



'Field work': drawing lessons from urban agriculture to facilitate transitions towards sustainable cities

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Abstract:

Based on a research project focused on urban agriculture initiatives in Lisbon, this article explores the three dimensions (economic, ecological and social) of sustainability, in view of improving our understanding of what a 'sustainable city' may be. In particular, it describes how urban agriculture is helping i) to meet one of the most basic human needs for food; ii) to improve both people's health - by tackling people's diet – and the 'environmental health' of a city – and by introducing more ecologically-friendly agricultural processes that also help fight climate change and water problems; and iii) to tackle social cohesion issues – by facilitating exchanges and learning within communities. Three critical policy areas where 'back to human scale' can have a global impact are then investigated, using the lessons drawn from Urban Agriculture (UA): a) Education for sustainability – and how territorial and social learning can also have an impact on global citizenship education; b) Participatory governance – linking citizen science with urban governance, using ICTs; and c) Political ecology – including fighting climate change through new forms of activism such as 'proximity and disruptive dissent' and improving people's awareness on the political dimensions of food production through alternative food networks dealing with food democracy. The article demonstrates the contribution that modest practical actions undertaken by individuals at neighbourhood levels could have at policy levels if advances in 'participatory urban governance', put forward by policy-makers and researchers, are to be taken seriously and better connected to the realm of 'practical (field-) work'.

INTRODUCTION

Addressing current urban challenges (Skar et al., 2020) led, in the case of Lisbon, to the development of measures focused on waste recycling, reduction of CO2 emissions and greening of the city. Their success was recognized through the city being awarded the title of 'Green capital of Europe 2020' by the European Commission in June 2018. In terms of CO2 emissions and energy consumption, Lisbon was the first European capital city to sign the New Covenant of Mayors for Climate and Energy in 2016, after achieving a 42% reduction in CO2 emissions from 2002 to 2014 (EU, 2020). However, the overall environmental plan of the city went



further with a new Master plan in 2012 (for 2012-2022) (CML, 2016) and the Lisbon Strategy (2010-2024), resulting in a considerable increase in green corridors, a strong emphasis on public transport, walking and cycling, and a Climate Adaptation plan including the planting of 100,000 trees to help reduce temperatures (Santos et al., 2015)¹. But there is a danger in assuming that greening a city makes it 'sustainable' and recent disruptive events (such as the Covid pandemic and the war in Ukraine) revealed weakness points that particularly matter for a city to be sustainable and resilient².

A new interest for developing agriculture in urban areas has emerged in Western cities as part of 'food movements', and Urban Agriculture (UA) is now seen as having the potential to becoming a key part of strategies for reducing cities' ecological footprint, recycling urban wastes, containing urban sprawl, protecting biodiversity, building resilience to climate change, but also stimulating regional economies, and reducing the dependency on the global food market (Poli, 2017). This article starts by focusing on the benefits of urban agriculture, each related to the dimensions of sustainability. It then demonstrates how actions at a human scale could have policy implications to make Lisbon more sustainable.

The benefits of Urban Agriculture

The benefits presented by UA have been demonstrated. They are both ecological, social and economic – therefore referring to the three dimensions of sustainable development. Consequently, UA initiatives are now promoted in various ways in Lisbon - through new legal approaches and 'green programs', sometimes linked to European ones.

Food security and democracy; meeting basic needs

Through moments of economic crises, subsistence agriculture has helped people to meet their immediate food needs (Delgado, 2017) and marginal spaces (roadsides, unoccupied urban areas) have been used for subsistence agriculture: even today, illegal plots are used for 'squatter gardens' in Lisbon. The creation of 21 municipal horticultural parks and 750 allotment gardens for local organic farming (EU, 2020, p. 38) begs the question of whether the greening of the city couldn't be better integrated with its economic activities in a (more multi-dimensional) 'sustainability plan'. The question of linking the 'greening of the city' to 'meeting its citizens' needs' is certainly one which was raised during the Covid pandemic. As Marat-Mendes et al. (2021)³ stressed, "after COVID-19, one person in three is likely to be at food

¹<https://www.treesforcities.org/> Planting trees in urban areas helps to address 'heat island effects' generated by the heat retained by concrete, pavements and buildings: through evapo-transpiration as well as thanks to the shade they provide, trees can help reduce air conditioning needs by 30%.

² Roggema (2020) defines a resilient city as one that is prepared for un-certain futures, whilst De Jong et al. (2015) describe sustainable cities as self-sufficient economic, social and environmental system.

³ This quote refers to a governmental study by the Direção-Geral da Saúde & Instituto de Saúde Ambiental da Faculdade de Medicina da Universidade de Lisboa, 2020



security risk” (p.52). As a response, UA has strongly re-emerged in Lisbon, bringing a variety of urban solutions to a growing external food dependency on abroad biocapacity (66.5% for vegetables and 66.4% for fruits), recognising the risks of food shortages and supply disruptions related to the interconnectedness of global food systems. From the beginning of the 21st c. informal UA was backed up by more institutionalised ones; the question is ‘will urban planners facilitate further move towards city food-autonomy?’.

Healthy citizens in a healthy city

Urban Agriculture (UA) – described by Skar et al. (2020) as the growing of plants within and around the city, through allotments, but also aquaponics, indoor agriculture, vertical farming, rooftops production, edible walls and landscapes, school, private and community gardens and many other forms of integrated agriculture - is linked to a number of social issues – poverty, nutrition, marginalized neighborhoods – on which both Portuguese and European institutions have triggered debates and action (e.g. EU Food’s initiative 2030 and the 2017 Integrated Strategy for the Promotion of healthy Eating).

In 2011, Lisbon municipality began the program ‘parquet Hortícolas Municipais’. Two years later, 16 out of the 18 Lisbon Metropolitan Area (LMA) districts had allotments and between 2009 and 2017, 190 ha of new green areas and an Urban Allotment Garden program were created (CML, 2016). The connection of these green areas in nine continuous green corridors helped to mitigate urban heat island, providing a range of measures that enhance sustainable urbanization, restore ecosystems and their functions, and aid in climate change mitigation (Dubbeling & Halliday, 2019; Alcoforado et al., 2009). Areas focused on growing plants in the form of growing food were found to contribute even more to sequestering CO₂ (4) and to protect biodiversity – as identified by the Parallel Biodiversity Strategy⁵. But the benefits go further: combining concerns about the health of urban dwellers as well as the city’s ecological health, research is now exploring how urban agro-ecology and permaculture could also help to provide citizens with healthier food and a healthier lifestyle through repurposing abandoned areas of the city. The required transition towards a more sustainable state will need a more sustainable use of natural resources, as well as the adaptation of infrastructure systems (Skar et al., 2020). Integrating UA within the greening of the city will therefore both affect the way in which land use is being prioritised and the way in which the productive role of the city is being envisaged. Following principles advocated in ecological economics⁶ (Muradian and Martinez-Alier, 2015) and in ‘Blue economics’⁷ (Pauli, 2017), an ecosystemic approach adopts a holistic approach of planning in which a ‘sustainable city’ is a healthy city.

⁴https://www.westernsydney.edu.au/hie/stories/young_growing_forests_offer_the_greatest_opportunity_for_carbon_storage

⁵ <https://oppla.eu/casestudy/19266>

⁶ encouraging ‘healthier’ linkages between economic activities and natural ecosystems and resources

⁷ in which economic activities meet human needs *and* repair ecosystems they use resources and services from



Social learning for social cohesion

The New European Urban Agenda (8) and, in Portugal, the Directorate General for territorial development (through its 'Strategy for sustainable cities 2020') emphasized that UA is a growing social urban phenomenon which can help the requalification of urban spaces with a positive contribution to social inclusion (Cabannes & Raposo, 2013). UA could help in mitigating the economic crisis and some environmental groups, inspired by the Transition Towns Movement, are occupying space for urban farming, seeing them primarily as spaces of resistance. UA also introduced notions of green infrastructures (Viljoen et al., 2015). As Ribeiro Telles explained, "the 21st c. citizen will neither be rural nor urban, but both. The city of the future will be re-integrated into rurality and agriculture" (1996: 19).

Policy implications: drawing lessons from human scale fieldwork

Although UA's benefits are felt 'at the human scale', and although they relate to all dimensions of what could be considered as characterising a 'sustainable city', urban planners are not taking time to genuinely integrate UA in their urban plans or strategies for the city. This is puzzling since, having been awarded the title of Green European capital in 2018, Lisbon could now attempt to move towards being a sustainable, more resilient city. This second part explores how the benefits and lessons derived from UA have been or could be better integrated into urban planning and policies in Lisbon.

Participatory governance: inter-connected stakeholders in a circular city

The new Leipzig Charter recommended (EUde, 2020) to make urban governance integrated, participatory and based on co-creation, and multi-level. 'Back to human scale' is relevant here in that policy-makers can find in UA one practical 'starting point' through which to capture the attention and contribution of citizens in the co-creation and ecological transformation of the city. Within this participatory approach, citizens can also understand better their place and role in the whole strategy while the motivation for urban planners is therefore to ensure that policies are accepted, embraced, and that new measures are collectively sustained over the long run. A focus on food security as a strong indicator of city sustainability and resilience, highlights the fact that a 'sustainable city' is neither solely a green city nor solely an economically successful city, but one that, instead, values all dimensions of sustainability. In order to generate such change, a radical transformation of our development model is necessary, possibly enabled by what Ceschin and Gaziulusoy (2020) called 'Design for Sustainability' (DFS), often focused on life-cycle analysis, and revived through the EU Circular Economy (CE) Action Plan (EMF, 2020), CE being defined as an industrial economy that is regenerative. DFS proposes alternative forms of CE in which the waste of one production system is used as an 'input' in another.

⁸<https://habitat3.org/the-new-urban-agenda/>



Reflections on how to integrate the production of food in cities within a CE, also encourage to integrate UA into food strategies (Marsden and Sonnino, 2012) and food systems, “representing the entire range of actors, activities and the biophysical and socioeconomic environments involved in producing, processing, distributing, regulating and consuming foods” (FAO, 2020, p.2). Planning for a food system strategy should therefore involve linking food strategies to other city concerns, such as the transport system. Salvador (2019) showed that continuing the current excessive dependency of the food system on road transportation might result in higher levels of CO₂ emissions. The Portugal National Strategy and Action plan to Combat Food Waste showed that UA has created an opportunity to explore CE, based on the reduction or elimination of waste – an urgent urban requirement since cities create 70% of waste. In Portugal, waste management was one of the most preoccupying effects of rapid urbanisation. The recent revival of UA actually started in Lisbon with the LIPOR initiative which advocated using organic waste to generate compost, leading to the elaboration of a National Strategy and Action Plan for Combating Food waste (2018) (DGT, 2016). In addition, the Action Plan for the Circular Economy (PAEC), first legal document devoted to the theme in Portugal, was published in 2017 and helped to create Regional and Local Agendas (Falcao, 201). As Marat-Mendes et al. (2021) documented, in the 2017 EC report on food in cities, Lisbon stood out as a case study for its innovative initiatives on waste reduction (with the Fruta Feia cooperative and the ReFood community initiative being quoted as exemplary). If composting organic waste (20% of household waste) could produce an excellent fertilizer, waste-water could also be better managed through UA since green spaces with permeable land surfaces allow rainwater and runoff to drain through the soil and manage potential flooding. Viewed through this light, UA activities cannot exist in isolation and need, instead, to be linked to each other and complement each other as well as, potentially other activities. Such a ‘circular approach’ leads to a redesign of the urban, peri-urban and rural spaces, and to a new conceptualisation of their inter-linkages (Skar et al. 2020). The urban governance changes that promoting a CE would induce could be facilitated by concepts such as ‘social economy’ and ‘social entrepreneurship’ which led to the creation of the first social economy law appearing in early 2013 (Law No.30/2013) (Delgado, 2017).

Menezes & Mateus (2020) explored the phenomenon of “place-making and governance in which citizens are considered co-designers and co-producers” and examined how ‘co-creation’ could be better associated to the concept of smart-city in order to make the latter more collaborative and socially-centred and encouraging a continuous process of exchange of knowledge between actors. In line with their conclusion concerning the usefulness of digital tools, the creation of an interactive platform that would enable the participation of all stakeholders in food production activities would be very useful; such a participatory platform, enabling negotiation and the design of strategies, does not exist yet.



Political ecology and transformational activism

A 'Back to human scale' phenomenon is also emerging through new forms of Climate Change (CC) activism. If UA can contribute to addressing CC, what is most urgently felt by citizens is the fact that it can address their (jeopardized) food security. This form of activism is explained through the 'psychological proximity and activism theory', which suggests that when CC is proximate, an individual is more likely to care about it and to be motivated to act on it because they tend to perceive CC in concrete terms and thus directly link the concrete problem to a specific action to mitigate it (Sparks, 2021). O'Brien et al. (2018), who analysed the ways in which power relationships are being challenged to promote climate resilient futures, described 'disruptive dissent' as a form of climate activism that questions the political and economic structures in place. Some forms of UA initiatives do so in that they also address food democracy (Hassanein, 2003). In line with this, food systems might help to support social justice, ecological regeneration and local, solidarity-based, economies and lead to a fundamentally new definition of citizenship and food citizenship" (Renting et al., 2012). In Lisbon, Serra (2021), through the Robust project, explored the potential for generating a Food strategy for Lisbon. The creation of Alternative Food Networks (AFNs) (Renting et al., 2003), contributing to more inclusive food systems leading to a reduced reliance on a small number of large, international food suppliers, has been paralleled with other networks, such as the European databases 'COST Action'(9), and the Milan Food Urban Policy Pact (2015)¹⁰ with the sharing of UA best practices. UA initiatives associated with disruptive dissent enabled dialogues with local authorities, leading to institutional transformations. In Lisbon, Seixas and Guterres (2018) described the emergence of a new generation of urban social movements , structured in digital networks and characterised by a growing demand for goods of a common nature - not just for 'private goods'. The growth of support for the Horta do Monte allotments and the creation of the Horta da Rua das Barracas, an example of socialisation between activists and local residents promoting organic cultivation and permaculture, is one of these examples (p.105).

Education for sustainability and the co-creation of a sustainable city

Research carried out on Education for Sustainability in Portugal has highlighted a general lack of integration of national strategies in higher education institutions with regards to the goals of the UN DESD 2005-2014 (Farinha et al., 2018). It concluded that, in order to grasp the practical dimensions of what makes a territory sustainable, one has to understand better the territorial context within which sustainability is to be operationalised and acquire skills. Away from top-down approaches, Territorial Education (TE) "focuses on the collective influence and responsibility in creating inclusive and responsive public spaces" (Smaniotto Costa & Ioannidis, 2017, p. 53).

⁹ http://www.circular-city.eu/images/pdf_download/Proceedings_COST_WS_13-15Feb.pdf.

¹⁰ <https://www.milanurbanfoodpolicypact.org/wp-content/uploads/2020/12/Milan-Urban-Food-Policy-Pact-EN.pdf>



Through this, the local territory both becomes an educational agent and content. TE also encourages innovation and ‘new proximities’ in a territory – a ‘complex system’ aligned with challenges such as recycling and energy saving. Besides being ‘territories of debate and objection’, “Urban gardens [can therefore] serve as learning platforms for creating territorial forms of socio-political, economic, cultural and environmental organisation in the city” (Araújo & Nascimento, 2021, p.149). In the examples of TE applied to UA projects, systemic (Bawden, 1991) and experiential (Kolb, 1984) learning is fundamental because “agriculture, a human-natural system, includes a range of biological and social dimensions, life-cycle analysis and long-term impacts” (Francis et al., 2011, p. 226). It is on these bases that students from the Lisbon University of Science initiated the Horta FCUL project, focused on demonstrating permaculture practices through educational workshops¹¹. In addition, the Bela Flor Respira project and its Campolide Agroforest are promoting the community’s agro-ecological transition using an abandoned plot of land (Araújo & Nascimento, 2021). Based on an agroforestry system’s methodology, which reconciles sustainable food cultivation with the recovery of forest areas, the project is rooted in the Transition Network¹². In total, in Lisbon, about a third of the UA projects focus on mandatory training on organic production or composting, education and capacity building. Some small-scale “Pedagogical allotments” (e.g. Olivais Pedagogical Farm or ‘Alta de Lisboa) were created. Over a thousand horticultural families are now provided with training and consultation.

CONCLUSION

Although it took a long time for UA to be integrated into urban planning, considerable progress has been made in the last ten years. It has included EU-funded types of programs¹³, the creation of networks and research groups (such as the Sustainable Food Planning Group, under the umbrella of the Association of European Schools of Planning AESOP), and the creation of design and strategies for the integration of UA into cities (Viljoen et al., 2015). In Lisbon, UA has been integrated into municipal development plans and still needs to be more holistically integrated into a strategy to ecologically transform the city into a more sustainable and resilient one. What is for sure is that the wish of urban planners to do so in a participatory manner will be helped by taking into consideration what really matters ‘at the human scale’ – that is: meeting immediate basic needs such as food, improving health (people’s and the city’s environment), enhancing social cohesion and creating innovative new types of jobs. By addressing these issues, UA demonstrates the crucial importance of respecting needs at a human scale when wanting to build sustainable cities in

¹¹ <https://hortafcul.wixsite.com/home/workshops-cursos--eventos>; <https://ciencias.ulisboa.pt/en/node/10664>

¹² <https://www.transicaoportugal.net/iniciativas-de-transicao/portugal/tu-fcul/>

¹³ (PUREFOOD, FOODLINKS, SUSCHAIN - <http://publications.jrc.ec.europa.eu/repository>)



partnerships with their citizens over the long-run. More than that, it highlights the need to establish a dialogue between learning and action in view of reforming education for sustainability in view of bringing the concept down to earth, to focus on practical skills to build sustainability and to help citizens build ownership of it.

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