most prominent existing trends in urban gardening: a) Self-governed community gardens that derive from the civil society as alternative forms of protest against controversial neo-liberal policies that promote privatisation of public land and natural resources. Usually located without authorisation on misused or abandoned land in the city fringe, their purpose is to claim land rights, social and spatial injustices through alternative forms of production, space appropriation, social interaction and decision-making. b) Spontaneous public initiatives mainly deriving from the local administration as a social policy oriented to combat crisis stress and social exclusion of vulnerable groups (pensioners, unemployed, low income, single parent families, etc.) as well as to promote togetherness, social interaction at the neighbourhood level. Hence, municipal initiatives are subsistence gardens for self-production (not commercialised) of fresh organic vegetables and 10% of the production is offered to the 'municipal social grocery', in a context of urban neo-poverty.

Switzerland: Urban densification and open greenspace management

In opposition to Greece, urban gardening in Switzerland in the form of allotment/family gardens has a longer tradition that dates back in the 19th and 20th century and contextually coincides with the development of the industrialisation (Klöti, Tappert & Drilling 2016). However, newer forms of urban gardening that have recently arisen in many Swiss cities question traditional approaches and large scale patterns of classical allotment gardens are no longer supported (Nikolaidou *et al.* 2016). They arise in a context of urban densification processes, as small-scale, multifunctional and temporary projects with high accessibility and a minimum of infrastructure. These flexible forms of urban gardening (community, intercultural, neighbourhood and guerilla gardening) are therefore assumed to be more compatible with the current planning paradigm as a strategy to facilitate social interaction and neighbourhood greening while increasing building density in inner cities (Klöti *et al.* 2016; Nikolaidou 2014).

In the city of Geneva, compact city development and densification strategies encourage these new forms of gardening (Ville de Genève 2009). They are commonly called 'jardins potagers', 'plantages' or 'jardins partagés' and are supported and integrated in the local development agenda by municipalities. Compared to Greece, they are less associated with serving productive functions linked to alimentary questions and self-provision. Embedded within a wider environmental discourse of 'City and Nature' (Klöti et al. 2016; Nikolaidou et al. 2016; Ward Thompson 2002), they are rather concentrated on bringing nature, biodiversity and related leisure activities into the central urban areas reconciling the goals of urban greening with the need of urban densification while promoting local neighbourhood relations and conviviality.

We can distinguish two main types of 'jardins potagers' that derive either as top-down, bottom-up or collaborative initiatives among several stakeholders: a) Municipal gardens developed at the local neighbourhood scale as a municipal social policy (mainly initiated by the Units for Community Action-UAC) and b) Several bottom-up initiatives that are widely supported by the public action as new forms of participation and cooperation between civil society and political-administrative actors (Nikolaidou et al. 2016).

Exploring similarities and differences in open space and governance patterns

The selected case studies

All gardens selected in Athens and Geneva (Fig. 1) are municipal initiatives and present some key common features as well as some differences concerning size, type, terms of use, infrastructure etc. Comparison is done according to their effects on 3 general categories of open space and governance patterns: re-appropriation of vacant land, accessibility and usability of open public space and the degree

of public engagement, diversity of actors and participative practice.



Figure 1: Short description of the selected case studies in Athens and Geneva

Re-appropriation of vacant land: temporary character and low level of formalisation

Although municipal gardens are not a policy priority, both cities support their creation by introducing them at the local level. In Geneva they are referred in the cantonal and municipal strategic development plans as a tool for the creation of green social spaces that foster proximity, neighbourhood social cohesion and conviviality (Canton de Genève 2013). In Athens, they are co-funded by the National Strategic Reference Framework-NSRF and the European Social Fund as a

municipal social structure tackling poverty and social exclusion. Either facilitated by slow real estate development in times of economic instability and budgetary difficulties (Greece), or by densification processes (Switzerland), they arise as a new multifunctional way of management and reactivation of abandoned/misused vacant open spaces while giving the right for re-use of open space to citizens. However, in Greece municipalities seek public brownfields whereas in Geneva strategies comprise broader schemes of a wide range of small-scale public or private lots in disuse, front yard lawns, and constructible land waiting for development, spaces within parks/green areas. Nevertheless, in both cases these initiatives remain short-term and low-cost strategies that enable a temporary land-access which is not connected to organised urban revitalisation efforts. Accordingly, because of the unclear policies and the spontaneous approach these small-scale efforts are dispersed and excessively susceptible to land use change in favour of more competitive uses.

Accessibility and usability of open public space

The different ways of re-appropriating open green space and vacant land in the two countries have various effects on the access and use issues of the gardens as collective public resources and therefore their inclusiveness/exclusiveness (Nissen 2008). These effects depend mainly on their location and formal/informal setting, the governance and design of the collective spaces, the multitude of functions, users and actors involved, the openness to the general public via access rights and social events etc. In all cases, beyond economic and nutritional functions, these spaces are collectively experienced as shared places of socialisation and complex interactions establishing a cooperative feeling among the participants that enhances community bonds. All case studies reflect a high level of internal social diversification among users. However physical accessibility and social usability of the spaces does not necessarily ensure the inclusive character of the public space (Akkar 2005). In both countries, municipal gardens are divided into individual plots which in most cases are not collectively gardened, so land re-appropriation can be considered inclusive for the minority that is taking part and exclusive for all those who are not able to invest time, know-how or commitment in the group activity. However, in Geneva, the interplay

between private and public sphere of these spaces is thought to be more open to the wider public due to their multi-functionality, diversified activities and open spatial structures (as parts of public parks, open garden picking by all residents, intercultural aspects e.g. Beaulieu is free-access, multi-user, multi-actor and multi-functional space). In Greece, fencing and locking/surveillance measures impede an all-day free access to passers-by resulting in a rather uneven access to public space.

Public engagement, diversity of actors and participative practices

A major difference identified between the cases examined in the two countries concerns the degree of collaborative and participatory design processes in all stages of their implementation. The city of Geneva strategically supports at a greater extent new forms of collaboration and partnerships involving public, private and civic actors via increasing participatory processes. These partnerships usually involve horizontal collaboration between different services of the municipal administration as well as broader and constant collaborations with associations, grassroots movements, NGOs and other representatives of the civil society or private actors that take part in the negotiation of space (Collective Beaulieu). Participatory approach is promoted mainly through the municipal 'Service Agenda 21' for the Sustainable development and the 'UAC' who are key actors for implementing urban gardening initiatives through the active participation of residents. Their approach is to adapt to the existing demand of citizens instead of imposing top-down projects. Hence they have external collaborations with associations, NGO's and collectives that are interested to set up new gardens (Nikolaïdou 2014).

In opposition to Geneva, the Greek examples are clearly top-down conceived with no participatory processes in space governance, although in many cases vacant lots were subject to residents' claims against their construction before their transformation to vegetable gardens (Maroussi). The only case in which municipalities are assumed to collaborate with civic actors is when they receive funds as 'Social Structures Against Poverty' (MLSS 2012). Beneficiary NGO's with the necessary expertise and staff in the field of social care are invited for the creation of a Social Corporate Scheme for the garden (Agios Dimitrios).

Conclusion

Either driven 'from below' or 'from above', either following the outbreak of the financial crisis, or other social, political and environmental motivations urban gardening initiatives can redefine livelihoods in both cities. They have a transforming effect on the conventional dominant forms of economic and social cooperation and play an important role in the creation of new shared/collective identities, partnerships, relationships and ethics of solidarity for urban dwellers. By claiming open access to fresh, qualitative, healthy and affordable food and more sustainable land use, these practices reflect a social demand for food re-appropriation and re-localisation of food systems (family self-sufficiency, food safety, organic production, employment and income generation etc.). They foster collective practices, civic engagement and local activism and facilitate new forms of socio-political participation.

However, despite their growing popularity the comparative study revealed that municipal gardens short-term social actions rather than long-term sustainable urban planning tools. In Greece, this temporary character is embedded within a wider discourse on urban resilience in times of economic decline and consequent real estate collapse that assume the Municipal support. In Switzerland it is rather connected to densification policies and the challenge to maintain open green spaces in the city. Planning aspects in both cases involve low formalisation and opportunistic facilitation of the use of vacant lots, though there are first steps for legitimisation through integration to the city's sustainable agenda. It is a question how this ongoing trend can create new productive green spaces that could be seen as green infrastructure for the long-term inner city revitalisation and ecological, economic and social urban development. Could these informal networks influence food policies at the local and national level, and whether these alternative practices are central in promoting long-term locally defined solutions for food security?

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Self-organised urban green initiatives and their practices of commoning

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Abstract

In growing and densifying cities the need for open green spaces increases. Where they do not exist or where current ones are at risk because of private interests, more and more citizens reclaim or take the initiative to create urban green spaces on their own. Some actors are simply carving out a piece of green space for their own needs, while others are fuelled by political activism and the right to the city. In recent years, academic research on self-initiated green urban spaces has developed rapidly. The majority currently derives from North America and some European cities, however, with little academic exploration in the context of Vienna. Drawing on current theoretical debates on the right to the city and the importance of urban commons for the social justice and equity of our cities the paper discusses selected case studies from Vienna. In addition to desk research and participatory observation, qualitative interviews with activists from the initiatives were conducted. The paper critically analyses a D.I.Y. park, a temporary parklet garden, an agricultural collective and a community garden with a particular focus on their strategies of "commoning". It considers their potential and pitfalls to create alternative spaces beyond the neoliberal city.

Introduction

Another world is "plantable"!?

In growing and densifying cities like Vienna, citizens' demand and desire for open green spaces increase. Although Vienna enjoys an international reputation as a green city, public green space is not evenly distributed among the city's districts and is increasingly characterised by privatisation and commodification.¹ Hence, where green spaces do not exist or are at risk because of private interests, more and more citizens create urban green spaces on their own. This growing number of self-organised initiatives varies in respect to the motives among the actors involved and their strategies of appropriating and creating these spaces. While some actors follow individualistic needs, others take political standpoints engaging in *the right to the city* and a commons-oriented approach.

This paper critically discusses four self-organised green spaces in Vienna: a D.I.Y. park (Planquadrat Park), a parklet garden (Krongarten), an agricultural collective (Wilde Rauke) and a community garden (Community Garden Donaukanal). It focuses on how these spaces are produced and constituted within the structures of a neoliberal city. The underlying questions of the research are: What are the initiatives' practices of creating these spaces - the practices of commoning? In what sense do these green spaces constitute green urban commons?

Based on the case studies, the research thus aims to contribute to our understanding of strategies and practices of commoning² employed towards green urban commons, which should provide inspiration and a guideline for future initiatives. For this purpose, the case studies were selected in view of projects which are as varied as possible in terms of their spatial characteristics, formation, organisation and realisation (trajectory). Information was derived from site visits, participatory observation, and qualitative interviews with activists

¹ Even though various research studies critically point to the current neoliberal urban developments in Vienna and the negative consequences of commodification and privatisation of public spaces, Viennese authorities are reluctant in their response to these critical voices. In their study "Donaukanal Partitur" the Vienna-based planners and architects Gabu Haindl and Susan Kraupp emphasise the importance of public (green) space for the city and its citizens. Following a detailed analysis, they have developed guidelines for the planning and design of public spaces in Vienna (cf. Haindl & Kraupp 2011).

² In this paper we distinguish between strategies and practices of commoning. While strategy relates to the overall plan of the actors involved to reach their objectives, the practice of commoning can be defined as the actual implementation of this strategy. As the practices of commoning are what becomes evident in the everyday initiatives, the present paper places the focus on them.

from the initiatives, which was then integrated with desk research, i.e. secondary data was obtained from websites, official reports and studies.

The right to the city and practices of commoning

As neoliberal forms of urbanisation, which are characterised by an increasing privatisation and commodification of public space, are progressing in European and North American cities, public spaces become increasingly inaccessible for citizens. These transformational urban processes result in social inequalities and injustices that are inscribed in and manifested within capitalist urban configurations (eds. Brenner, Marcuse & Mayer 2012). This issue has been (re-)addressed within different academic debates as well as by social movements arguing for the city as a shared space (cf. Harvey 2008 and 2012; Mayer 2010). These actors emphasise the necessity of understanding cities as "arenas in which the conflicts and contradictions associated with historically and geographically specific accumulation strategies are expressed and fought out" (Brenner et al. 2012:1). The claim to *the right to the city* was first proposed by the philosopher Lefebvre (1968) in the course of the anti-capitalist movement in 1968 in Paris. Following Lefebvre, the Marxist geographer Harvey (2008) describes the *right to the city* as an emancipatory and common right of the citizens to shape and transform their urban surrounding. The production of collectivity and non-commodified spaces are the most important aspects of the practice of communing (ibid. 2012).

Relating to Harvey's interpretation of the *right to the city* the city can thus be considered as a space where social structures and norms are being negotiated. Hence, alternative ways of thinking the city as a collectively produced commons become possible. Throughout this paper, commons is thus understood as a social, emancipatory process and the practice of production and reproduction of public (green) spaces "through collaboration, cooperation and communication [...] rather than through private interest and competition" (Eizenberg 2012:766). It is considered as a transformational political process through which new modes of spatial (re)production become possible and capitalist systems and structures can be questioned. Or as the political economist De Angelis puts it: "commons are a means of

establishing a new political discourse [...] to overcome capitalist society" (eds. Clemens et al. 2010:4).

Current research on self-organised green spaces focuses primarily on the potential of public green spaces towards sustainability and community building. The meaning of public green spaces as shared spaces and their contribution to a commons-oriented city beyond the neoliberal system has yet to be investigated more closely. The environmental psychologist Eizenberg (2012) has only recently analysed community gardens in New York as new forms of commons. She applies Lefebvre's concept of the *production of space* and *the right to the city* and describes community gardens as "a paradigmatic example of counter hegemonic spaces" (Eizenberg 2012:765). For Europe, a significant contribution has been Follmann and Viehoff's (2014) study on a community garden in Cologne (Germany) which they describe as a form of "political gardening". To enhance recent academic literature stream in Europe, the present paper examines the practices of commoning through the lens of four self-organised green spaces in Vienna.

Findings: Vienna's self-initiated green urban spaces

Table 1 provides background information about the selected case studies. It forms the starting point for the subsequent analysis of the case studies in regard to their practices of commoning.

	Type	Location and site	Access	Members	Origin and trajectory	Organisation
Recreational Park	self-organised public park	located in Vienna 18th district, Penzancepark. Park covers 3,400m ² , is composed of various areas for different users and needs.	It was initiated by local residents with the help of two journalists. To provide a legal partner during the planning process, the association "Gartenbauverein" was founded in 1976, also to promote the idea of the self-organisation of the green space in the middle of the building block. Today the association consists of about 200 members.	A group of local residents decided to improve the living situation in their immediate surroundings, i.e. take control over their own back and claim their right to landscaping in the city instead of waiting for the city to take action.	Originally the space consisted of 34 informal lawns which were mostly "strong" individual, quite random buildings. City authorities had plans to remove the area but did not get action. Then, a group of local residents initiated a series of actions to persuade city authorities of the idea of a self-organised park. The collective, consisting of the residents, formed the area with a green stripe concept – one of citizens of Vienna – initially without facing the official permission from the city. In 2017 the association was finally awarded with recognition of the park and the city relinquished the red-down borders.	The park is owned by the city of Vienna, however, unlike other public parks, it is not run by the municipal authority department for green spaces, MA42 but by the non-profit association "Gartenbauverein". Regular visitors are invited to join the association (annual membership fee of around 10 Euro). The "Gartenbauverein" is responsible for the administration and maintenance of the park. It receives funding from the city government for free disposal.
Neighbourhood	self-organised garden – seasonal open (closed from May 10 September)	located in front of a gallery's space in Vienna 10th district – a neighbourhood which is densely dense and quite congested. It covers the site of 1.3 parking spaces (around 12m ²)	The actors are running the neighbouring gallery's space. The major target group and users are the residents of the neighbourhood and visitors of the gallery.	It should provide a new threshold for local people to visit the gallery, i.e. attract an audience, which is not bound to the typical art audience. It is also based on the motive to create an open meeting point for people living and working in the area. Fostering communication in the neighbourhood and creating a sense of community.	In 2012 the founders of the gallery and some neighbouring shops developed the idea to subordinate the parking lot in front of their stores – allowing for various uses instead of parking private goods (cars). Starting an official permit was challenging, however, after negotiations with city authorities, the garden was initiated.	Bruggen's is organised as a loose collective of people around the owner of the gallery space. It is open to the public, however the main target group are local residents.
Agricultural Community White Acker	collective agricultural field	The first location field is situated adjacent to a housing complex in the neighbourhood situated at the edge of the urban fringe of Vienna.	The collective consists of 23 active members who cultivate the field. The members are all local, all of them are women with an agricultural background. The majority members have an academic and socially privileged background.	The main motivation of the actors involved was the wish to create a social meeting point with all kinds of activities and events in the local neighbourhood. The actors were motivated to engage in collective food production as a way to connect with the city and to create a sense of community. The actors are all women, all of them are local, all of them are socially and academically privileged. The actors are all women, all of them are local, all of them are socially and academically privileged.	In Jan 2012 a group of about 20 people were invited to the site and they were asked to develop a plan for the site. The plan was developed by the actors and it was approved by the city. The actors then started to cultivate the site and they were able to create a social meeting point with all kinds of activities and events in the local neighbourhood.	The collective is organised as an association. The members are all local, all of them are women with an agricultural background. The majority members have an academic and socially privileged background.
Community Garden (Donaubach)	community garden	The community garden Donaubach is a small garden situated within walking distance from the city centre along a walking path at the Donaubach. It consists of 20 raised beds that were provided by a local landscaping company and that are planted by two groups of a family group. There is one common bed where plants are grown collectively and the fruit and vegetables are shared among the group.	30 active members share the space and engage the allocation and planning of the beds.	The community garden serves as a space that offers citizens the possibility to grow plants, fruit and vegetables in the inner city. Moreover, it is a critique of the limited use and availability of public spaces in the inner city. The members' main aim is to keep the area of the garden as a non-commercial space, open and accessible to everyone. Thus, the garden serves as a meeting point for people who are interested in growing plants, fruit and vegetables in the inner city. The members' main aim is to keep the area of the garden as a non-commercial space, open and accessible to everyone. Thus, the garden serves as a meeting point for people who are interested in growing plants, fruit and vegetables in the inner city.	The community garden was initiated by a Vienna based actor in 2013, who became concerned about the development of the inner city. The actor wanted to create a space for citizens to grow plants, fruit and vegetables in the inner city. The actor wanted to create a space for citizens to grow plants, fruit and vegetables in the inner city.	The association called "Gartenbauverein Donaubach" runs the community garden. It is located in the inner city, near the city centre. The actor wanted to create a space for citizens to grow plants, fruit and vegetables in the inner city. The actor wanted to create a space for citizens to grow plants, fruit and vegetables in the inner city.

Table 1: Description of case studies (source: Schraml & Wiegner)

Against the theoretical background outlined above, four indicators of commoning were derived that provide the framework for the analysis of the selected case studies: collective production of space, raising

criticism towards the commodification of space, accessibility in terms of openness and transparency of the space and the collective, and community building (beyond the collective).

Collective production of space

The first practice of commoning to be analysed relates to the collective appropriation of urban space for alternative, unintended and emancipatory uses.

The self-organised Planquadrat Park is a good example of how space can be created collectively, i.e. how existing spatial structures can be transformed by a group/collective. The residents of an apartment block claimed their *right to the city* by creating a common green park on their own by combining individual courtyards, originally without having either the official permission or the financial support by city authorities. The collective was formed on a common goal, i.e. to improve the living conditions by creating a shared green space. In various group meetings (Fig. 1) the actors discussed the organisation of the backyard and finally built an unfenced community park that is open to the broader public.

In contrast, both Krongarten and community garden Donaukanal were initiated by one person who defined the original motives and spatial structures of the respective space. However, as soon as a group of interested people was formed, decisions about future developments were made together. The actors involved in the community garden Donaukanal stress the importance of continually transforming and arranging the garden in a collective rather than by individuals.

At collective agriculture Wilde Rauke a core group initiated the search for a space to grow vegetables and fruits. The use and organisation of the field is decided at regular group meetings and discussion forums that are based on democratic decision-making processes.



Figure 1: Collective planning process of Planquadrat Park (source: Gartenhof Verein Planquadrat, Archive)

Raising criticism towards the commodification of space

Raising criticism towards the commodification of space and goods as a practice of commoning is applied by all four case studies, yet in different ways.

The example of Planquadrat Park illustrates quite well, how a previously privatised space, i.e. a parcelled courtyard, can be turned into a public space. The collective criticises the private use of space and instead makes a political statement for the collective use of space.

Through the practice of appropriating and transforming a parking lot into a communal garden (Fig. 2), the example of Krongarten criticises the occupation of public space by private goods, i.e. cars. Not only does Krongarten change the use and meaning of the space, it also offers access to the space for different user groups and thus demonstrates how public space can be shared. In a similar manner, the members of the community garden Donaukanal highlight the importance of the space being non-commodified and open to the public. This objective

is fundamental to the political standpoint of the group which is opposing the current neoliberal development of public spaces in Vienna. The community garden is creating green urban commons in a highly contested area of the city, where public space is more and more decreasing. Thus, the group demands *the right to the city* as a common right to (co-)create and shape the city (Harvey 2008).

In the example of Wilde Rauke, the collective is raising criticism towards commodification of space and goods by questioning the mode of distribution of food in a globalised world. As the collective is determined to remain non-profit, the food produced is not sold. Rather, the harvest is shared among the actors based on self-responsibility. Everyone takes as much as they actually need – a principle which has turned out to be successful.



Figure 2: Criticising limited use of space at Krongarten (source: Hinterland 2013)

Accessibility – openness and transparency

Accessibility, i.e. openness and transparency of the space as well as of the collective, is another key aspect which relates to the practice of commoning.

Like other parks in Vienna, the self-initiated Planquadrat Park is open to the public. However, access to the park is also restricted in the sense that the park's gates are closed throughout night-time. Moreover, regular visitors are invited to join the association by

paying an annual membership fee of around 30 Euro. This is similar to the case of Wilde Rauke: Accessibility to the association, and respectively to the field, is regulated through financial resources (membership fee).

By contrast, at both Krongarten and community garden Donaukanal access is almost entirely unrestricted. Both spots are readily accessible to the public in order to use the space and to spend time there. They are not fenced-off from the surrounding area and thus are quite successful in applying the idea of providing the widest possible access and equal possibilities of participation (Fig. 3). At Donaukanal, one of the 25 raised beds serves as a common bed where plants are grown collectively by whoever feels like doing so.

In terms of communication, all four case studies show a high level of openness and transparency. They have an online-presence and try to establish contacts with the broader public by hosting events.



Figure 3: The space of community garden Donaukanal (source: Schraml 2013)

Community building (beyond the collective)

Another practice, which occurs in all four case studies, is their engagement in community building efforts; reaching far beyond the collectives themselves. By engaging in joint activities, such as social gatherings and collective working days, the actors strengthen a sense of community in the neighbourhoods where they are based.

For instance, both at Planquadrat Park and the agricultural collective Wilde Rauke, regularly community events are hosted, such as collective gardening and cooking. To generate additional income for the association, the members of the association at Planquadrat Park host flea markets and other public events. At Wilde Rauke, especially the sharing of knowledge about the cultivation of vegetables and fruit play an essential role for the community building (Fig. 4). For this purpose, public lectures and workshops are organised at the field. Moreover, Wilde Rauke is part of a broader network of international agricultural initiatives³, which is committed to the dissemination and exchange of agricultural skills and knowledge.

Similarly, the people actively involved at Krongarten are running a cultural programme, which strengthens the unrestricted and non-commodified use of the garden, ranging from concerts, workshops and open talks. In this way, a wider public is attracted to the parklet as well as the adjacent art gallery. The garden has triggered a positive chain-reaction in the neighbourhood: Over time more and more plants and benches have popped-up in close-by streets, improving the vitality and living quality in the area.

At the community garden Donaukanal the gardeners meet on a regular basis to coordinate the planting of the beds. Picnics and summer parties take place, which offer opportunity for networking and social interaction among members as well as with visitors/random passers-by. For many people spending time at Donaukanal, the garden is an oasis in the midst of an increasingly consumer-oriented area, where more and more profit-oriented facilities (food stores, bars and cafés) have popped up in recent years.

³ The collective is a member of networks like Gartenpolylog (a network of initiatives and projects of green urban commons in Austria), STADTFRUCHTWIEN - Initiative für urbane Selbstversorgung (an initiative for self-sufficient food production), via campesina austria (an initiative that represents mountain and smallholder farms in Austria).



Figure 4: Sharing vegetables at Wilde Rauke 2014 (source: Gemeinsame Landwirtschaft Wilde Rauke 2014)

Conclusion

The paper discussed the practices of four Viennese self-initiated green spaces towards to the production of green urban commons. Though the case studies differ in terms of space, organisation, trajectory, etc. they all engage in the production of urban commons, which has to be understood as an ongoing transformational process. All four examples express a demand to *the right to the city* by means of "gardening", or – to put it more precisely – by "collective action[s] that [challenge] the hegemonic social order and follows instead an alternative logic of justice" (Eizenberg 2012:779).

The various practices of commoning outlined concern both the formation of social groups (collectives) and the co-production of alternative space. In all four initiatives hegemonic social and spatial structures are challenged and altered (ibid.; Harvey 2008). In the formation process of a collective, social relations are negotiated and the collective transformation and production of space is carried out. In other words, the self-initiated green spaces contribute to community building and the formation of common spaces that are less restricted in terms of usage and access. As Stavrides states: "We don't have simply to raise the moral issues about what it means to share, but to discover procedures through which we can find out what and how to

share. [...] Who defines this sharing and decides how to share?" (Clemens et al. 2010:12).

However, the paper also showed that the case studies employ practices of commoning to different extents. For instance, while access to the community and space of collective agriculture Wilde Rauke is financially restricted, the parklet garden Krongarten and community garden Donaukanal are more readily accessible. Also, some of the introduced green spaces were originally organised by individuals before a collective decision-making practice was employed.

Altogether, it can be said that the self-initiated green spaces take a political stance by functioning as alternative and progressive spaces in the city. By positioning themselves within existing social and spatial structures and altering them from within, the case studies contribute to the openness and equality of urban spaces and strengthen the social relations within a neighbourhood. This is exactly the crucial starting point for future initiatives, which aim to create green urban commons: The various practices of commoning discussed always have to be thought from within the system they are criticising in the first place. Or as Stavrides (ibid. 17) points out, "Resistance is not about an absolute externality or the utopia of a good society. It is about becoming aware of opportunities occurring within the capitalist system and trying to turn them against it". In this sense, the self-initiated green spaces analysed in this paper all articulate proposals of alternative and emancipatory strategies to counter existing and often limiting spatial and social structures, and thus produce new forms of spaces of interaction and everyday life in our cities.

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C4 - The role of urban gardening research - The role of urban gardening after disasters

Neighbourhood self-sufficiency in Tokyo: How much can hobby farms contribute?

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Abstract

Introducing urban agriculture (UA) into the urban fabric is said to increase the sustainability of cities by ensuring food security for its neighbouring residents (La Rosa *et al.* 2014). Moreover, an increasing interest of urban residents in urban agriculture and in “safe and fresh food” (Iijima & Edahiro 2013; Tahara *et al.* 2011; Lovell 2010) has evolved in recent years. Tokyo, whose residents have been keen to participate in agricultural activities, is no different. Local governments in conjunction with farmers have even organized hobby farms within densely populated residential areas. However, production of these hobby-farming gardens has yet to be formally and systematically recorded. Thus, this study explores the hypothesis that Tokyo’s hobby farms have the potential to contribute to the vegetable self-sufficiency of its neighbouring residents.

Household consumption statistics, annual yield per square meter and per type of hobby farms (Tahara 2011) are utilized. Firstly, a geographic information system (GIS) buffer analysis is conducted around each hobby farm based on walking distance. Household numbers were then estimated within these designated areas to determine the required vegetable production for self-sufficiency. Secondly, the yield indicator, an estimate of households per buffer, and a potential number of households that can be self-sufficient in vegetables from each garden is determined based on consumption statistics. Finally, the results of each buffer analysis are categorized by municipality creating three distinguishable categories for discussion.

Results of this research show a larger number of allotment farms (380) than experience farms (75) and that despite the high population density in Tokyo, a considerable number of households within the buffers have access to vegetable supply of hobby farms

Introduction

Urban agriculture (UA) is recognized as a relatively modern concept. However, the concept has been ingrained in Japanese cities since the Edo period (1603–1868) in which paddy fields were intermixed with urban areas in Edo-Tokyo (Yokohari *et al.* 2000) and samurai also were known to have a vegetable garden (Brown 2009). The Japanese of the time turned to nature in response to environmental problems (e.g. loss of biodiversity, waste management) we also face today, by bringing agriculture to the city and therefore connecting people and nature (Brown 2009). Social (Acton 2011), economic (Opitz *et al.* 2016), and environmental (Armstrong 2000; Guitart *et al.* 2012) reasons motivate hobby farmers. However, UA's promising benefits such as food supply have led to increasing research on the multi-functionality of UA (La Rosa *et al.* 2014). Finally, UA can be applied to every type of land plot whatever the size or shape, scattered or contiguous. This convenience makes UA a valuable, productive land use that requires no land assembly (Mogk *et al.* 2011). Nonetheless, addressing food security is still necessary because agricultural studies on professional farming have focused on improving environmental conditions (Foley *et al.* 2011).

Previous academic studies on the self-sufficiency of residents in urban areas are sparse. Grewal and Grewal (2011) estimated the potential self-sufficiency in Cleveland, though neighbourhood scale was ignored. We argue that results vary greatly according to neighbourhood characteristics such as population density, local government involvement, and urban planning system. Self-sufficiency was discovered of 1.7% by Grewal and Grewal (2011), using the following equation:

$$\% \text{ self-sufficiency} = ((\text{area} \times \text{yield}) / \text{intake})$$

The following case-study in Tokyo builds upon this earlier approach from 2011 applied in Cleveland by improving data precision and adapting the method as necessitated by local variables. Context-specific adjustments can lead to greater accuracy of the results. In addition,

we further increased the spatial details using both satellite imagery and government land use maps in the Geographic Information System (GIS).

The threats of climate change and resource depletion dictate the need for sustainable urban planning (Sioen *et al.* 2016), and self-sufficiency studies have already begun gaining traction. Detailed quantifications on city scale are needed to make calculated decisions. However, even though professional agricultural productions are very well documented, no data is available on the production of hobby UA. This study, therefore, focuses on quantifying the UA yield of hobby farms in Tokyo.

Background

Japan's urban planning policies used the City Act of 1968 to designate two types of land areas: 1) Urbanization Control Areas (UPAs) where strict restrictions control urban growth based on the Western idea of zoning, and 2) Urbanization Promotion Areas (UPAs) consisting of current urban areas and agricultural areas where land readjustment should take place in preparation for urban development (Yokohari *et al.* 2000). Apart from professional UA, these land acts resulted in the creation of new types of urban agriculture such as allotment and experience farms as a response to meet the needs of urban residents as well as a result of strict policies and demographic conditions (La Rosa *et al.* 2014).

Three main types of UAs were identified in Tokyo through an exhaustive literature review and field observations. Firstly, an allotment farm is a plot of land made available for individual, non-commercial farming. Such plots are formed by subdividing a piece of land into a few to several hundreds of land parcels, which are assigned to individual residents (MacNair 2002). Secondly, an experience farm enables neighbourhood residents to grow their own vegetables as a form of leisure. Professional farmers design the crop plans and provide the hobby farmers with instructions and guidance for planting, maintaining, and harvesting (Tahara *et al.* 2011). The different maintenance and administration of the hobby farm results in different amounts of crop production (Tahara *et al.* 2011). Thirdly, professional farming has been identified as an important urban activity. These professional farms have all the characteristics of their rural counterparts. Because the separation between urban and rural land in Japan is unclear, the pres-

ence of modern day professional farms in Tokyo is substantial (Yokohari *et al.* 2000). These farms are already documented by the Japanese Ministry of Agriculture, Forestry, and Fisheries and are therefore not included in this study.

Cities require a minimum amount of green space for health and environmental reasons. Considering Tokyo's low amount of green space ($3\text{m}^2/\text{capita}$) relative to the World Health Organization recommendation ($9\text{m}^2/\text{capita}$), agriculture lands used with hobby functions could be valuable to protect. More recently, the importance of UA was recognized by policymakers and a new policy was enacted for the protection of urban agriculture lands in UPAs (MLIT 2015).

Methodology

Area selection in Tokyo

The Tokyo Metropolitan Government states Tokyo's population as 13,389,584 people (TMG 2013). The island municipalities are excluded from this study because of different socio-cultural and economic conditions. As a result, the selected study area has a population of 13,371,646 people across $1,778.09\text{km}^2$ over 53 different municipalities (Fig. 2).

Identification of hobby farms

Aerial photos in Google Earth Pro (ver. 7.1.2.2041) were utilized for identifying and drawing polygon shapes over the two selected hobby farm types (allotment and experience farms). The first stage of identification accessed official online databases of all 53 municipalities: 46 available databases, of which 27 contained allotment farms and 19 contained experience farms. The locations were then confirmed through the satellite images in Google Earth Pro and GIS.

Secondly, selection was divided according to the types of hobby farms. For allotment farms, remote sensing was conducted by drawing a $1 \times 1\text{km}$ grid over Tokyo. Each of the squares was then carefully visually analysed to identify allotment farms. Allotment farms have a distinguishable pattern and shape with rectangular divisions and small pathways making them easily detectable via satellite images. The document is then imported into GIS (ArcGIS ver. 10.3.1) for converting to a shapefile. A column is added in the attributes table to show the surface of each individual shapefile, which are then re-exported and analysed by municipality (Table 2).

As for experience farms, only the government-registered farms could be identified through databases because of their spatial similarities to professional farms. Finally, the spatial data of the two types of hobby farms were used to prepare quantifications.

For further selection of hobby farms with this methodology, a set of criteria was developed for farms that can be accurately quantified (Table 1).

No.	Criteria	Allotment farm	Experience farm
1	Registered in database		X
2	Subdivisions for users	X	
3	In residential area	X	X
4	Full soil (no rooftop, etc.)	X	X
5	Open to public	X	X

Table 1: Criteria for hobby farm selection

From all 53 municipalities: 36 contained one or more types of hobby farms (Fig. 2). Therefore, in this study, no further reference is made to the following 18 municipalities: Arakawa-ku, Bunkyo-ku, Chiyoda-ku, Chuoh-ku, Fussa-shi, Hinode-machi, Hinohara-mura, Kita-ku, Meguro-ku, Minato-ku, Nakano-ku, Okutama-machi, Shibuya-ku, Shinagawa-ku, Shinjuku-ku, Sumida-ku, Taitoh-ku, and Toshima-ku. Based on the criteria (Table 1) 2 allotment farms in Koto-ku and 2 allotment farms from Hinode-machi were also excluded.

Quantification

Yield estimation

In Tahara S. *et al.* (2011) hobby farmers recorded the weight of vegetable yields for each harvest in their plot of land. The results varied according to farm type. Estimates showed an annual yield of 4.16kg/m² for allotment farms in Nerima, Tokyo, and 8.45kg/m² for the experience farms in Inagi, Chiba. Both case studies are leading hobby farms in Tokyo and therefore show high yields compared to others (Tahara S. *et al.* 2011). The results of this study are utilized to calculate the yield of each hobby farm according to type.

Buffer analysis

Accessibility—reasonable walking distance to the hobby farm for daily maintenance—is an important factor for hobby farmers. According to Morar *et al.* (2014) who assessed walking distances to open spaces, 300m is suitable for a land use of 2ha. (20,000m²). In addition, Grahn and Stigsdotter (2003) suggested that people who live less than 300m from a green space are less stressed compared to those who live at a greater distance. Therefore, 300m was selected for the buffer analysis in this study.

Household estimation

A household estimation within each buffer was conducted using 2012 land use data (TMG 2012). In each buffer area, residential building types were extracted. Four building layer types were identified for this household estimation: House & store (HS), detached house (DH), Condominium (C), and house & factory (HF). According to literature, Japanese households are sensitive about their privacy; therefore, one Japanese house equates to one household (According to the Tokyo Metropolitan Government (2013) the average members per household is 2.03) on average (Ozaki 2002; Ronald 2008). Building layer types HS, DH, and HF were therefore designated as one household per building unit in the estimation. Estimating households in condominiums, therefore, required further analysis because Tokyo contains a significant number of condominiums (Table 2).

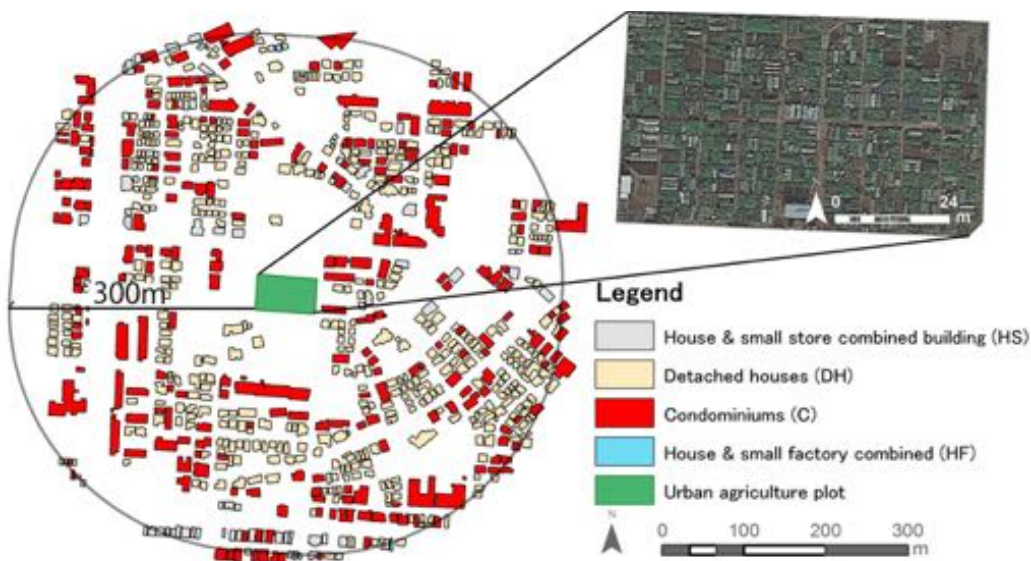


Figure 1: Example allotment buffer analysis in Sugunami Tokyo (source: Tokyo Metropolitan Government, land use data 2012; Satellite imagery 195m height, google earth 2015)

Code	Description	Formula and conditions	Source
H	Household [units]	$H_{ind.} + H_{cond.}$	
H_{ind}	Household in individual houses [units]	$B_{HS} + B_{DH} + B_{HF}$	
B_{HS}	Buildings in house and store [units]	Counted by GIS	(TMG 2012)
B_{DH}	Buildings in detached house [units]	Counted by GIS	(TMG 2012)
B_{HF}	Buildings in house and factory [units]	Counted by GIS	(TMG 2012)
H_{cond}	Households in condominium	$\sum_{i=1}^n ((C_{An} * C_{Fn}) / Rd) * (1 - Vr)$	
C_{An}	Each condominium area [m2]	Calculated by GIS	(TMG 2012)
C_{Fn}	Each condominium floor [units]	Calculated by GIS	(TMG 2012)
Rd	Average rental dwelling size [m2]	Variable per municipality	(Statistics Bureau 2013)
Vr	Vacancy rate	0.135	(Statistics Bureau 2013)

Table 2: Indicators and estimation of households per buffer

Self-sufficiency calculation

For the self-sufficiency calculation (Table 3), the assumption is made that vegetables produced in the hobby farms are consumed within the designated neighbourhood buffer (Table 2). In addition, since each hobby farm was analyzed, the total amount of vegetable production by hobby farmers and the spatial distribution of hobby farms in Tokyo became visible (Fig. 2).

Code	Description	Indicator	Source
H_{shss}	Self-sufficiency [%]	$(H_{pv} * 100) / H_{sh}$	
H_{pv}	Households that can be provided [household]	$A_{LY} - (H_{sh} * H_c)$	
A_{LY}	Hobby farms vegetable yield [kg]	$A_{ls} * F1$	
A_{ls}	Hobby farms surface [m2]	var/hobby farm	Identified in GIS
F1	Yield factor [kg/yr/m2]	4.16 allotment, 8.45 experience	(Tahara, 2010)
H_c	Household consumption [kg/yr]	198.9	(Statistics Bureau 2012)

Table 3: Indicators and estimation of self-sufficiency per buffer

Results

Spatial distribution of hobby farms

Allotment farms identified in Tokyo totaled 590,279m² and consisted of 385 identified farms, along with a total amount of 151,054m² experience farms consisting of 75 different farms.

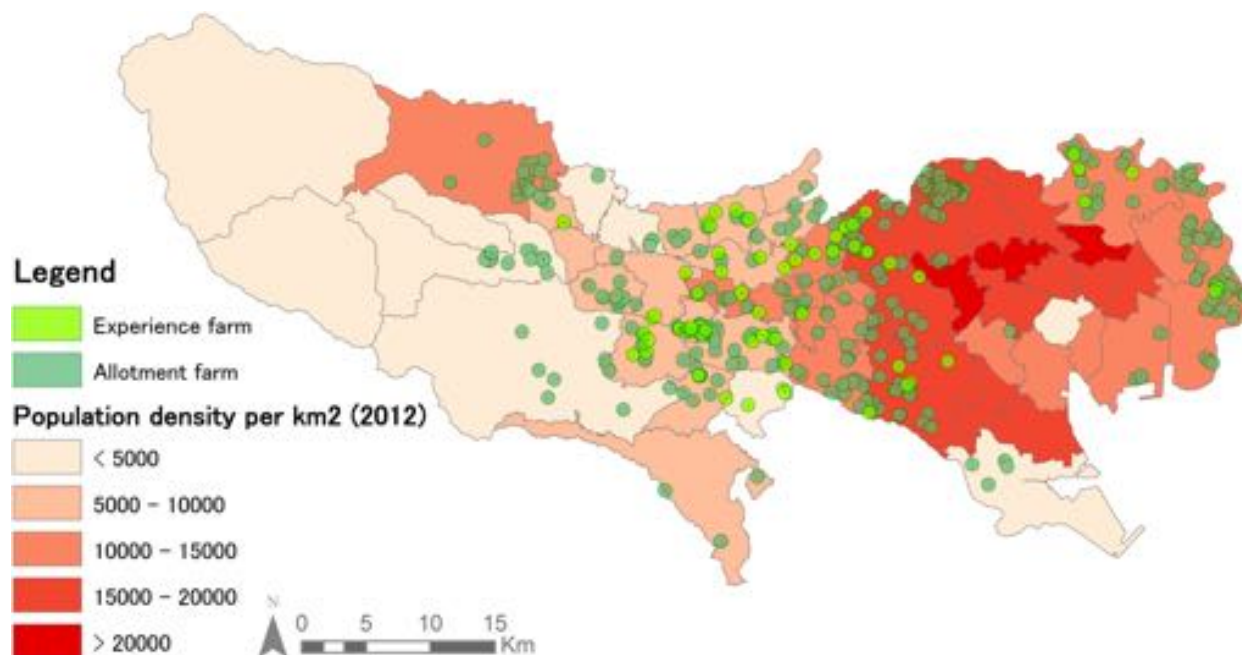


Figure 2: Distribution of hobby farms with their 300m buffers (source: Administrative map of Tokyo's municipalities; Tokyo Metropolitan Government 2012, land use data)

Amounts of vegetable supply

Description	Allotment farm	Experience farm
Num. of hobby farms	380,00	75,00
Area in total [ha]	59,03	15,09
Food provisioning [ton]	2455,56	1274,77
Number of households with vegetables provided from hobby farms	12346,00	6409,00
Number in parenthesis ratio of total household [%]	6373335 (0.19%)	6373335 (0.10%)

Table 4: Total amount of potential vegetable supply from hobby farms

Buffer analysis and categorization

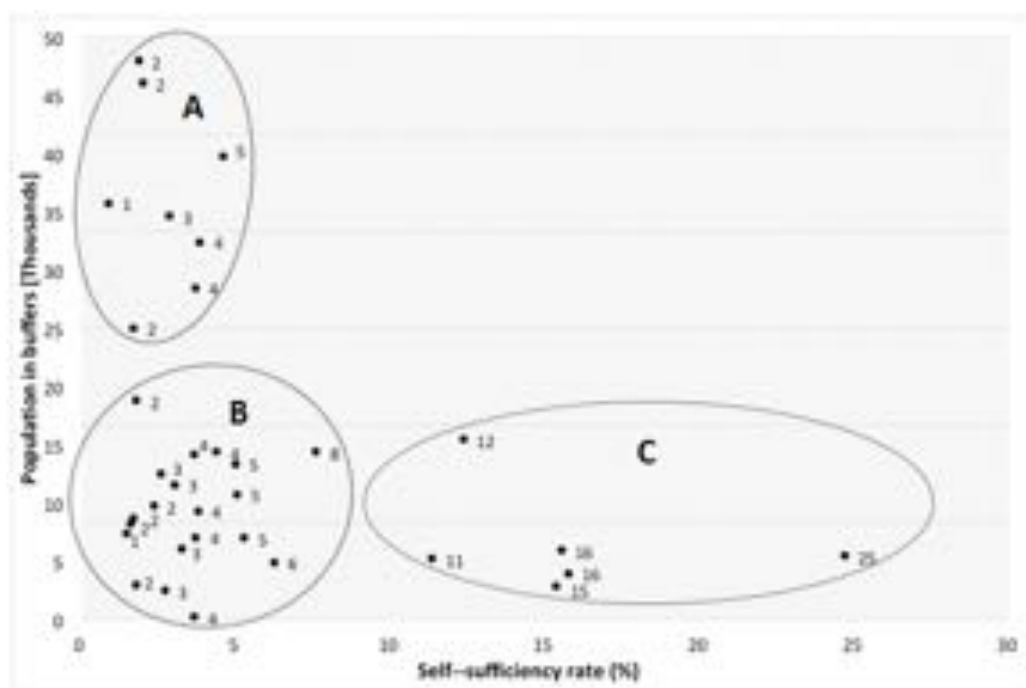


Figure 3: Population and potential self-sufficiency scatter analysis in 300m buffer by municipality

Neighbourhood self-sufficiency within 300m buffers averaged 5.86% (Mdn = 3.69 %) in the selected municipalities of Tokyo (Fig. 3). Fig. 3 shows three municipality types (Table 5), their average self-sufficiency rate and average population covered in all the buffers. Type A is “Low self-sufficiency and high population”, type B is “Low self-sufficiency and low population”, and type C is “High self-sufficiency and low population”.

Code	Municipalities	Average Self-sufficiency rate [%]	Average population covered [person]
A	Adachi-ku, Edogawa-ku, Fuchu-shi, Katsushika-ku, Nishitokyo-shi, Ōta-ku, Tama-shi, Kiyose-shi	2.67	36263
B	Akishima-shi, Chofu-shi, Hachioji-shi, Hamura-shi, Higashikurume-shi, Kōtō-ku, Inagi-shi, Setagaya-ku, Kodaira-shi, Koganei-shi, Kokubunji-shi, Komae-shi, Mitaka-shi, Machida-shi, Musashimurayama-shi, Nerima-ku, Oume-shi, Suginami-ku, Musashino-ku, Itabashi-ku	3.53	9217
C	Akiruno-shi, Higashimurayama-shi, Higashiyamato-shi, Mizuho-machi, Hino-shi, Kunitachi-shi	15.83	6475

Table 5: Municipal categorization of neighbourhood food self-sufficiency'

Discussion

Spatial distribution of hobby farms

The spatial distribution of hobby farms (Fig. 2) shows a clear presence in the peri-urban area of Tokyo (Fig. 2 population 5,000-15,000). This area is characterized as a dense mixture of residential land with farmland. The urban core (Fig. 1 population 10,000 to < 20,000) contains no hobby farms; however, the surrounding dense belt of municipalities does contain many hobby farms. In addition, it should be noted that experience farms are mainly located in the peri-urban belt with slightly lower population densities, whereas allotment farms are spread out over different areas with varying population densities. Policies promoting hobby farms in municipalities such as Nerima-ku lead to the higher number of hobby farms.

Different hobby farm types have different yield productions and could lead to the promotion of experience farms (Table 4). However, allotment farms provide additional benefits for hobby farmers (e.g. flexible in crop plans) and Fig. 2 shows distributed in various municipalities.

Amounts of vegetable supply

The amount of food supply from hobby farms is limited when referring to the total households in Tokyo (Table 4); therefore, self-sufficiency should address smaller areas such as neighbourhoods to understand their actual contributions. In response to the demand of fresh and safe food as discussed in the introduction, there is market demand for the presence of these types of UA. Hobby vegetable production on the scale of an entire city seems insignificant when compared to professional farming. Hobby farms, however, do contribute on a neighbourhood scale and various users may even meet their annual vegetable demand.

Buffer analysis and categorization

A high population density is inextricably linked with a low self-sufficiency. The average and median values are relatively high because this study focused on the municipalities where hobby farms were present, indicating where hobby farms are present, they do contribute to vegetable self-sufficiency levels, even though limited (Table 5).

The categories in Table 5 - which are derived from the scatter analysis (Fig. 4) between municipalities, population in buffers, and self-sufficiency rates - are the result of a historical presence of agriculture, local policies, and even promotion by local governments.

Although municipalities have spatial differences internally, results do not necessarily represent the trend of that municipality. Type (A) municipalities are densely populated areas where high-rise buildings or condominiums are prevalent and therefore only limited open space is available for agricultural activities. Most municipalities are fall within the Type B category because they consist of sprawling residential areas (from the 1960s population boom) mixed with remaining agriculture lands. Currently, protection and promotion of agriculture lands are ongoing. Areas in category (C) are not lacking space and are more rural compared to (A&B), therefore positive results emerge due to lower population densities and larger hobby farms.

Conclusion

This study shows that a considerable vegetable self-sufficiency at neighbourhood scale, despite a high population density, is possible. Therefore, a considerable number of households can access the vegetable supply from hobby farms. The results also indicate that a closer proximity for households and hobby farms increases the possibility of self-sufficiency. In addition, the level of involvement by professionals contributes to the production of the farms, as shown in the different yield indicators used within the study. However, the authors believe that a variety of types of hobby farms should be promoted, rather than focusing on the more productive experience farms, due to the additional benefits allotment farms provide.

Further research is necessary to determine crop yields during different seasons. Self-sufficiency especially, will likely vary significantly depending on the season of analysis.

More than half of the world's population lives in cities and 60% of these urban areas are exposed to natural disasters (Gu *et al.* 2015). To understand the potential contribution of both professional and hobby UA to resilience, further research in times of a large disaster should be made.

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D4 From theory to practice (II). Exploring innovative initiatives from Europe and beyond

A yard out of nothing: Building a common landscape experience and place-making in Kipos3 project, Thessaloniki

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Keywords: Place-making in Crisis, Landscape Design, Urban Resilience, Bottom-up & Top-down Synergies

Abstract

In the most forms of urban gardening worldwide, the community building and the establishment of alternative food networks are promoted either top-down as a social policy or bottom-up as a spontaneous "return to the land", as a means for self-sufficiency, social networking and cultural exchange. In the case of the city of Thessaloniki, the second biggest urban agglomeration in Greece, both forms of urban gardening have emerged over the last years linked to the effects of the economic crisis in the city's evolution. This paper elaborates the story of an urban community garden in the center of Thessaloniki which was developed from scratch in 2015 by a team of postgraduate landscape architecture students of the Aristotle University. "Kipos3" ("Garden in the cube") is a proposal for a module of a "social courtyard" applicable in every residual site of the Greek city core. In this concept, this first garden narrates more than the impact of urban agriculture in the condition of urban crisis. It reflects the new field of synergies among local authorities and citizens on the formation of the urban environment starting from the public vacant spaces and using food as a common incentive. It proposes the top-down and bottom-up cooperation in order to spread and strengthen the idea of urban gardening with an active, community based approach and as a cultural practice. After a comparative review of similar initiatives in Greece, and learning from the best practices abroad, this paper presents the first results of the field study in Kipos3 project. It discusses finally the experience of a new-born concept and its

implementation in a concrete environment as well as the first quantitative and qualitative results of one operative year, the building of "top & bottom synergies", the social empowerment of a neighbourhood community and finally a resilience story from Thessaloniki.

Introduction

Urban green Commons as a contemporary urban landscape design question

"The world is so empty if one thinks only of mountains, rivers & cities; but to know someone who thinks & feels with us, & who, though distant, is close to us in spirit, this makes the earth for us an inhabited garden." (Goethe 1874:520)

Always throughout the history, particularly in hard times, community gardens have been used to transform vacant or leftover land into spots of growing food and developing community synergies, from the victory gardens in the U.S. and London after World War II to the characteristic images from Cuba in the economic stress of the 1980s, referring usually to great utopian visions such as the garden city or other social movements for communal organization. Their emergence during the last century turned the emphasis from the self-sufficiency to the political manifestation, the social or cultural dimensions and more recently to their perceptual value in the city; more than a trend, as a new form to shape the urban open space and describe a new lifestyle.

Due to the socio-economic uncertainty that cities of the 21st century have to face, urban green commons (collectively managed green spaces) within the urban fabric respond to a contemporary need for urban resilience (Colding & Barthel 2013; Dubbeling et al. 2009). The need for multidimensional urban governance, strategic design and decision – making with multiple protagonists and under multiple stresses, the capacity finally of the city as a system to survive, adapt to changes and "thrive" within every kind of challenges, is described as a necessary quality for urban development. From Holling's theory on ecosystems' resilience to the new urban goal, the awareness that urban space describes the spatial framework where all crises are born and cured, and as point of reference for human welfare and cultural evolution, advances the concept of sustainability: a resilient city

capable to develop reflexes in the present to evolve in the future (Holling 1973; Lister 2015). The “commons” as a contemporary description of collectively owned public spaces, as productive landscapes, or “foodscapes”, as grounds for spontaneous experimentation and open to the ephemeral, as spots for social co-existence and practice for arts and culture, as cores for the regeneration of a lost urban ecology and biodiversity or even as poles in a broader planning, can be seen as landmarks transforming a former decay into hopeful and alive urban space scenarios (Gavriilidou 2015). The introduction of “commons” into the discussion on the city requires decision-makers, planners and designers to take on responsibility and to become competent in working with and for communities, treating these spots as fields of deliberation among the involved actors as well as fields of design and architectural practice that can create identity, a sense of place and belonging and contribute to a cultural regeneration, ecological renewal and even economic empowerment (Corner 1999; Weller 2015).

The story of the creation of the first urban garden in the city center of Thessaloniki as a “common” landscape and an urban experiment, the birth of Kipos³ project narrates the trip of an academic idea meeting reality, the evolution of a social commitment, the process of working with the municipality of Thessaloniki for a new strategic goal, the process of mapping the city and activating a neighbourhood to co-create a garden out of scratch, the process of keeping this garden alive after one year, investing on the collective practice. Promising a new era of urban prosperity the “commons” initiatives, like Kipos, create a broader impact in contrast to previous projects and the past inaction, even in the recession, and serves as a virgin ground again for innovation.

Building the commons in the world and Greece: Forms, approaches and impacts

Overleaped by the need for food security, new land use values, enterpreunership, low-cost regeneration, or new natures and new landscapes in the city, on the occasion of economic crises, as a response to the urban densification and as a reaction to the missing or residual urban green, the commons appear in urban cores worldwide (Gasparrini 2015; Jègou 2015; McQuirk 2015). In all cases, the community’s engagement, the activism lies above the volunteerism and

the concept is clear: the residents are set to improve the surroundings of their neighbourhood, acting to form a livable community and bringing a new layer in urban planning and design know-how. As occasions to practice democracy, they create a ground for self organization, demand and formation of everyday life landscape, with interesting cultural and political dimensions (Arnstein 1969; Mitchell 2015). Posing food as the incentive, they reveal the community power, restoring a motivation for the engagement with the public space, offering in parallel new aesthetical and spatial qualities in the city, colors, flavors, interesting textures and natures, an interesting space for dialogue around ecology, food production, work with the land, a collective memory and knowledge (Bohn & Viljoen 2005; Colding & Barthel 2013).



Figure 1: Urban Green Commons. Motivations and the role in the city (source: Gavriilidou)



Figure 2: The "Commons" in the resilience building of cities (source: Gavriilidou)

"Commons" as an urban strategy

Decades after the heterotopian collage of Agnes Denes in 1982 for the Battery Park in Manhattan as a wheatfield, the new Battery Park verifies the reality of the "commons". From the Prinzessingarten to the roofs of New York, every vacant lot within the city is seen as part of a strategy for urban transformation, art, social or cultural policy (Svendsen 2013). A variety of organizations like 596 acres, Grounded in Philly, LA open acres, GFC activating land, Edible Cities, the urban design lab in Columbia University is working in this direction producing powerful maps that are useful in decision-making processes.



Figure 3: Utopia or an urban reality? From the collage of Agnes Denes, 1982 to the Battery Urban Farm in Manhattan, 2014

Executive cases are cities in a postindustrial decline with a huge reserve of brownfields and vacant land considered strategically as points of value through the community stewardship. There, the ephemeral occupation is selected by the authorities for its long-lasting effects, from the Detroit Future City – Working with Lots Field Guide motivating communities to transform step by step their neighbourhood landscape (Detroit Future City 2015) to the cultural initiative VivaCidade Aveiro with the active engagement of the Aveiro's Municipality. Among other, the Glasgow city campaign for the "Stalled Spaces" and the moto "A community fit for a wee.bit", consists of a characteristic call to the communities to include the following uses in their open spaces: "green gym/ play space/ outdoor exercise, pop up sculpture, exhibition space, outdoor education, arts

project, event space, urban beach, pop up park, growing space, or any innovative idea" (City of Glasgow 2015).

"Commons" as landmarks

"Transforming vacant lots into new opportunities" is also the motto of the Mayor of Phoenix City in Arizona, who coordinated the commitment for the transformation of vacant lot of around 140 acres into a vivid garden for the whole city, engaging groups of volunteers, restaurants and the Arizona State University, School of Architecture who designed a zero energy and water house in the desert financed through crowd funding. A new beautiful landscape, that is accessible to everybody and that allows for continuous experimentation, was designed as a sustainable system for the use of water, soil and recycled materials, but also as a space for art, color, rare or local species. In the European context, the urban educational garden of the University of Gothenburg in the Swedish city of Mariestadt is a similar but small-scale example of how commons as urban landmarks can be established through design.



Figure 4: Phoenix Renews (source: Gavriilidou)

The Greek case

In Greece there is a lack of urban policies and strategies on this issue and a reserved trust that these landscapes could operate as fields of synergies between the authorities and the communities. The "commons" are meant here either as totally top-down Municipalities' initiatives controlled with timetable, social criteria and limited

access, usually as allotments out of the city center, or as totally bottom-up initiatives, like Per.Ka's gardens in a former military campus in the west Thessaloniki. Either in the first case or in the second, design is not involved in the process; while by nature that consists of landscape interventions. The allotments in both cases are considered as a resource for self-sufficiency and social policy (Partalidou & Anthopoulou 2015). Thus in Greece there are no "commons" as landscape design projects. They are gradually recognized for the social values they can produce, while are not seen yet as a land use in need of planning and design. The dense city centers as well as the limited land use policies do not allow for initiatives to take place in the pre-mentioned extent.

Kipos3 in Thessaloniki: A garden in the cube

Thessaloniki Red & Green Project: Reading the potentials for urban agriculture in the Thessaloniki

In the case of Thessaloniki, the rapid mutations between times of prosperity and recession after 2008, and processes of densification followed by sprawl and the recent pause of building activity in the periurban new districts (Pyla 2013), led to hybrid landscape forms of rural-urban blending as well as extended difficulties in the planning of new infrastructures. These became the object of research in the context of the design studio projects in the Master of Landscape Architecture in the Aristotle University of Thessaloniki in 2013-2014. The heterogenic area of the west entrance of the city, the first periurban agriculture area in the 19th century, and the today postindustrial wasteland among big transportation networks and a new low price building stock, a contemporary urban wildscape co-existing with greenhouses and nurseries of intense agriculture, became the main subject of discussion in the context of landscape planning and design studio (Faczanyi 2013).

Lachanokipi area (lachano=vegetables, kipos=garden), was projected as a the perfect site to introduce the concept of community gardening in the city as a multifunctional "red" (community design) and "green" (landscape) infrastructure (Thessaloniki Red and Green project⁴), where "green" would be found in parks, small individual gardens, fruit and

⁴ Team: E. Gavriilidou , D. Dedousi, M. Ritou and E. Oureilidou, Joint Postgraduate Program of Landscape Architecture, Aristotle University of Thessaloniki, supervisors: Prof. Sarantis Zafeiropoulos & Prof. Holm Kleinmann

vegetable markets, pavilions for leisure, places for research and education and “red” would play a role model in relation with the social identity and the community living around common vineyards, olive trees and gardens.



Figure: 5 a, b, c: Thessaloniki Red & Green Project

Creating a Common Ground

Vision and goals

After the academic scenario, in a city of only 2.5 m² of green/resident and limited budgets for green infrastructures, Kipos³ was born as a commitment for the transformation of residual sites in the city into spots for common gardening and common activities driving a broader impact on city's everyday life. Awarded by the Angelopoulos Clinton Global Initiative University Fellowship as an innovative social start-up, Kipos³ was set as a platform bringing together three teams in collaboration for the renewal of a network of the last remnant lots inside the city: local authorities, landscape architects/designers, and neighbourhoods/communities. The name “Kipos” refers to the Greek

word for the "garden", the archetype of the designed nature as a common meeting ground with aesthetical, productive, educational, cultural dimensions. "Kipos in the cube" (Kipos³) becomes the module, the return of the "garden" to fill, reshape and redetermine the leftover sites, to bring life and identity instead of vagueness, to bring the idea of the "citizen" above the "individual".

The "food" in the case of Kipos³, at the minimum scale of urban intervention, is seen as the "carrot" to bring change, as the new, hopeful and unusual (in Thessaloniki's reality) idea; powerful to activate a discussion in the Municipality's offices and also in the city's streets. It operates as a park, the evening walk, a "foodscape", a hobby space, a meeting point, the stage for cultural events, the everyday coffee hour, an art point, a landmark for the city, even an "encyclopedia" of different natures in the urban environment, while it urges the reactivation of institutions and communities, consisting of a resilience lesson in crisis, a discussion on the top-down and bottom-up blending. The "food" at the minimum scale of urban intervention is used here as the "carrot" to bring change, describing a contemporary form of green public space.

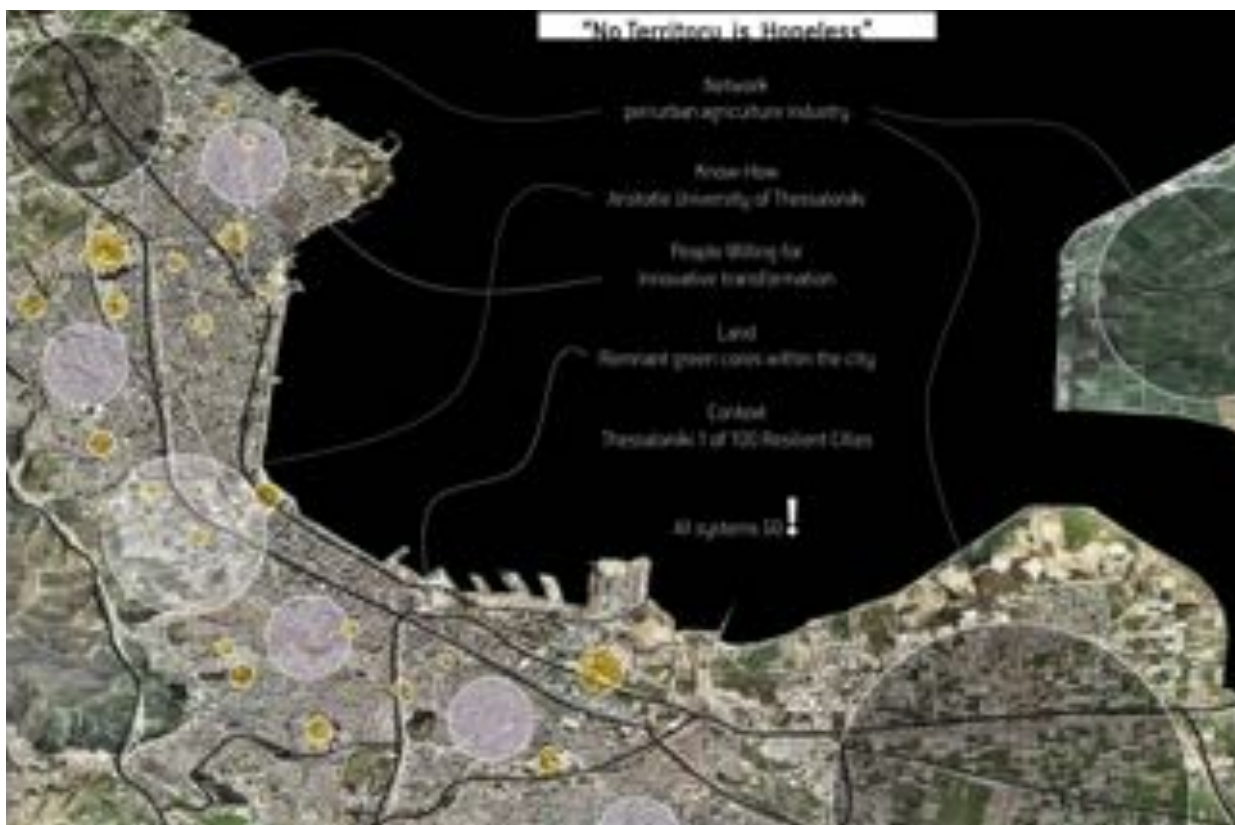


Figure 6: Mapping the city's potentials (source: Gavriilidou)

The garden

Implemented in 2014, the activation of the first community garden in the city of Thessaloniki took longer than the creation of the garden itself. In a city, dependent from the municipality's maintenance of green space, inactive in terms of urban activism, and with the majority being unaware of community initiatives and urban green commons, the commitments of Kipos had to start from zero.

The very first question was where to intervene, which neighbourhood to activate. With the guidance of the municipality of Thessaloniki, over 15 spaces were mapped in the city center available for transformation and under the property of the Greek State or even the Church. Among them, 6 spaces were selected for their spatial characteristics, their scale, and the proximity to dense areas. In the next phase, a campaign for the community engagement started. In the 6 neighbourhoods voting posters were hang up asking people to cut a YES or NO answer in the question "Would you like to see this space as a garden putting yourself in this transformation". The 6/6 posters of positive answers gave the signal to build the first community garden in the city center out of scratch (Gavriilidou et al. 2016).

In the heart of the city, near the municipality's vineyard and orchard, an innovative landscape was selected to get established as a top-down experiment in order to introduce the bottom-up action. "Don't shuuu.. please DO Disturb!" was the slogan hang door-to-door to activate residents for a new experimental park. In a neighbourhood alerted only when the first planting pots were set up, after hard work of coordination and team-building, the remnant green is managed by 10 neighbours - previously not knowing each other - for more than one year now.





Figure 7, 8, 9: From the neighbourhood campaign to the creation of the first community garden in the city center of Thessaloniki (source: Gavriilidou)

Project Name: Kipos3 garden Location: Thessaloniki, Greece Designers: Kipos3 Date of study: 2014-2015 Date of operation: 2015-2016 Surface area: 300 m ² People: 10 families living from 5 meters to 1km away from the gardens' fencing, mixed ages and social profiles, most of them not knowing each other first Cultivable surface: 84 m ² , 22 raising beds of 4 m ² (each family owns 1-3 pots)	DONT sthth..... Discuss Share Create Goals - the collective care of a yard - the return to public space - citizens – municipality synergies - the garden as a means for place-making & story-telling - as a means for achieving resilience Activities Community Gardening, Cultural participation, Educational activities for Schools, Development of an expertise in food systems 1 year harvest / family: around 80-90 kg of vegetables, herbs and aromatics	Tools for building the commons: - Space mapping - Neighborhood campaign - Open voting: would you like to contribute in changing your neighborhood? - Setting the rules – the food as the carrot for a beautiful landscape - Introducing motivations – role playing and new players (artists, children, researchers) - Envisioning a neighborhood park: Using the experimentation and the spontaneity in a concrete urban environment - Thinking in terms of architecture and landscape elements

Figure 10: Information about Kipos³ project

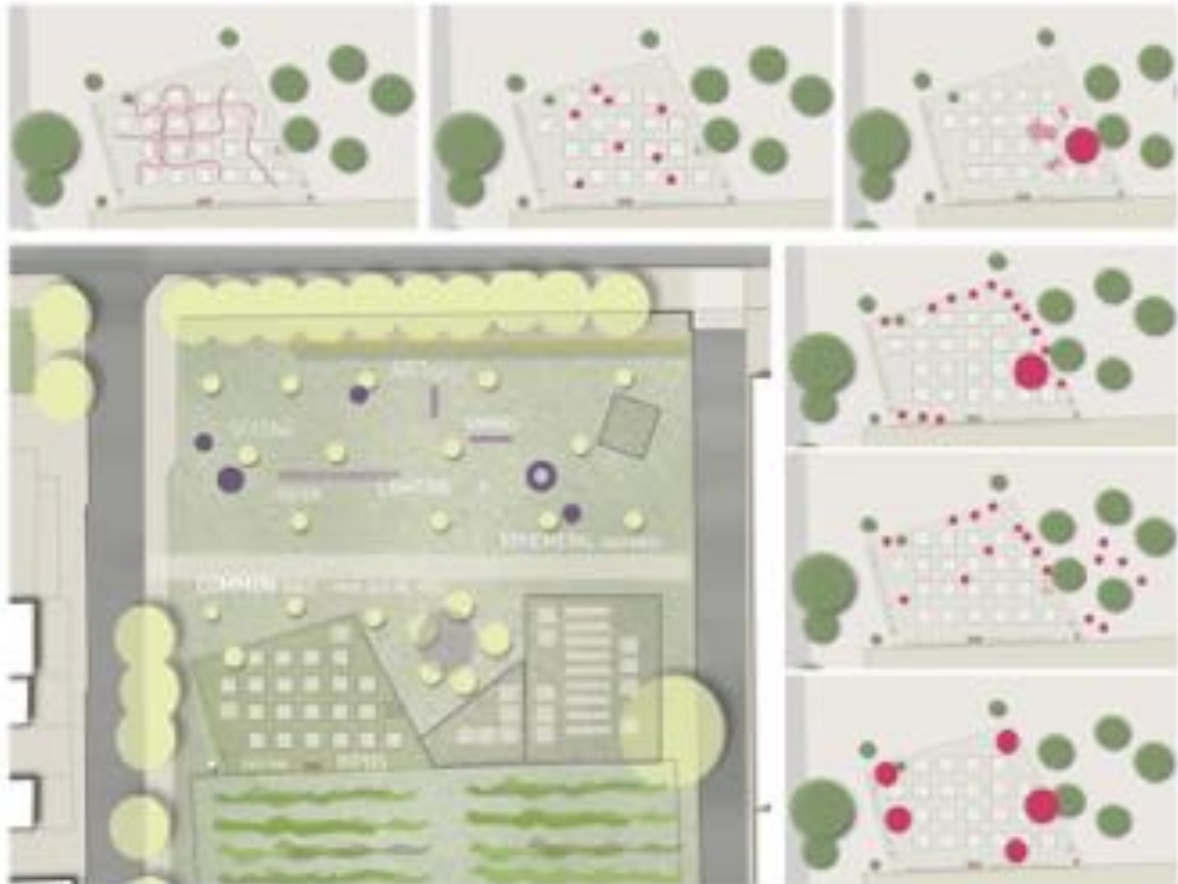


Figure 10: Users' exploration on site & drafting a neighbourhood park as a site for experimentation open to the ephemeral

What's next? Planning an open to experimentation and the ephemeral community landscape

With the experience of the Kipos garden created from scratch and operating in Thessaloniki successfully for one year, the second target would be a total re-approach of the green area as neighbourhood park open to design: the garden, the orchard, the vineyard, the space for walk, the space for meetings and free food tables, while a third goal would be every - even the most degraded - neighbourhood in the city.

The common narration around the story of Kipos and the role playing that gradually developed among the participants (a craftsman, an expert in traditional cultivation methods and plants, a specialist in collecting forgotten local seeds, two teachers active in environmental education programs) make up the main ingredients for the team building as well as the time spent in the garden, the common enthusiasm for the initiative, the hope that the city can change even in crisis, and even with low budgets, and the recognition of the external environment that this attempt could be exemplary for more neighbourhoods,

municipalities and cities. The gradual introduction of more “players” in the network of Kipos, artists, primary and secondary schools, as well as activists or researchers is creating acceptance to a broader audience in the discussion of public space and urban life quality and the role of envisioning, designing and even constructing a better everyday landscape (Kipos3 video 2016).

Conclusions

The story of Kipos³ garden consists of a useful lesson on the reactivation of authorities and communities, a resilience lesson in crisis, a discussion on the top-down and bottom-up blending, the new role of citizens, designers and institutions, the power of vision and imagination in place-making and storytelling for the renewal of every ostensibly hopeless land. Kipos is special because 1) it lies within the city centre, 2) it collaborates with the municipality (not a public land capture), 3) it is more than a cultivable area, it is the creation of a beautiful landscape using art and design as a driver for change, 4) it targets the community – not the self-sufficiency, 5) it is not a top-down social policy, but it creates synergies in order to get established as a cultural policy. More than a garden, it describes a symbolic initiative, an incentive to move the discussion about the city and the public space in the neighbourhood’s level, to cultivate an aesthetical culture also, in the small scale of the everyday landscape. The reference of Kipos as one of the best practices in the focus area of the “Co-ownership” of public space in the Preliminary Assessment Report for the Resilience Strategy of the City of Thessaloniki, under the project 100 Resilient Cities pioneered by the Rockefeller Foundation (Liakou et al. 2016), responds to the question how small-scale initiatives have the potential to change not only the city experience by the users but also, the role of the citizens in the discussion for the city, the communication with the local authorities, and finally the development of a broader sensitivity on the quality of public space by all the engaged parts.

Acknowledgements

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Urban Gardening in Pune and Mumbai, India

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Abstract

Since urban agriculture has the potential to direct urban development into a favourable direction, more knowledge about it is crucial. The forecast that India – besides China – will contribute most to future urban growth, led to the decision of investigating more in urban agriculture in the large Indian metropolises Pune and Mumbai. This study examined characteristics of the sites, the involved actors as well as motivations and problems in urban agriculture through an explorative questionnaire and field visits.

The study reveals that, besides individuals who grow plants for themselves on balconies, terraces, window sills or gardens, new forms of urban agriculture are coming up. These are, on the one hand, community gardens which cultivate a variety of plants. On the other hand, there are people who are committed to green hills to improve the condition of the environment. Restrictions and problems of urban agriculture include negative environmental influences, social issues like trouble with neighbours or family members as well as personal resources including lack of knowledge. Urban community gardening activities are increasing lately, with similarities in the motivation to urban gardening activities in the Global North. Still, a deep interest in organic waste management and in environmental upgrading of the city indicates a different emphasis. Because of the explorative character of the study, further investigation is required, for example, the differences between Pune and Mumbai agriculturalists.

Introduction

Since urban agriculture (UA) has the potential to direct urban development into a favourable direction more knowledge about it is crucial. A lack of data and the forecast that India will contribute substantially to future urban growth led to the decision of investigating more in this region. Pune and Mumbai, two cities in the South of India, are facing both, tremendous urban growth and increasing social disparities. As economically successful cities in the Global South, there is much pressure on remaining open spaces, and livelihood for the urban poor cannot be guaranteed.

In this paper, the term UA follows Mougeot's (2006) widespread and encompassing definition as being the 'growing, processing, and distribution of food and non-food plant and tree crops and the raising of livestock, directly for the urban market, both within and on the fringe of an urban area' (Mougeot 2006: 4). In the prevailing literature it combats with similar terms such as urban farming or urban gardening and a clear distinction is not possible. Nevertheless, it can be noted that studies on UA in the Global South mostly focus on informal UA activities of the urban poor as a means for food security and income generation (Hamilton 2014; Tixier & de Bon 2006), whereas the resurgence of cultivation practices in the Global North is depicted more by 'urban (or community) gardening' (Ernwein 2013; McClintock 2010; Mougeot 2005). Studies on UA in India are rare. The biggest part of the literature focuses on so called waste-to-farming-systems hinting at a close relationship between farming and the reuse of urban waste water for irrigation and urban organic waste used for composting to grow food. Further studies deal with the importance of urban and peri-urban farming practices for people's livelihood, including composting and vermicomposting (Sharholly 2007; Yasmeen 2001).

In Mumbai, the 'International Institute of City Farming' has spread knowledge on how to grow one's own food on every available space in the city. The Mumbai Port Trust Garden e.g. was primarily installed to dispose of the organic waste of its kitchen in an eco-friendly way and is now a major attraction and kitchen staff members started growing with pleasure (Doshi et al. 2003; Patil 2003). Also in Pune, an increased interest in farming due to incentives for composting occurred (Behmanesh 2010). To counter the challenge of the solid waste

generation, the Pune Municipal Corporation (PMC) has encouraged waste segregation at the source through tax discounts for property owners undertaking vermi-composting. Now, a growing number of properties put vermi-composting into practice (ibid. 49). To green the city, PMC tries to involve non-governmental organizations (NGOs) as well as the public and private sector by offering sponsorships and an adoption system of traffic islands, road medians, gardens, tree plantations etc. (PMC 2014).

Whereas the importance of UA for the urban poor in India has been explored at least to a small extent, only one study examines its role for middle- and higher-income classes. Zasada and Benninger (2015) found that UA in residential areas in Pune does not differ substantially from developed countries, with regard to social milieu, motivation and community-basis, and with regard to practice (organic, small-scale, and recreation-oriented). The final choice of Pune and Mumbai resulted from an available contact with the Centre for Environment Education in Pune as well as internet-based findings of urban community gardens in Mumbai. The study seeks to explore the motivations of middle- and higher income household people in these two cities to take up UA. Due to language barriers and limited capacities, informal forms of UA conducted by the urban poor could not be included in this study. Because few studies on urban agricultural activities in Pune and Mumbai are available, at first the following explorative research question is examined: What characterizes the different urban agricultural sites and who are the actors involved? Secondly, the motivations of people are examined. Deduced from findings of the close relationship between farming and waste management the following hypothesis is drawn up: Middle- and higher income groups in Pune and Mumbai partly engage in UA to reuse organic waste. In terms of community actions, the study should reveal whether there are similarities or differences in gardening motivations to European community gardening initiatives.

General facts on Pune and Mumbai

Pune and Mumbai are two cities in the state of Maharashtra in south western India. Pune is located at the western margin of the Deccan Plateau, around 160 kilometres southeast of Mumbai. Its climate is monsoonal and shows the common Indian seasonal pattern (summer, rains, winter), but in a moderate form. Pune Metropolitan Area has around

5.06 million people (Census 2011) and has experienced rapid urban expansion and industrialization (increase of the area of settlement from 1999 to 2006 by 33%), accompanied by a loss of green cover and agricultural land (Nesarikar-Patkil & Raykar-Alange 2013). Mumbai is the capital of Maharashtra, and the Mumbai Metropolitan Region is India's most populated urban agglomeration with around 18.4 million inhabitants (Census 2011). In Pacione's (2006) opinion, "Mumbai is the most globally connected of India's cities" (229) as well as "one of the most cosmopolitan cities of India" (231). The Municipal Corporation of Greater Mumbai (MCGM) claims the city to be India's finance center, the economic powerhouse of the nation, and the industrial hub of everything from textiles to petrochemicals (MCGM 2015) – resulting in tremendous environmental pressures and challenges with regard to steering and restricting urban growth (Pacione 2006).

Methodology

Due to the explorative character of the study, grounded theory has been chosen as it allows an open approach to new fields of investigation (cf. Corbin & Strauss 1990; Mey & Mruck 2011). The study examined characteristics of the sites, the involved actors and motivations and problems in urban gardening through expert interviews, an explorative questionnaire and field visits to 85 sites. On-place research started with the Centre for Environment Education (CEE) in Pune which helped in networking. Observation of gardening sites and short interviews with the people involved gave an idea about the situation of farming in Pune and where to connect further. Because of high activity on facebook, online forums and e-mail groups, a questionnaire became the final instrument. Samples have been chosen by using the snowball sampling method. The questionnaire asked about the characteristics of the site of cultivation and the participants, and about motivation, problems, help and networking.

For categorization, first, answers were separated into their smallest key messages. Second, same or very similar responses were grouped together (for example relaxation and stress-buster or happiness and joy). On the basis of grounded theory (constant comparison), small categories then have been merged to broader categories with headings that fit both (for example 'waste management' and 'biodiversity' were regarded as environmental reasons). Finally, the broad headings again were classified within Self-determination theory to extrinsic and

intrinsic motivations in order to reflect the degree of internalization of the behaviour. Intrinsic motivation, in this regard, describes actions that are done for the inherent satisfaction of the activity itself, whereas extrinsic motivation is goal-oriented (Ryan & Deci 2000).

Results

Of the 92 interviewees, 67 lived in Pune and 25 in Mumbai. Both types of UA, individual and community gardens, were found in each of the cities. As could be expected, communities were less than individual cultivation sites (11 to 74). The presentation of results is structured according to Lohrberg *et al.* (2014) in spatial, functional, and market dimension, actors, origin and evolution. Beyond that, motives and problems faced are presented.

Spatial dimension

The sample covers a wide range of localities in both, Pune and Mumbai. In Pune, many of the participants and their cultivation sites were located in the inner city as well as at the fringe of the city. Individual urban agriculturalists mostly live at the same place where they involve in cultivation (97%). In communities, distances to the cultivation site were still quite small, with five initiatives accommodating their participants within the limits of the site of cultivation and two initiatives stating that their participants came from about one to five km. away. Gardens and rooftops were the main places for cultivation (each about 35%) (Fig. 1). Individuals also cultivate on balconies (19%) and window grills (8%). Two communities focus on tree plantations on hills (Fig. 2). Nearly half of the individual cultivation sites (47%) measure less than 1,000sq. ft. whereas communities mostly occupy larger spaces. Especially the two tree plantation sites on common space with around 30,000 and 88,000sq ft. influence the data.

Functional dimension

Transportable pots were used most (50%). Earth beds represented 33% followed by raised beds with 13%. The methods of production include horticulture (vegetables, fruits, herbs/spices), the exclusive growing of decorative plants or trees, and also a few animals (buffalo, fishes for aquaponics, earthworms). Favourite vegetables were leafy vegetables like spinach or fenugreek, okra or eggplant. In fruits,

among others, lemon, mango and papaya were named frequently. Other products mentioned were cotton, green fodder for animals and neem, a tree that is known to keep away pests. In none of the cultivation sites conventional fertilizers are used. Solely a few users of conventional pesticides, particularly among the individual sites, were found. Thus, 87% of the sites are tended to in a completely organic manner.



Figure 1: Mrs. Patil's rooftop garden, Pune (source: Hildebrandt)



Figure 2: Tree plantation on Tukai Hill, Pune (source: Hildebrandt)

Market-Dimension

Both groups show the biggest amount in making use of their products for personal consumption, while differing slightly in the share of

gifting. Here, community gardens not just distribute the food amongst the members, but also share it with visitors or even grow it specifically for others, for example for a hospital for children with cancer. Other usages are donating flowers during Pooja (religious ritual, three cases), and making use of plants to prepare medicines (Fig. 3-4).



Figure 3: Community garden Urban Leaves, Don Bosco School, Mumbai (source: Hildebrandt)

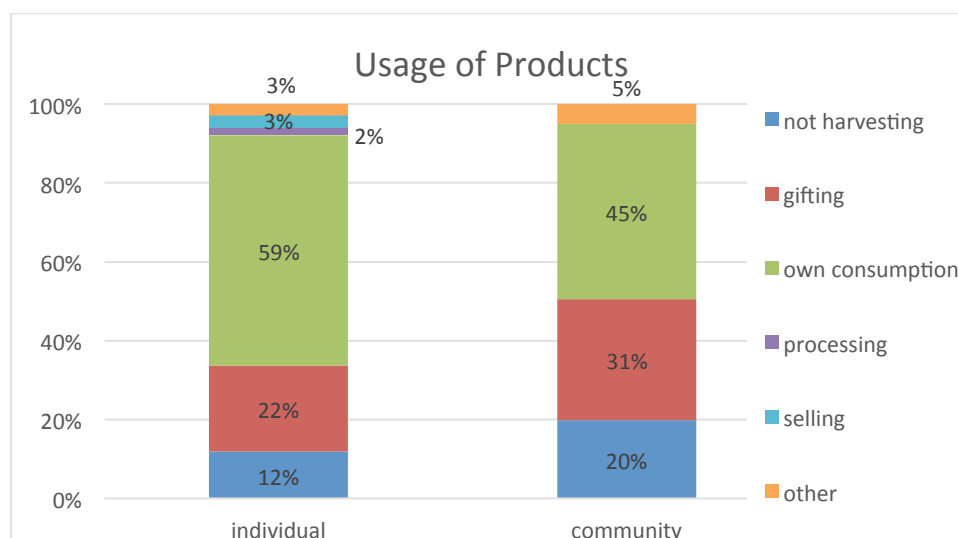


Figure 4: Usage of products (average share of usage per type) (source: Hildebrandt 2015: 33)

Actors

Women (65%) and the age group between 46–65years (51%) are most active. Age groups revealed to be quite similar except for the fact that no active community member older than 65 years was found and the share of people below 45 years was higher in the community gardens (44%) as compared to the individual's (32%). The educational level in general is high with the majority being post-graduates or graduates (individuals 85%, community members 94%). In terms of the current occupation, disparities between communities and individuals were made out: Individuals are mostly homemakers (41%) or already retired (19%), with just 33% of people following a profession, and partly supported by employees. Community members were, to a large extent, professionals (57%) or self-employed (29%) (Fig. 5).

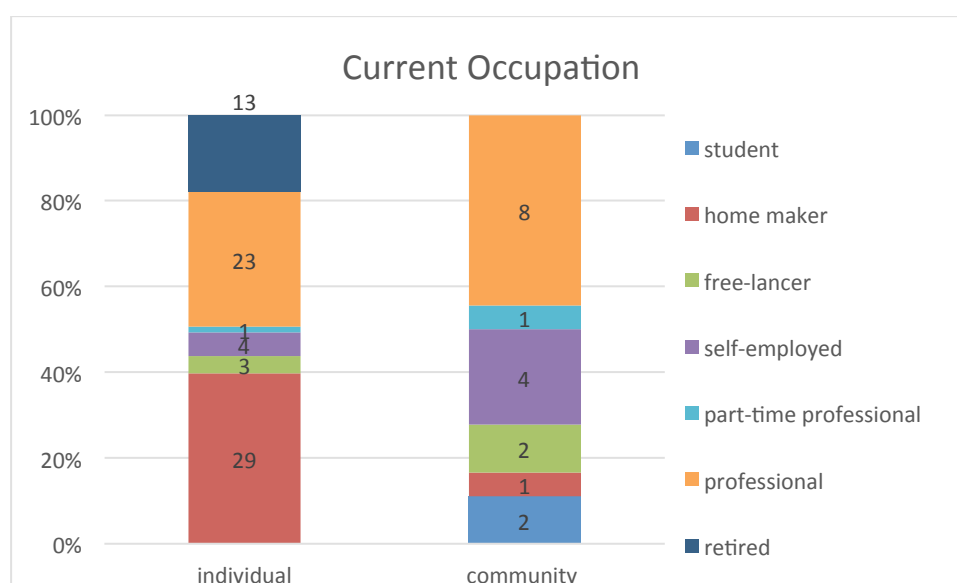


Figure 5: Current occupation (source: Hildebrandt 2015: 36)

More than 60% of individual farmers have a commercial farming or gardening background, whereas in community gardens, participants show a higher percentage of a non-farming background (56%). The financial situation of both groups is more or less similar, with the difference that fewer community members consider themselves in a 'very good' financial situation as compared to individuals (7% vs. 33%).

Origin and evolution

The individual cultivation sites mostly are older than community gardens (≥ 25 years), while the oldest community cultivation site is 'only' ten years old. This suggests that there is a trend for

cultivating in a community in India, too. This coincides with the actor's cultivation experiences: 30% of the individuals stated to be active in gardening since childhood, while nearly 60% of the surveyed 17 community members had less than five (35%) or ten years (24%) of experience in gardening.

Motives

Personal wellbeing and personal aims make out the biggest share on all mentioned motives, followed by intrinsic motivation. Environmental or social reasons seem to play a comparatively small role. Motivations that were given by nearly half of the participants (47%) are 'happiness' and UA as a 'passion' / 'I love it' each, as well as 'it is a hobby' (36%). Relaxation also plays an important role for many people (31%). 14% also named 'kick-off' incentives like being inspired by friends, NGOs, family or information on internet and movies about gardening. Categories relating to the hypothesis' motive of 'a more environment friendly food production' are: 'for the environment, sustainability' (26%), 'own production, for consumption' (28%) and 'food: safe, healthy, good quality, pest-free' (30%). Waste management was given as a reason by 14 participants (around 16%). A further division of the type community agriculture in community gardens and community tree plantation has been carried out after experimentation with data revealed outliers. Community tree plantations are organized through registered trusts or NGOs with the aim of greening Pune and reducing the carbon footprint of the city (Tree Public 2016; Green Hills Group). According to own statements, the Green Hills Group (interview on 27 July 2015) planted more than 130 trees, especially native Indian trees like Amla, Neem, Peepal, Banyan as does the Tree Public (Tree Public 2016).

All three types show differences in their motivational structure. Whereas individuals' motivation to grow is to 50% based on personal wellbeing and intrinsic motivation and thus highly internalized, for community gardens personal (35%) and social aims (17%) gain in importance. Social reasons are even more important for community plantation activists (20%) and the biggest difference can be seen in the share of environmental reasons (30% as compared to 12% and 13% respectively). Also, personal aims are fewer (20% vs. 35% in community gardens) (Fig. 6). Consequently, the overall share of extrinsic

motivations (to bring about positive consequences or to avoid negative ones) is higher.

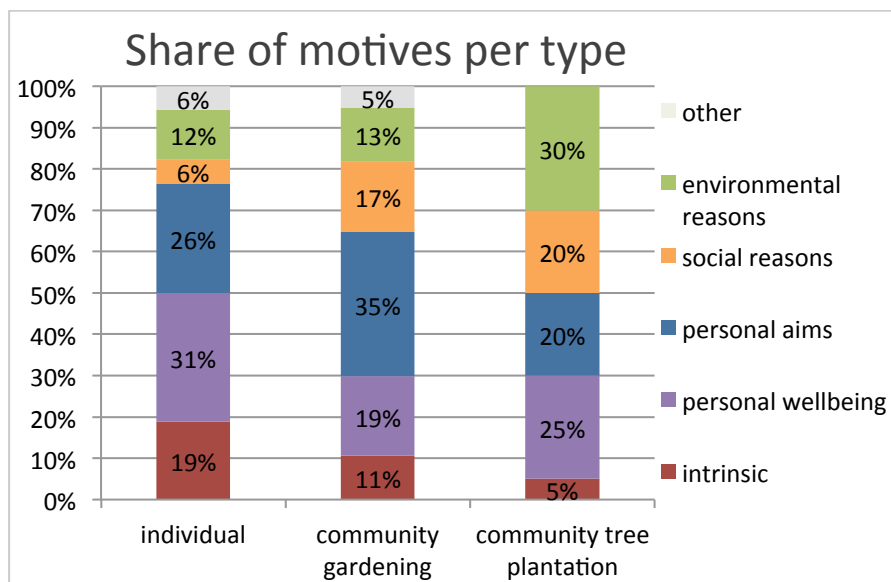


Figure 6: Share of motives per type (source: Hildebrandt 2015: 39)

Problems

Problems could be made out in three areas: the deficit in personal resources, such as space or financial means, social aspects negatively influencing agricultural activities and environmental constraints (weather, pests). Although the distribution of the first two categories mentioned is relatively even (28% and 30% of all problems) the latter takes a share of 43%. In detail, some specific problems appear. A personal resource that caused barriers to farming was basically a lack of knowledge (11% of all mentioned problems). In the realm of the environment, pests, diseases and animals cause the most trouble (18%), but also soil is a problem for many people (15%) (bad quality, acquisition, construction material in soil etc.). Social constraints mostly derive from neighbours (16%) who worry about the farming activity to harm the building (leakage), complain about water running down the wall or demoralize. In community gardens the process of community building in the beginning is a difficult issue.

Discussion and Conclusions

Activities take place mostly in gardens and on rooftops, but also on balconies or window sills. The usage of rooftops can be related to the fact that land pressure is high in the cities and alternatives have to be found. The study reveals that, besides individuals who grow plants

for themselves, new forms of UA are coming up in the investigated Indian cities. These are, on the one hand, community gardens which cultivate a variety of plants in order to re-learn gardening as well as to share, teach, and motivate others. On the other hand, there are people who are committed to green hills to improve the environment.

The hypothesis that middle- and higher income groups in Pune and Mumbai engage in UA to ensure a more environmentally friendly food production or to reuse organic waste was partly found to be true. Most people referred their cultivation practice to their own well-being indicating that for many of them the action itself is the aim giving them satisfaction. However, taking a look at the extrinsic motivations reveals a more confirmative picture of the hypothesis. Here, environment-friendly food production is on the forefront of claimed motives within participants and a motivation to tackle the garbage problem played a role for 14 participants (around 16%). So, extrinsic reasons are more or less the companions of an inner feeling of satisfaction derived from gardening. In this regard, this study is coherent with the recent findings that UA in residential areas in Pune does not differ substantially from equivalents in developed countries with regard to motivation (Zasada & Benninger 2015).

A new finding is the existence of a number of community gardens in Mumbai that, at first sight, appear to be quite similar to community gardens in the Global North when it comes to the motivations. Many of them mention personal aims like 'own production and consumption' (40%), 'safe, good-quality food' (53%), 'knowledge enhancement' (47%) as well as social reasons such as 'community/sharing' and 'teach, motivate others' (both mentioned by 40% of the participants) as their main motivation to get involved. These reasons match many of the reasons of community gardens in the Global North given by Müller (2011): among others, local and organic production of food is gaining importance for people, platforms of exchange are needed in the more and more anonymous cities and providing environment education is seen as necessary to not lose contact with one's roots.

Urban community gardening activities in India are increasing lately, with similarities in the motivation to urban gardening activities in the Global North as depicted in Lohrberg et al. (2016). Still, an interest in organic waste management and in the environmental

upgrading of the city indicates a different emphasis. Further research has to go more into detail.

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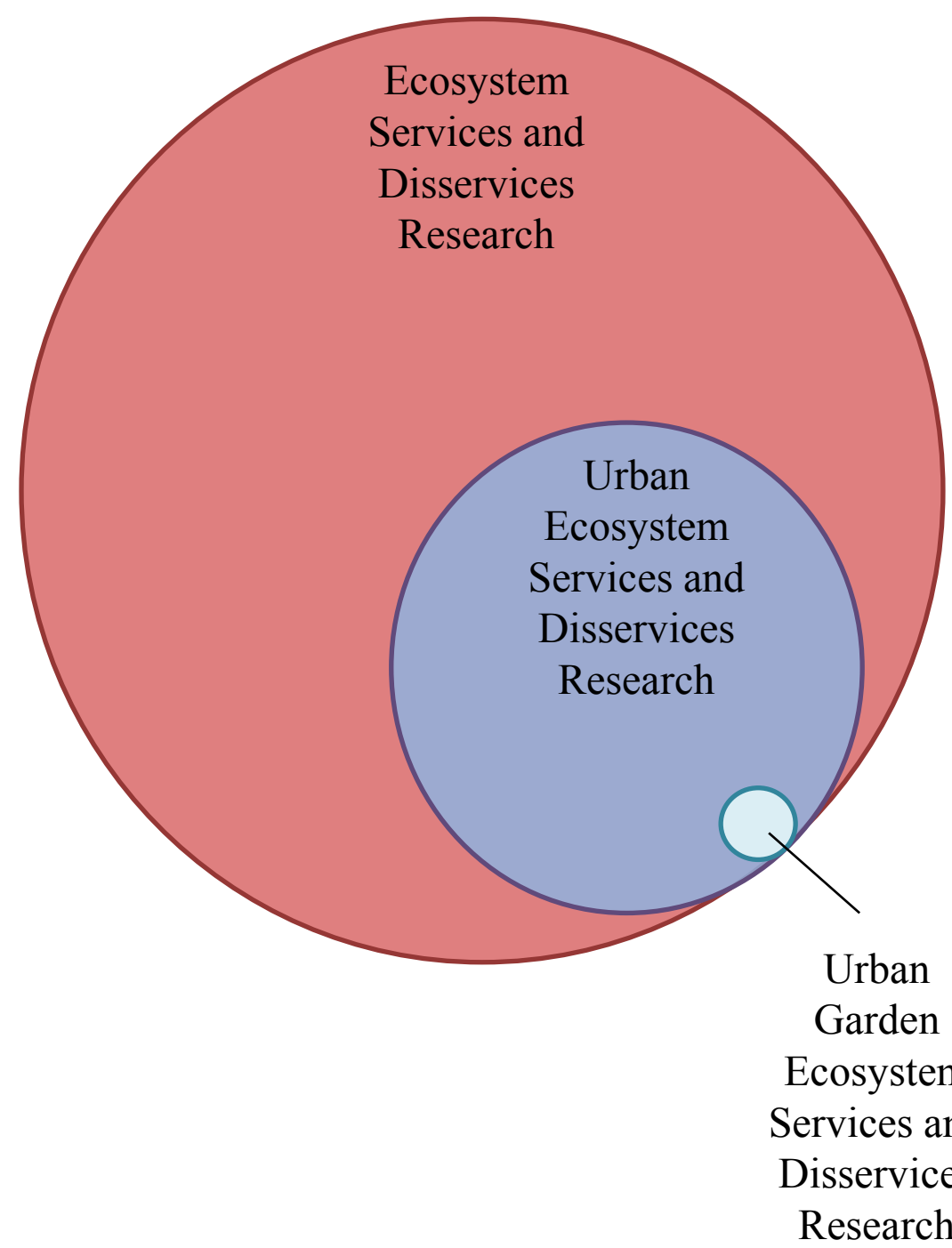
An Assessment of Ecosystem Services and Disservices of Urban Gardens using Case-Study Analysis of Berlin (Germany) and Vancouver (Canada).

Tristan Duthie (Ph.D Project)

Institute for Geography, University of Leipzig

1. Introduction

While **urban** ecosystem services and disservice research remains a largely unexplored area, *urban gardens* comprises an even rarer part of this research^[1,2]. They are a ‘forgotten realm’ – emphasis placed on the ‘big and tangible’ urban green spaces like urban forests or wetlands. Yet, when added up, urban gardens make up a substantial share of space in urban landscapes, thus many citizens often have their main experiences with ecosystem services and disservices in their own backyard. Urban gardens therefore essential in the context of urban sustainable development because people are more likely to take action for biodiversity and better behavioural practices if they have direct contact with the nature that effects them^[3].



2. Research Questions

This research aims to identify and understand the dynamics of ecosystem services and disservices from urban gardens using Berlin and Vancouver as case-study cities.

1. Which types of gardens can be identified in Berlin and Vancouver?



2. What quantitative share do urban gardens have in Berlin and Vancouver?



3. To what extent do the identified gardens contribute to various ecosystem services?

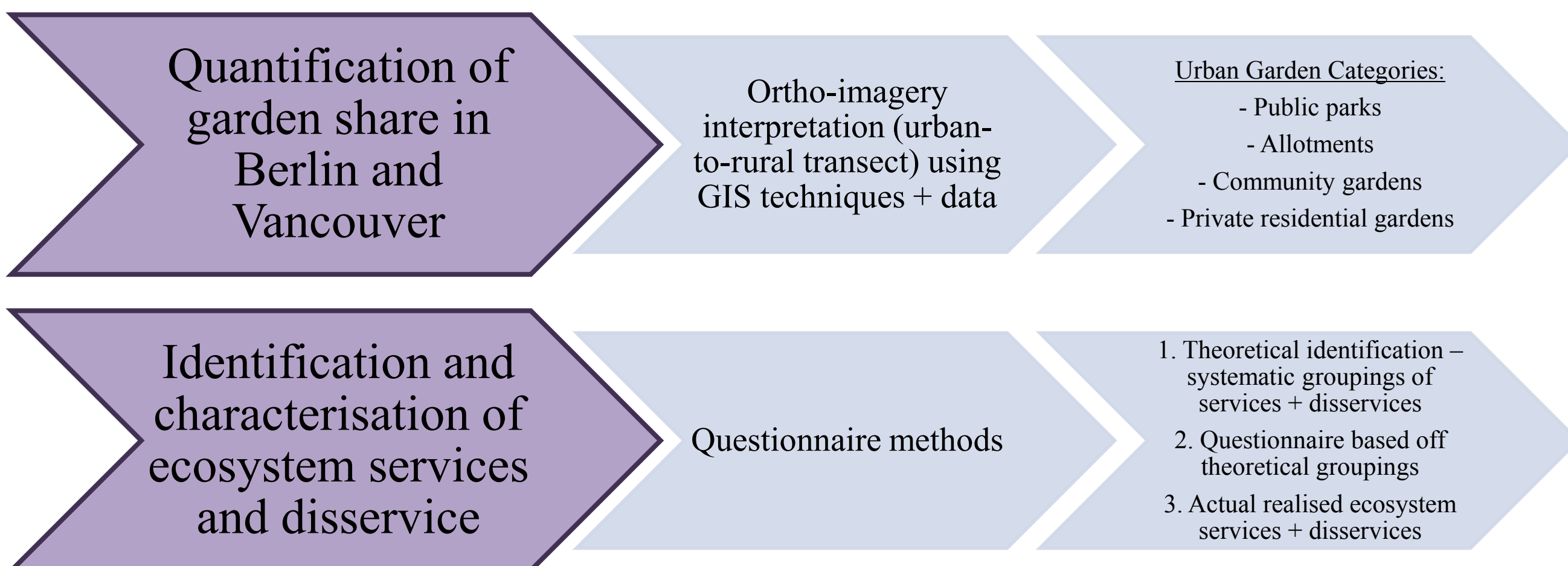
4. Can ecosystem disservices, if any, be identified in Berlin and Vancouver?

5. How can the identified ecosystem services and disservices be improved to better inform local policy agendas that contribute to sustainable urban development.

Research questions already answered



3. Methods



- ❖ Quantification of garden share done using the CATS^[4] urban-to-rural transect (Fig. 1, 2).
- ❖ Six generalised zones in the transect (theory), Berlin and Vancouver only perceptibly covered zones T6 – T3 (reality). Transects of T6-T3 $\approx 3\text{km} \times 3\text{km}$ (9 km²).
- ❖ Results from the quantification of urban garden share, according to defined garden categories, are shown (Fig. 1-4).

4. Results

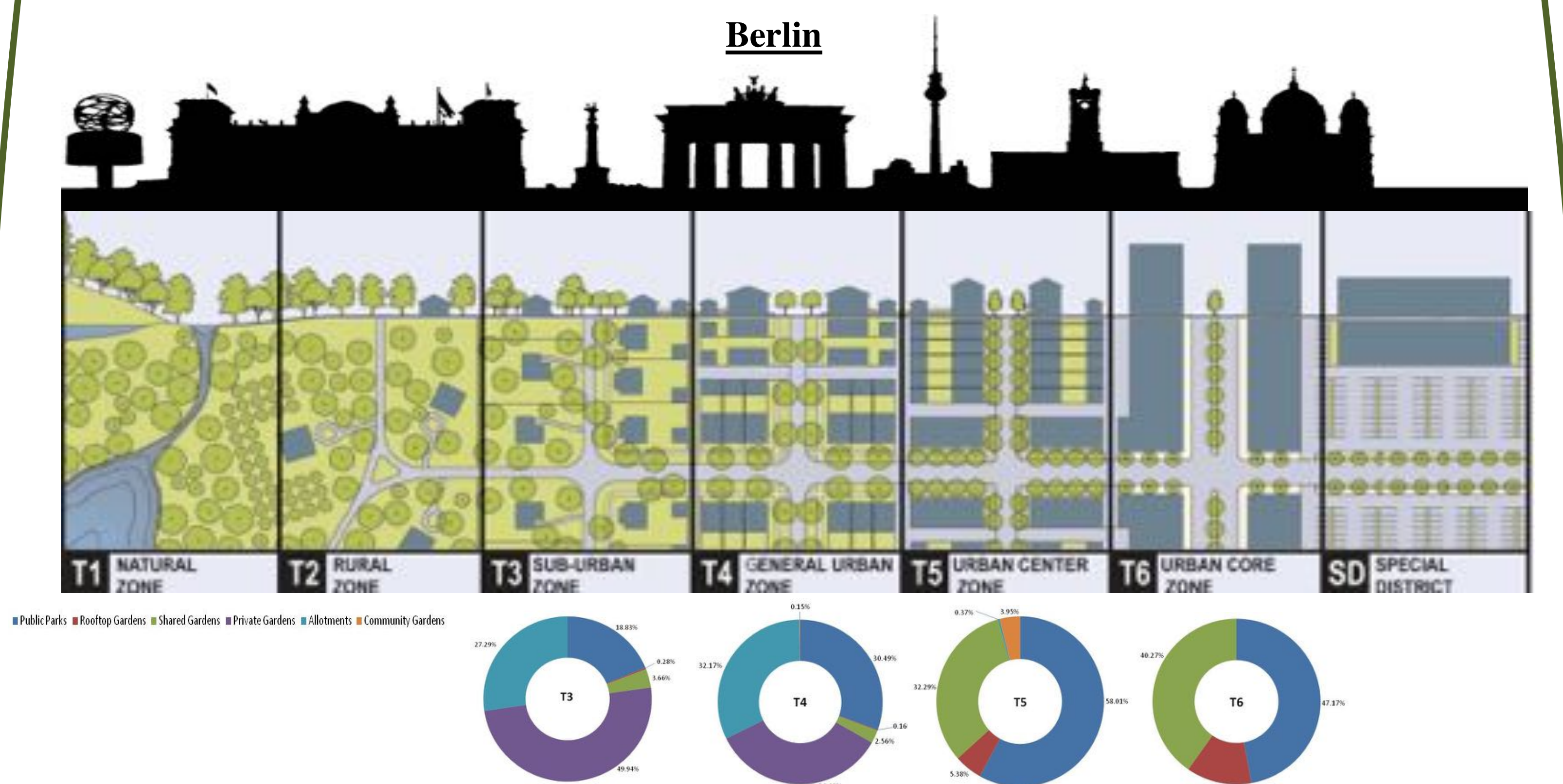


Figure 1. Percentage area occupied by urban garden categories of the total area occupied by urban gardens within CATS transect zones T6-T3 in Berlin. *Note: Private residential gardens have been split into rooftop, shared and private home gardens.

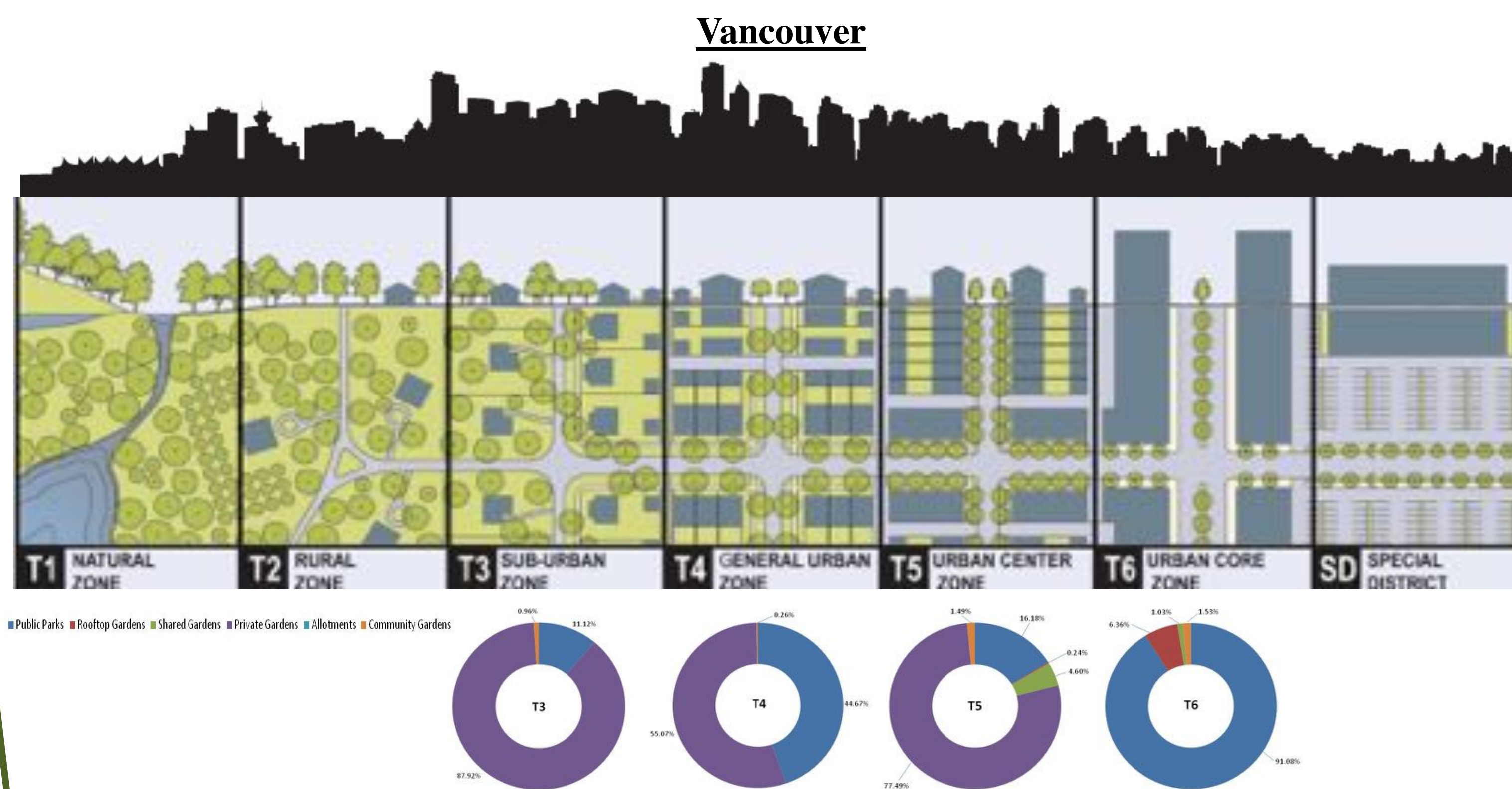


Figure 2. Percentage area occupied by urban garden categories of the total area occupied by urban gardens within CATS transect zones T6-T3 in Vancouver. *Note: Private residential gardens have been split into rooftop, shared and private home gardens.

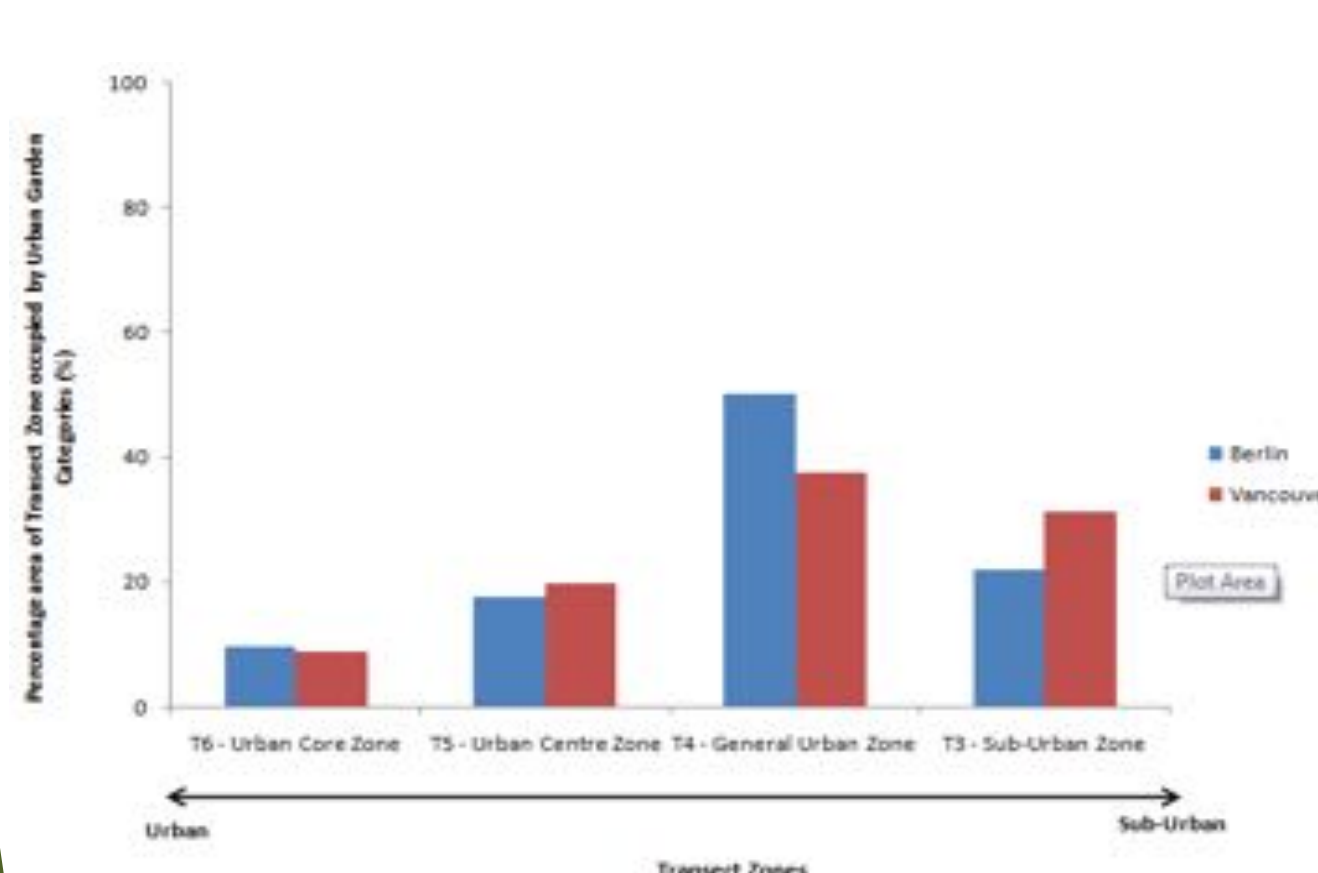


Figure 3. Percentage of total transect area occupied by urban garden categories.

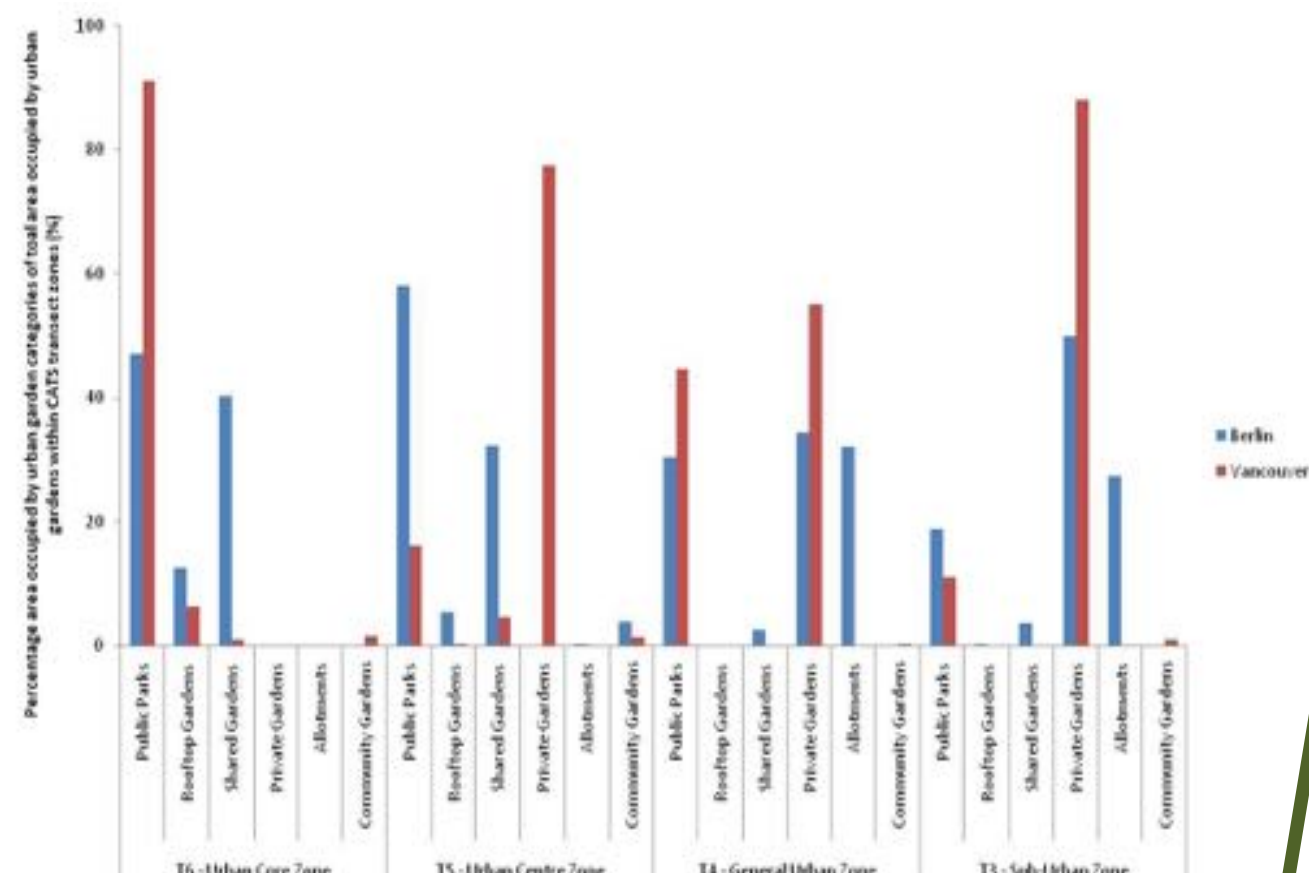


Figure 4. Comparison of percentage area occupied by urban garden categories of the total area occupied by urban gardens within CATS transect zones T6-T3 in Berlin and Vancouver.

5. Summary

- ❖ Garden share increases in area from urban to sub-urban zones:
T6 (low): 10% in Berlin, 9% in Vancouver
T4 (high): 50% in Berlin and 38% in Vancouver (Fig. 3).
- ❖ Berlin: public parks, shared gardens and private residential gardens the prevalent garden types (Fig 1,4).
- ❖ Vancouver: public parks and private residential gardens the prevalent garden types (Fig 2, 4).
- ❖ Results indicate urban gardens constitute a considerable share of urban space.

6. Outlook

Research questions and objectives to still be answered.

To what extent do the identified gardens contribute to ecosystem services?

➤ Assessment of ecosystem services provided by identified urban garden types.

Can ecosystem disservices, if any, be identified/characterised?

➤ Assessment of ecosystem disservices provided by identified urban garden types.

How can this information be used to better inform local agendas contributing to sustainable urban development?

➤ TEEB Manual for Cities framework.

7. References

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Multilayered Identity of Urban Allotment Gardens

A comparative study within the context of Estonia, Poland, Denmark and the UK

The author would like to thank the academic staff from the Warsaw University of Life Sciences for help in conducting research in Poland as well as allotment holders from Estonia, Poland, Denmark and the UK who agreed to participate in the study.

The study was carried out under the guidance of professors Simon Bell and Mart Külvik.

Introduction

Globalisation tends to increase the sense of a fluid and fragmented self, leads to placelessness and urban alienation. And there are few spaces within an urban environment that have potential for personalisation. The simplicity of urban allotment gardens (UAGs) allows it to adapt within any cultural and historical context and reflect the local identity. They exist beyond standardisation and legal constraints thus facilitating and enhancing personal and communal identity. The aim of this dissertation is to explore the distinctive and common features of UAG identity across different European cultures, to find out the qualities that make these places valuable and meaningful, that ensure continuation of this practice, its transformation and adaptation to people's needs. This is achieved by researching the functions that users of allotment consider important and the meaning that they attach.

The following research questions will help to understand how the process of identification within UAGs is established by their users.

- What are the activities that the environment of UAG support in public and private space?
- What is the meaning that tenants attach to UAG?
- What are the emotions that users associate with UAG?
- What are the commonalities and distinctiveness of UAG identity within different cultural and historical context?
- What are the tendencies of allotments practice in researched countries?

The main research questions are based on the theories related to natural human needs and concept of place identity.

Methodology

The qualitative approach to this study is deemed important to ensure the participant's personal perspective to the UAG experience. The data is collected by the author of this dissertation through onsite observations and questionnaires in four European countries - Estonia, Poland, Denmark and the UK. These countries are chosen to represent allotments that have been established within different economic and social systems.

This approach allows to research the UAG identity on two levels.

Firstly, what are the general qualities of allotments taking into account different cultural, historical and geographical contexts and, secondly what are the distinctive characteristics.

The results of the interviews are examined using thematic analysis. The emerging themes are organised in two interrelated categories that present the place identity as result of performed activities (space related qualities) and emotional bonding (place related qualities) (Figure 1).

Also the themes are organised in two comparative tables to analyse the variations in preferred activities and attached meaning to UAGs by their users in relation to different countries (Figure 2, 3).

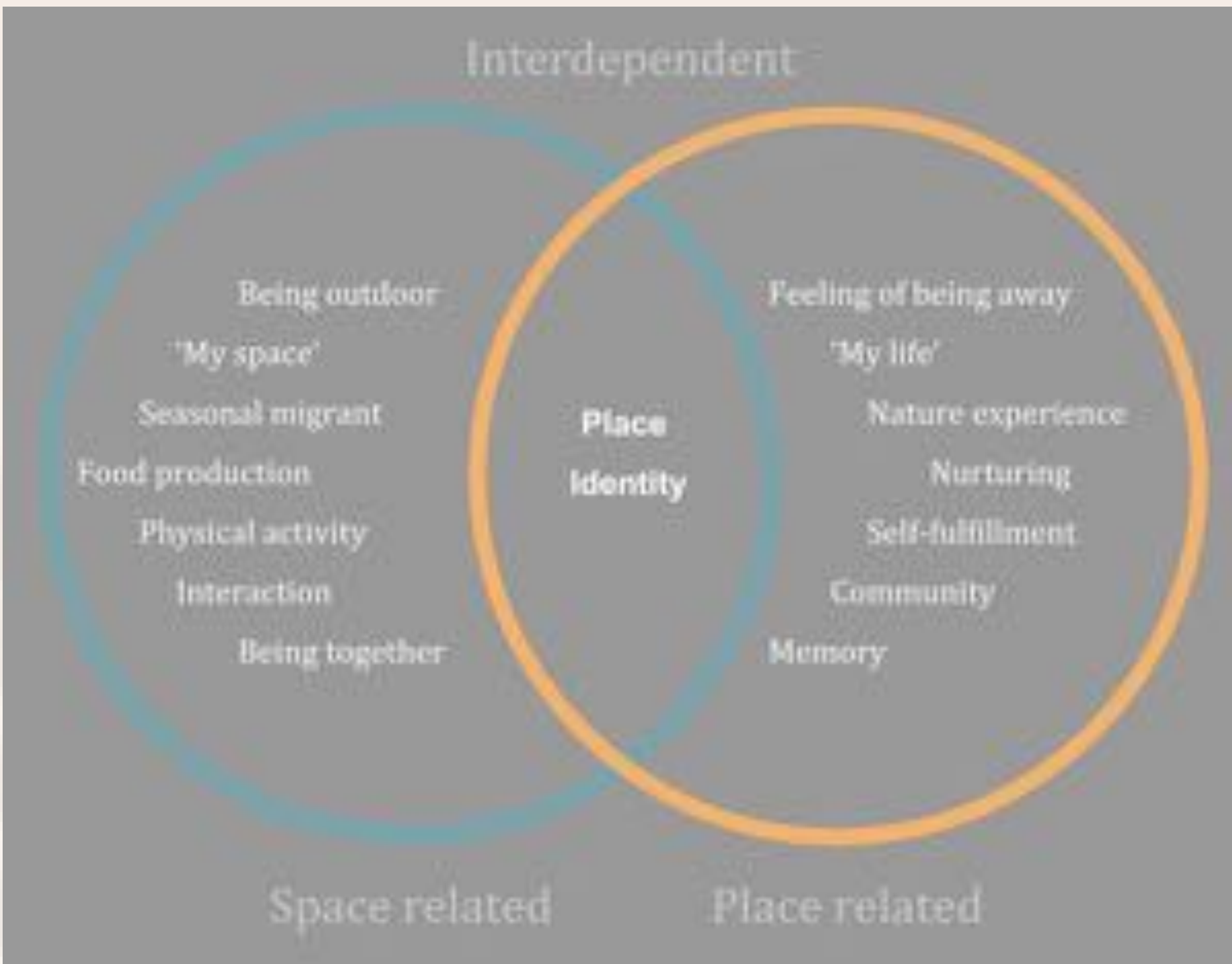


Figure 1. The emerged thematic groups is a result of thematic analysis based on theory of place identity (Relph, 1976)



Figure 2. Ranking of importance of space related themes



Figure 3. Ranking of importance of place related themes

Discussion

In discussion, there was designed a diagram based on theories of natural human needs that explain the motives behind the UAGs practice and as result emotional attachment to place. The diagram presents space related themes as physiological needs (like "physical activity", "food production", "seasonal home", "being outdoor") that create a base for fulfillment of meta needs (like "self-fulfillment", "my place", "memory") (Figure 4).

The findings indicate that the cultural context and historical development affect the functional value of allotments whereas on an emotional level there is more agreement that attachment to is related to restorative potential of UAGs. Also the strong variation in space related qualities shows that allotment gardens are not considered today important only for satisfaction of basic human needs, but rather they are appreciated for meta needs and restorative potential to their users. As research shows allotments are very adaptable and can support a range of human needs and represent their values within different cultural context.

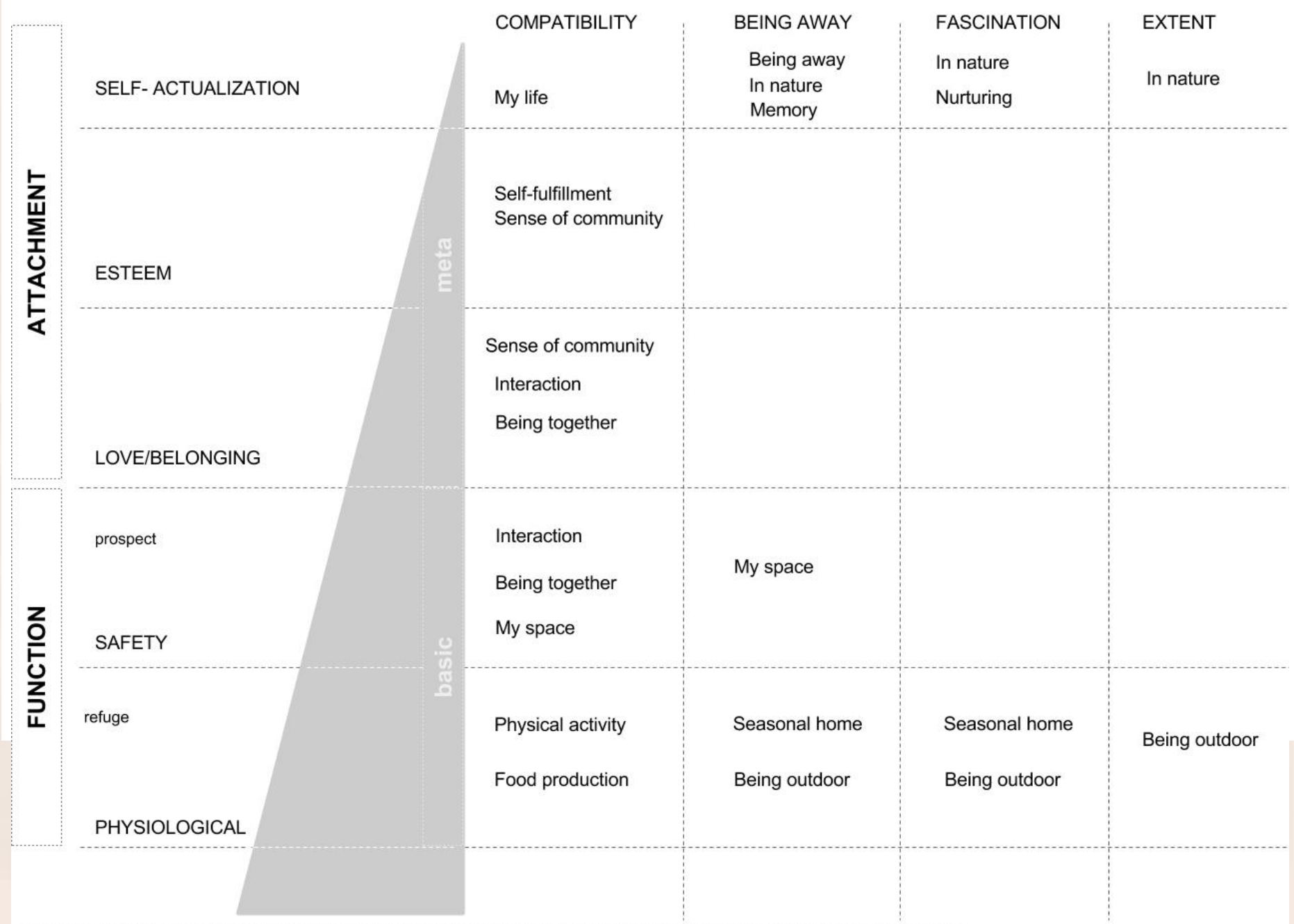


Figure 4. Diagram shows organisation of themes in relation to natural human needs and place identity components

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Identity of allotment in Estonia: allotments as a way for production of healthy food.



Identity of allotment in Poland: allotments as a place for active retirement.



Identity of allotment in Denmark: allotment is seen as a valuable green space for recreation and socialising for everyone.



Identity of allotment in the UK: allotment is seen as a valuable place for contribution to the local community and sustainable living.



Allotments in Estonia are critically seen as a relict of Soviet past whereas plot holders themselves see them as a way to reconnect to a traditional and a more rural way of life. In Estonia they have the potential to become aesthetically attractive and valuable recreational places for everyone as it has been described in examples from Denmark and England UAGs, and become a part of the local identity. There might be a way to design an experimental site with a potential to develop and assess different qualities of place identity that were described. These will help to understand what potential an allotment has within the Estonian context. Further studies can also explore the relation of function and meaning of allotments in relation to physical setting of it.

Keywords: place identity, basic human needs, Urban Allotment Gardens, English allotments, Polish family gardens, Danish garden colonies, Dacha

Meaning of organic gardening in Swiss allotment gardens

What perception do gardeners have of organic gardening in Swiss allotment gardens?

What motivates (or prevents) gardeners to adopt organic gardening practices?

These questions were elaborated by qualitative interviews, focus group workshops and a face-to-face quantitative survey (n= 574) with gardeners in the cities of Basel, Lausanne, Lucerne and St. Gallen.

Selected results

Perceptions and definitions of 'organic' vary greatly

- Some gardeners see organic gardening as 'neglectful' garden management. Others see it as the only possible way of gardening.
- Gardeners define 'organic' as the absence of synthetic fertilisers and pesticides. Practices, such as composting, crop rotation and mulching, are often not considered to be part of organic gardening.
- Some gardeners describe themselves as organic gardeners but use synthetic pesticides and fertilisers. Others use synthetic inputs only on flowers but not on vegetables or fruits.

Importance of neighbours and gardening association on gardening practices

- Gardening neighbours are the most important source of horticultural information.
- Some rules, such as building codes, are strictly obeyed but rules regarding organic gardening are often neither followed nor policed. Rules do not motivate organic gardening.
- Traditional perceptions of 'good gardening', in terms of tidy gardens and a large harvest, still exist within garden associations. This puts pressure on organic gardeners and potentially hinders natural garden design and other practices that foster biodiversity.

Conclusions

- The degree of knowledge about organic gardening influences management practices, with synthetic fertilisers and pesticides more likely to be used when knowledge of alternatives is lacking.
- Gardeners often already apply some principles of organic gardening but misinformation exists about the concept. Incremental change might be fostered through targeted communication strategies. The effectiveness and purposefulness of organic gardening need to be demonstrated to gardeners and their representatives, through e.g. diversifying the supply of information and education, creating opportunities for networking, and offering more tools for support.
- The decision of whether to garden organically is a combination of the attitude held by the gardener and the culture among neighbours and within the gardening association; with city regulations playing a less important role. Through demonstrating the advantages and practical applications of organic gardening management, there is potential for creating a culture of organic gardening in Swiss allotment gardens.

What do gardeners enjoy about gardening?



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Social relevance

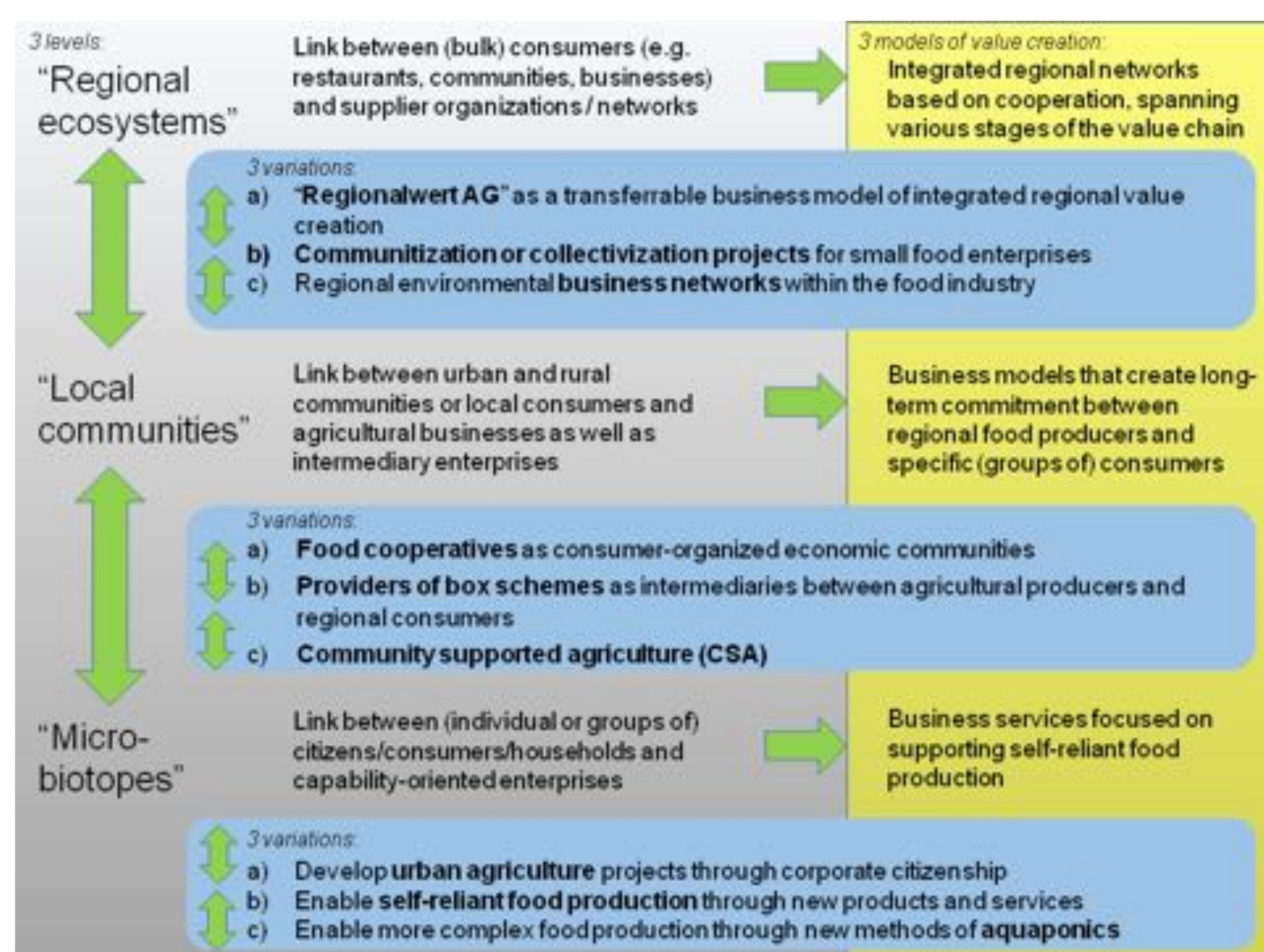
Developing a sustainable food industry that enables and supports food security and food sovereignty as well as resilient food production requires placing much greater emphasis on local food production initiatives. By adapting creatively to rapidly changing environmental conditions, these initiatives reduce the impacts of exogenous disruptions. At the same time, they often no longer fit the traditional classificatory concepts of production and consumption, urban and rural, or economic and ecological success.

Aims and research issues

The project examines the transformative potential of initiatives working towards a sustainable food supply, taking into account the following questions:

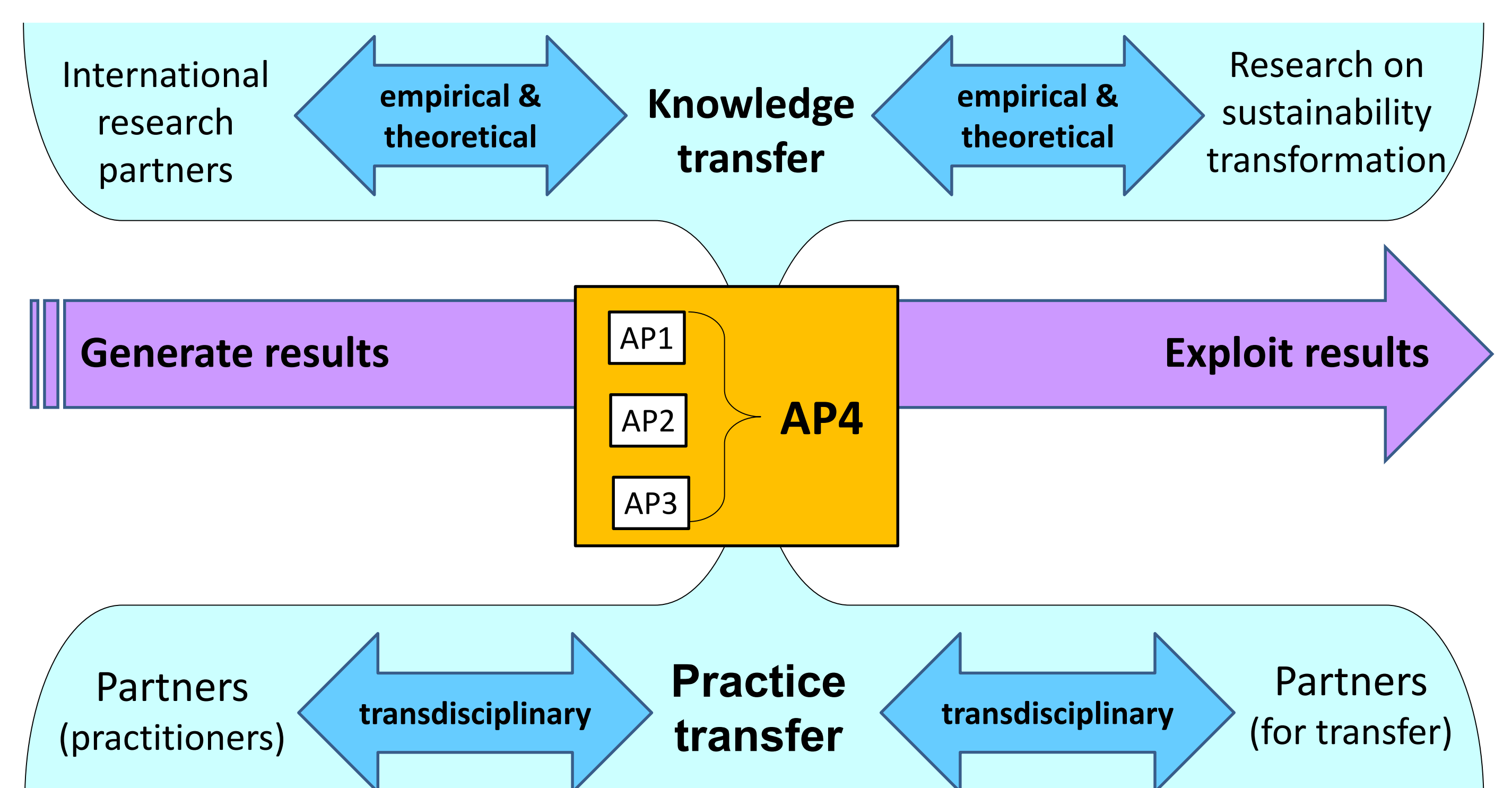
- How can transformative business models, rather than just being niche players, provide leverage for innovation processes?
- How important is their contribution as pioneers of transformation?
- Can these initiatives change the established food system from the bottom up?

Project conception



The empirical field comprises three levels of transformative kinds of food enterprises (microbiomes, local communities, regional ecosystems). These will be examined in transdisciplinary cooperation with 27 partners who are practitioners. In addition, knowledge transfer (both academic and practical) will be ensured through numerous links to diverse partners in research and practice.

Project structure



Work packages

- Corporate and organizational theory approach
- Production and consumer theory approach
- Sociological and transformation theory approach
- Scholarly and practice-based knowledge transfer

Methods

Transdisciplinary workshops, quantitative and qualitative research



Research Team

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Introduction

More than 80% of the Brazilian population inhabit urban areas (about 150 million people) [1]. Within urban population, the diet is often scarce in fresh vegetables. Consistently, growing concerns about the quality and cost of food, and food insecurity have increased interest in growing food locally in cities including in community or allotment gardens [2]. Urban horticulture, besides its recognised role in improving community emancipation and healthiness of the diet, may have some risks. A previous study in the city of Bologna [3] have found that vegetables cultivated in urban areas may accumulated more heavy metals, however no significant differences were found between the rural control and the urban sites at 60 m from the road. Thus, the accumulation was mostly related to the distance from the street. Indeed in urban environment, vehicle emissions are considered one of the main sources of contamination of heavy metals. Plants grown in urban allotments nearby the road have shown high level of lead, zinc, chrome, nickel and tin [3,4]. Heavy metals, which can cause chronic diseases, are transported in human body through food consumption. The present study analysed the heavy metal contamination in urban allotments gardens compared to a rural farm and urban allotments at different distance from a highway in North-East Brazil.

Methodology

Two experiments were conducted between October 2013 and January 2014 in two different cities of Brazil, Recife (Pernambuco) and Teresina (Piaui). In Teresina sites the soils it is called locally "*Latossolo amarelo*" with pedogenetic substrate originated by the alteration of Triassic sandstones in dry monsoon humidity regime [5]. They are classified as Rhodic Ferralsols [6] with profile ABwC and relatively high content of iron and aluminum oxides.

The soils of the Recife sites are classified as Fluvisol Gleysols [6] with ACg profile. In humid-moist monsoon transition humidity regime [5]. The Gleysols occur on wide range of unconsolidated fluvial and lacustrine materials in depression areas and low landscape positions with shallow groundwater.

During the experimental period, plant samples were collected from crops already grown in the gardens, according to their availability in each site. Plant species considered were lettuce (*Lactuca sativa* L., Teresina and Recife), chive (*Allium schoenoprasum* L., Teresina) and okra (*Abelmoschus esculentus* L., Recife). Six samples per each location were collected at commercial maturity of the plants.

Ions analysis were conducted as described in Vittori Antisari et al. (2015).

Experimental trials

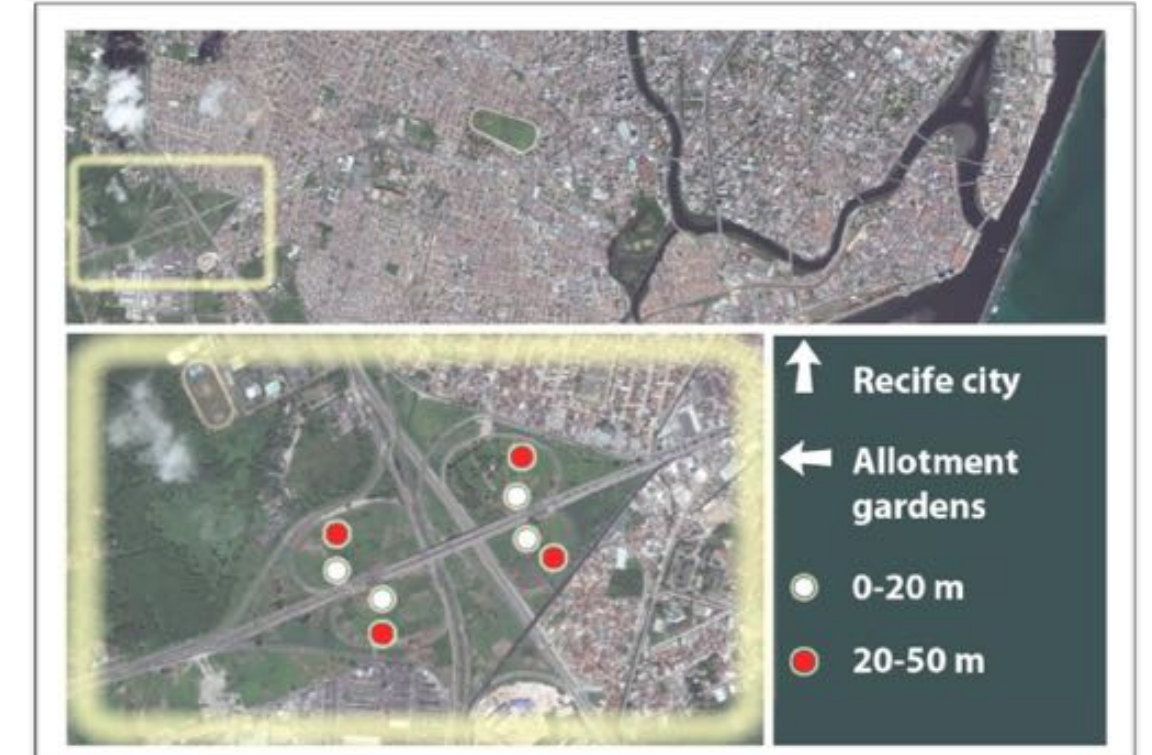
In Teresina the experiment consisted of three treatments:

- *Rural Farm*: samples collected from a commercial farm situated 7.5 km out of the city centre of Teresina
- *Rural Allotments*: samples collected from a rural garden situated 7.5 km out of the city centre of Teresina
- *Urban Allotments*: samples collected in two traditional allotment gardens situated in the city centre of Teresina



In Recife, the experiment was located in an allotment garden nearby one of the main roads of the city, BR 232 (average daily volume of 33000 vehicles) and consisted of two treatments, namely:

- *0-20 m*: gardens located within 20 m from the road.
- *20-50 m*: gardens located between 20 and 50 m from the road.



Results

TERESINA – RURAL VS URBAN ENVIRONMENT

In Teresina lettuce showed higher contents of copper (+48%) in the rural and urban allotment as compared to the rural farm. Lettuce grown in urban allotments showed higher content of zinc (+23%) and molybdenum (7-fold) than plants grown in the rural farm. Lettuce grown in rural environments (farm and allotments) accumulated more barium (+64%) than in urban area. No significant differences are detectable for B, Mn, Cr, Pb and Sb (Fig. 1 A, B).

Chives accumulated less Pb (-28%), Ba (-82%) and more Sb (+20%) in urban allotments than vegetables of the rural farm (Fig. 1 C, D).

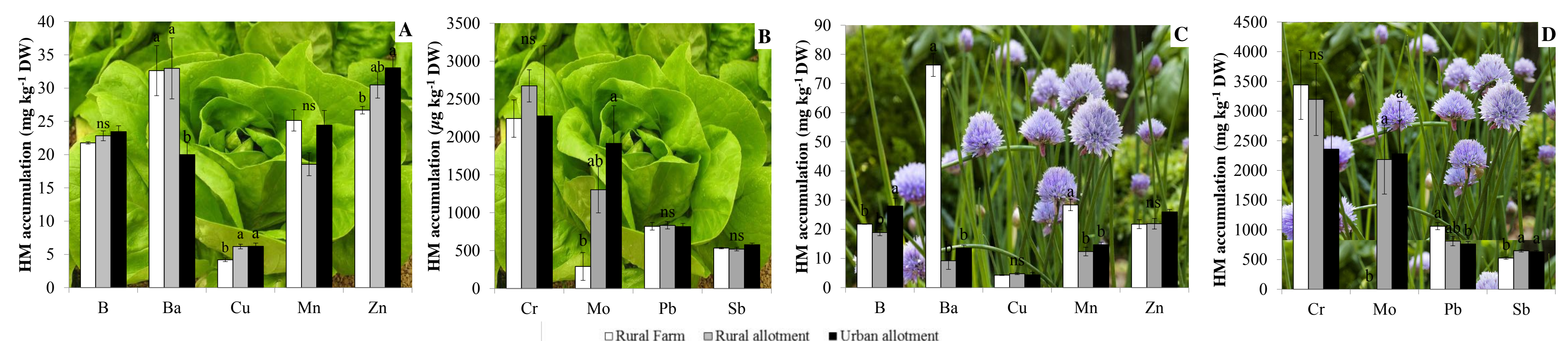


Fig.1: Heavy metal accumulation in plants grown in rural farm (black bars), in rural allotments (gray bars) and in urban allotments (white bars). Letters means significant differences with One-way ANOVA at $P \leq 0.05$. A, B) Lettuce. C, D) Chives

RECIFE – DISTANCE FROM ROAD

Lettuce grown within 20 m from the highway accumulated more B (+52%), Ba (+41%), Cr (+229%), Cu (+11%), Mn (+10%), Sb (+14%) (Fig. 2 A, B), as compared to the lettuces grown between 20 and 50 m from the road. Accumulation of Ag and As was below detection limit in samples cultivated between 20 and 50 m from the road, while between 0-20 m were respectively 0.11 and 0.37 mg kg⁻¹ DW. Contrariwise, accumulation levels of Se, Sn were higher on samples situated between 20 and 50 m from the road. No significant differences were associated with Ca, Fe, K, Li, Mg, Pb, S, Sr, Ti and Zn accumulations (Fig. 2 A, B).

Okra leaves collected near road in Recife showed higher content in Cd (5.2 fold near vs far from road), Cr (+68%), Sn (90.7 µg kg⁻¹ DW ± 52.4 at 0-20 m vs 0 µg kg⁻¹ DW ± 0 at 20-50 m), as compared to the leaves of okras grown farther (Fig. 2 C, D)

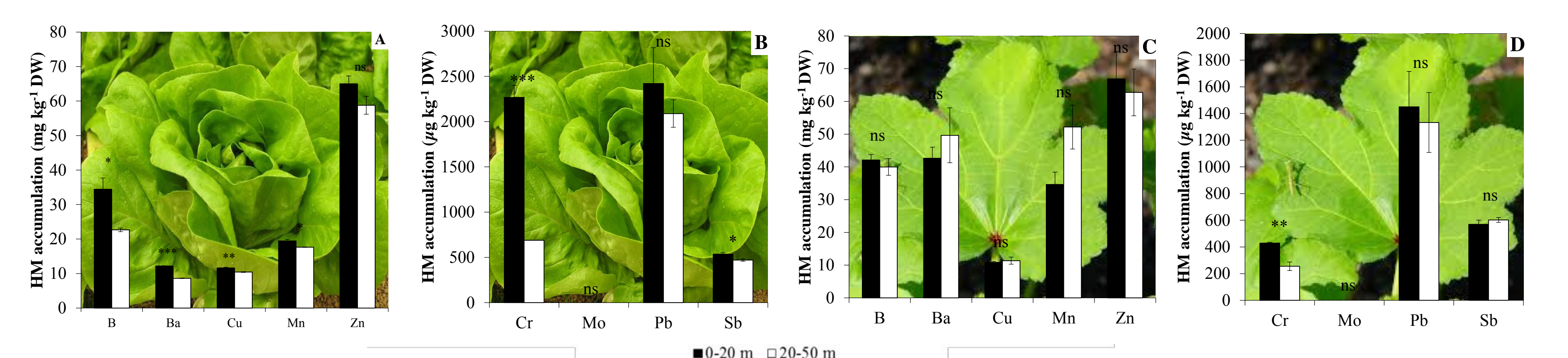


Fig.2: Heavy metal accumulation in plants grown within 20 m from the road (black bars) and between 20 and 50 m from the road (white bars). Significance with One-way ANOVA at $P \leq 0.05$ (*), $P \leq 0.005$ (**), $P \leq 0.01$ (***) and $P > 0.05$ (ns) A, B) Lettuce. C, D) Okra leaves.

Conclusions

Between urban and rural environments in Teresina the differences are mostly related to the gardeners and farmers practices, such as the overuse of copper sulphate for crop protection in the allotments [3]. No higher lead, cadmium or arsenic content was found in urban gardens in Teresina, where the road are distant and with low traffic burden, hence, the higher heavy metal accumulation in vegetables grown in urban areas are mostly related to the distance from the street as found in previous studies [3,4].

Plants collected in Recife were generally safer than other urban-grown leafy vegetables described in literature. Indeed, lettuce grown between 0 and 20 m from the highway BR-232 in urban gardens of Recife resulted in lower amount of Zn, Cu, Ni and Cd compared to leafy vegetables of urban gardens of Berlin [4]. On the other hand, Cr accumulation nearby the road was more than 2 times higher in Recife than in Berlin between 0 and 20 m from the road. The accumulation of Pb was similar in the urban gardens of the two cities.

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URBAN GARDENING NEAR HIGHWAYS: UTOPIA OR NEW WAY OF THINKING IN SERBIA?

INTRODUCTION

For millennia, mankind has shaped landscapes, particularly through road networks. Landscape through which highway passes, can be particularly valuable, worth of seeing and driving through it (Fig.1, Fig.2).

Highway provides a sense of harmony that contributes to drivers' enjoyment of the scenery. Wisely integrated, peaceful plains, wide open areas, flat slopes and rounded ditches, can make a highway more visually pleasant, as well as safer (Fig.3). In the process of improving the existing image of landscape, the functional and ecological value, as well as the road safety, highway planting takes precedence.

Inclusion of urban gardens into highway landscape could reflect new values of design, where nature, culture (Fig.4), leisure, and production are present, mutually complementary with a strong involvement of the population.



Figure 5. The potential area for raising urban allotment gardens. It is 6 km far away from the city center, next to the highway. It is large and space area (approximately 200ha) open for afforestation in due to be closed from traffic pollution. It is state land and water could be provided.

METHOD AND RESULTS

Method that has been applied was survey. The questionnaire consisted of three parts. The first part evaluated respondents' state of mind related to urban gardens. In the second part the respondents had task to select the most appropriate location for the research purpose. At the end, it was conducted the survey with illustrated character (Fig.6), where respondents were asked to highlight adequate landscape design for the selected location. The results showed that respondents were not quite familiar what urban gardens are indeed. They were guessing that urban gardens are some green areas in the city center that can be used by anyone, but how and under which conditions that still remains a question (Chart 1, 2, 3).

However, in the second and the third part of the questionnaire, through the illustrations, they got better image and opened themselves to the specific design of the selected location. The most applicable idea according to respondents was the one with raising small houses on the plots with flowers, fruits and vegetables. The respondents had a skepticism towards developing urban gardens in highway areas, but they will not complain on the location near highway just in the case if it is afforested.

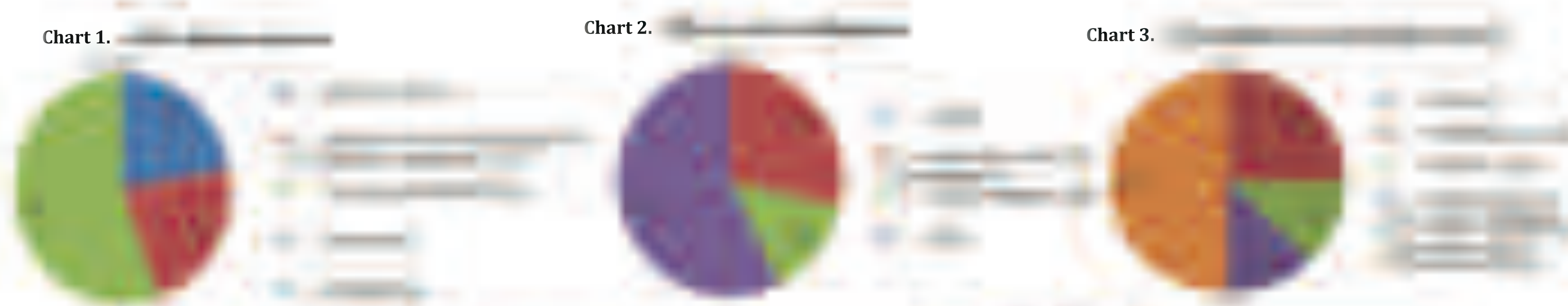


Figure 6. Presentation of conducted questionnaire

CONCLUSION

- People are getting closer to the term of urban gardens and its meaning;

- People are not so open to highway areas, only in the case when they are afforested and bit away from traffics. Since urban gardening is quite new in Serbia, it is not strange that people are a bit reserved related to this issue, especially for raising gardens next to highways. In due to that some of good examples with similar problems can be of help, in Europe: Sao Paulo's Urban Garden (Fig.7), Ville Saint Cloud in France (Fig.8) and ÖBB allotment garden (Fig.9);

- What is more and positively, people are showing interest to community garden that can manage both the gardens and wildlife area; also arranged as a volunteering camp, therapeutic horticulture garden, garden and forest schools etc.

- In order to all above mentioned it could be concluded that urban gardens are a new way of thinking in Serbia, but still utopia for some people. Raising awareness should be on higher level and cooperation between several parties in this field must be achieved.



Figure 1. Texas highway - These bright blue flowers (*Texas Blue Bonnets*) are all along the highway and carpet many of the hillsides. It is such a contrast to the normal drab desert coloring.



Figure 2. Brazilian hillsides next to the highway



Figure 3. The Vancouver Land Bridge reconnects historic Fort Vancouver to the city's Columbia River waterfront and helps restore the natural landscape continuum from upland prairie to river edge.



Figure 4. This bucolic image of the Blue Ridge Parkway dates from 1953 and was heavily used in advertising the road nationally. Reproduced with permission of the Blue Ridge Parkway Headquarters, Asheville, North Carolina

RESEARCH AREA

This research examines possibility of using landscape that belongs to the city of Novi Sad, for urban gardening and improving the visual image of the entire area. Among all there were presented also several highway landscapes as a potentials for urban gardening, but one got the best score (Fig.5), the condition was afforestation. Urban gardening is of a new day in the city of Novi Sad, so it is not a surprising that the awareness among the people is a quite low related to this topic especially for highway landscapes. The research is direct to encourage the people to think a bit more about allotments as a new way of living. The challenge is even bigger if they think about highway landscapes.

This paper evaluates several different locations for developing allotments on their area, but the main accent was putted on highway landscapes in order to make the image more clear - could that be a new way of thinking in Serbia, or just an utopia?



Figure 6. Presentation of conducted questionnaire

CONCLUSION

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Figure 7. Sao Paulo's Urban Garden next to the highway



Figure 8. Ville Saint Cloud in next to the railway tracks in France



Figure 9. ÖBB allotment garden next to the railway, Salzburg













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