

URBAN AGRICULTURE

UA MAGAZINE

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The EFUA manifesto, "Let's grow together".
Credit: Daniel Münderlein.

Editorial

4 Linking future policies and next practices for urban agriculture

Sara Smaal
Ian Whitehead
Henk Renting
Jess Halliday

The EFUA (European Forum on Urban Agriculture) project is now in its final year. This four-year project, funded by the EU Horizon 2020 programme, has been tasked with “unlocking the potential of urban agriculture”. In this issue of Urban Agriculture Magazine, we look beyond the lifespan of the project and into the future of urban agriculture (UA). What challenges and opportunities lie ahead for the EFUA Forum and for UA as a whole? What are the future pathways for UA development? What promising policy perspectives are emerging? And which networks will help to articulate and valorize the multiple benefits delivered by UA?

The magazine aims to answer these questions through showcasing tangible actions, outputs, innovative policies and new unexplored angles of UA, with an eye on the future. Although EFUA is a European project, we also look beyond the borders of Europe. There is still so much that UA practitioners, policy makers and advocates across the world can learn from each other. However, enabling this learning requires better coordination across the disciplines and between the silos of the research, policy and practice communities. Achieving such synergy is one of EFUA’s key goals.

EFUA’s mission

EFUA’s core mission is to unlock the potential of UA through better networking, better knowledge, better deployment and better policies in the field. Through establishing an UA Forum, EFUA has been working relentlessly to develop new levels of stakeholder engagement that help to inform decision making and mainstream UA into European, regional and local policy. EFUA has set ambitious goals that involve identifying and addressing gaps in UA knowledge, awareness and best practice.

Through supporting the EFUA Horizon 2020 Project, the EU has highlighted the significance of UA and the need to invest further in this burgeoning sector, but there is much work still to be done. EFUA stands for developing a synergized approach involving civil society, agricultural businesses, researchers and government working together. This is intended to deliver four outcomes:

1) Better networking of stakeholders in UA

EFUA’s aim is to sustain the newly created European UA Forum beyond the project’s lifespan. This will give UA a strong voice and a permanent European presence. In particular, EFUA has been developing the potential of:

- city networks for UA that build upon and expand existing partnerships and the sharing of best practice between the different stakeholder groups and municipalities, not only within Europe but also across the globe;
- farm business networks to help develop the potential of individual farming enterprises and SMEs facing everyday commercial realities and business decisions.

2) Better knowledge in UA

EFUA has been helping to identify knowledge gaps that currently hinder UA’s development, to define Research & Innovation (R&I) activities to fill these gaps, and to provide stakeholders with up-to-date knowledge. Additionally, EFUA has provided a general framework of UA types, their benefits, challenges and risks. Specific themes that EFUA has tackled include:

- development of an EFUA Typology of Urban Agriculture;
- identifying the benefits of UA according to different types;
- examining how UA links to urban-oriented concepts;
- developing planning guidelines for UA;
- developing a series of detailed UA case studies.

3) Better deployment of UA

EFUA partners have identified barriers that hinder UA’s development and have defined strategies and actions to

overcome these constraints. EFUA is also identifying future challenges, potential game changers and “next practices”. Next practice examples and case studies illustrate the full potential of UA and the multiple societal benefits it can provide.

4) Better policies for UA

By increasing understanding among policymakers, EFUA has been helping to define the UA agenda for the next decade and to proactively advise on policy development from EU to city level. EFUA has investigated both the policies that impact upon UA and has also highlighted those that might benefit from inclusion of UA. In doing so, EFUA aims to synergize key EU agendas and priorities to enable better support and funding for UA. These insights and recommendations have been documented in a series of policy briefs on different relevant and promising policy areas. These make clear that a multiscale approach is required – from European level to individual city level – whilst also recognizing the increasingly globalized nature of UA.

Outline of this issue

We have been fortunate to have received contributions from across the world. We could not have accomplished this without the wonderful (net)work of RUAF, who have been facilitating a global forum on UA since long before EFUA even existed and hopefully will do so for many more years to come. We were saddened to hear that Joaquim Moura, devoted UA advocate and RUAF associate, has passed away. In his memory, this issue starts with an article by his hand. Joachim reminds us that the future of UA starts with young people.

We have structured the remainder of the articles quite literally according to the issue’s theme: linking articles that discuss a future policy direction for UA, with articles that describe next practices that are tackling these very same issues on the ground. Browsing this issue from start to finish, you will notice that these policy debates gradually move from an international level, towards national, regional and urban levels, before finally zooming in on the urban farm level.

We start with a contribution from EFUA colleagues Trine Agervig Carstensen and Rebecca Leigh Rutt who share their insights from a study on **EU-level policy instruments**. One of the instruments the authors point to are EU-supported city networks. Food Trails is a great example of one such network. In their article, Andrea Patrucco and Emanuela Plebani from Food Trails outline UA-related next practices and lessons from four of their urban living labs. Another policy direction at EU level relates to embedding UA into the policy discourse on

nature-based solutions, discussed in a contribution written by EFUA members Giusy De Grazia and Patricia Hernandez Lelli. Subsequently, Stefano Quaglia explains how the city of Milan has been pioneering the implementation of **nature-based solutions**, using the example of SoulFood ForestFarms Hub Italia.

Next, the issue turns to future UA policies and next practices within the fields of **urban planning** and Geographical Information Systems (GIS). Claudia Cassatella and Enrico Gottero outline policy recommendations on how to overcome barriers with spaces and plans for urban and peri-urban agriculture. This is complemented by the article of Juliana Tângari and Roberta Curan, who are involved a civil society-led programme that supports municipalities in their urban food planning efforts in Brazil. Kelliane Da Consolação Fuscaldi, Marcel Garcia De Souza and Valéria Cleide De Paiva describe a digital platform on UA set up by the Brazilian government. Finally, Andrew Cameron describes a GIS model developed by Virginia Commonwealth University and the City of Richmond that enables UA initiatives to achieve their full potential.

UA is not just about food production. It offers **multi-faceted benefits for various communities and groups in society**. In their article, Laura Martins de Carvalho and Márcia Tait Lima argue for incorporating an intersectional feminism and equity-based approach in UA policies and programmes, acknowledging in particular the needs and role of black and indigenous women. A connected next practice can be found in the work of the WEHAT foundation, as reported on Christopher Burke. In a pilot UA project, the foundation is looking to empower female youth in Kampala, Uganda. The JUST GROW consortium is working towards a framework to help city regions view UA as a holistic governance system, based on a set of equity indicators.

A group that is often neglected in the UA discourse is people with a migration background who practice UA as a way to stay connected with their culinary heritage. Esther Veen and Julian Agyeman propose to use the term trans-locality to embrace a more inclusive perspective on what is considered when growing “local food”. From the same starting point, Valentina Cattivelli presents the results of a questionnaire amongst foreign gardeners in the Italian region of Lombardy to explore their motivations. Next, two articles address the healthcare benefits of UA. Daniel Münderlein and Lenneke Vaandrager, both active in EFUA, dive into urban care farming and related policy gaps at various levels of government. Letícia Machado and Cláudia Maria Bógus look at urban gardens as healthy food environments.

The final set of articles addresses the **support and network needs of UA farms and initiatives**. Nevena Alexandrova-Stefanova, Zofia Krystyna Mroczek, Cristiano Consolini, Joe Nasr and James Kuhns call for a tailored Integrated Services for Innovation (ISI) approach that helps to empower urban and peri-urban agriculture practitioners. Jessica Souto shares the inspiring journey of a vibrant urban farm in Canada, called Social Harvest Ottawa (SHO). Ilkay Unay-Gailhard, Robert Chaskin and Mark Brennan look into the potential of digital media to boost urban farming career perspectives. An example of an UA project that is already extensively utilizing digital marketing strategies is presented by Gu Yi, Cai Jianming and Sun Jinyu. We are very curious to try this Grandma's Sauce!

Learn more at our ACTION Conference – 25th to 26th September 2024 in Brussels

Do you want to learn more about how EFUA's work is being translated into action on the ground? Would you like to further discuss and build upon the insights and

angles presented in this magazine? Join us in Brussels for our ACTION Conference, which is dedicated to advancing Urban Agriculture (UA) policies and practices across Europe!

During this conference, the focus will be on tackling challenges in the real world and putting research and policy into practice. We aim to provide a participative agenda, giving everyone the chance to have their say on the future of UA in Europe and beyond. However, we are doing things differently; we are starting down on the farm, where the real work of UA is done! So, don't come along expecting a typical conference format, with a long list of dry presentations to make your head spin.

Instead, we look forward to hosting a highly interactive event featuring lively field visits and discussions, 'ready-to-implement' insights, knowledge exchange and stimulating workshops. We will explore and showcase the latest innovations in UA, whilst offering new perspectives for linking action on the ground to policies at EU, national and city level.

Our presenters and hosts will include real practitioners (i.e. urban farmers and urban gardeners), EU policymakers, city representatives, community groups and NGOs. Additionally, our conference format will ensure numerous formal and informal networking opportunities with the chance to meet other UA enthusiasts and professionals from across the EU.

We will also launch our UA Manifesto, "Let's Grow Together" (see box), at the conference and discuss how we are going to sustain a wider "European Forum on Urban Agriculture" as a community of stakeholders from across Europe. It is your opportunity to help guide and steer a new and comprehensive vision for UA – so we hope to see you in Brussels!

The event is hosted by Boerenbond at the Ateliers des Tanneurs in Brussels as part of the EFUA project, funded by the EU Horizon 2020 research and innovation programme under grant agreement No. 101000681.

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More information

- EFUA ACTION Conference website: <https://www.efua.eu/conferences/action-conference>
- Link to register for the EFUA ACTION Conference: <https://forms.office.com/Pages/ResponsePage.aspx?id=bRXIzHI6RUiSfAf8Z0w-K3bf5lvckYV0IT5KweGn10ZUM01IREtWVVJURzhSWVZMVURXOUtMU0hURS4u>

In memory of Joaquim Moura

Joaquim Moura, who passed away on 11 April 2024, was a dedicated and inspiring individual, who worked for decades to promote urban agriculture, community composting, and the involvement and education of young people in Brazil and across the world.

Joaquim, in his own passionate, dedicated, and sometimes impatient way, made major contributions to the advancement of urban agriculture. He did so through his local involvement in Visconde de Mauá, Resende, Rio de Janeiro, Brazil; through his incredible work of translating

almost all issues of RUAF's Urban Agriculture Magazine's (from the first in 2000 to number 39 in 2023); and by constructing unexpected and original networks, contacts and linkages between practitioners, advocates and researchers of urban agriculture in Brazil, Europe and the United States.

Thank you for everything, Joaquim. It has been a pleasure to know you and we will miss you. Let's all continue to practice and realize your vision and dreams.

The catalogue of Urban Agriculture Magazines in Portuguese can be accessed at <https://ruaf.org/urban-agriculture-magazine-portuguese/>

Joaquim Moura

Organizing youth to cultivate their own future

This article, sent to RUAF by Joaquim in December 2023, exemplifies Joaquim's passion. His vision of a global network to introduce high school students to urban agriculture is a perfect fit for this issue of Urban Agriculture Magazine on 'Next policies and future practices'. It has been lightly edited for English language.

Worldwide, there are more than 600 million young people studying in high school who could be easily reached via the internet by a global urban agriculture programme, supported locally by adult volunteers, educators and practitioners.



Joaquim Moura. Credit: Zsolt Varga

The importance of urban agriculture goes far beyond food security, income generation, and environmental management. As important as these contributions are, urban agriculture also has the potential to have a huge sociocultural impact, as it opens the door to people actively gather around a real, concrete and useful activity – very different from the virtual reality of social media.

Food is a crucial component of urban life and economic systems, and food production in cities, besides its obvious benefits, can bring a new sense of hope for populations traumatized by extreme climate disasters, wars and pandemics, and will stimulate people to build a better future through local action.

Urban agriculture is unique in this role, and only the youth can catalyze the process, because they are everywhere, they have time, energy and interest in their own future, and are waiting for a clear call and a consistent project.



A student adds manure to compost, as part of a pilot project to engage young people in urban agriculture in Bocaina de Minas, Brazil. Credit: Joaquim Moura

In each high school, in each city of every country, practical groups could develop their own projects, networking under an institutional umbrella provided by global organisations and funders that promote urban agriculture, such as FAO, RUAF, ICLEI, MUFPP, GIZ, Fondation Botnar, etc.

It would be possible to monitor the increasing number of schools, students and projects around the world, and to promote synergies among them, offering opportunities for students to improve their own futures – locally and globally.

Such a project would merge two perspectives: the 'professional-academic' and the 'volunteer-spontaneous', so that the visions, priorities and practices of each could mutually complement.

To really contribute to the youths' future, the programme should build coalitions with other projects to offer them numerous, holistic opportunities for personal and social development.

Besides the technical and organizational skills usually promoted among urban farmers, other kinds of knowledge and skills would further empower them, including bodily

practices as tai-chi and yoga, self-massages, meditation, martial arts, relaxation techniques etc. This knowledge should not stay within the reach only of affluent people but should also be accessible to the poor to help them overcome their limitations.

In China there are 'traditional exercises for peasants', and I – at the age of 75 and thanks to oriental body practices – work many hours a day, on the computer or with a hoe. I see around me 'old people' 15 years younger, who give up after a slight effort, complaining of back pain and shortness of breath. In the West, the poorest are the most fragile.

In fact, experience shows that personal development and one's own energy also contribute to volunteering, cooperation, cohesion and sustainability of communities – and to the reduction of consumerism and violence.

Regarding the cultural interface needed to promote UA, the articles published by RUAF in Urban Agriculture Magazine (I translated 39 editions) – rarely take into account the changes that have occurred in society over the last 20 years.



Teacher and volunteers in a pilot project to engage young people in urban agriculture, at the high school in Bocaina de Minas, Brazil. Credit: Joaquim Moura

For example, they do not consider the enormous cultural shift driven by smartphones that has been taking place among urban people since 2000 – and which has hit young people especially hard, after two years isolated by the pandemic at a crucial stage of their development.

What I consider the most difficult challenge is rarely discussed: how to involve many more people – especially young people – in projects that aim to improve urban food security, waste management and the local economy by promoting UA in the community. At our community meetings involving environmental management and sustainable development, the majority of those present are over 60 years of age. The few young people always need to be encouraged to attend.

Usually, discussions on the promotion of urban agriculture seem to view the problems and challenges we face as merely technical, institutional, financial and/or political – without any concern for the ‘cultural factor’ of rampant alienation, individualism, selfishness, fragility and discouragement, and not just in Brazil. People are not the same; they have changed a lot in the last decade.

The Urban Futures programme – developed by Fondation

Botnar, Hivos and RUAF to support projects in Colombia, Ecuador, Indonesia, Zambia and Zimbabwe, with a focus on youth and urban agriculture – promises to explore the potential of this synergy.

Again – and I'm afraid my impressions are influenced by my perspective – Brazil has characteristics that make it a special case to be considered in any strategy aimed at promoting urban agriculture in the world.

Brazil has a very diverse population, amalgamating cultures from Europe, Africa and Asia like no other country – a ‘melting pot’ even hotter than the US. Brazil has the second largest black population in the world, behind only Nigeria. And only Japan has more Japanese people than Brazil. This mix makes Brazil a country that blends easily with other cultures, with its famous stereotyped image of joy, friendship and extravagance. It could become an example of overcoming challenges on a world scale.

Brazil and its youth are facing the same sociocultural challenges as many other countries – only more acutely, brutally and prematurely. Bruno Latour, the French ecosociologist, noticed this and wrote: "If Brazil solves its challenges, the world can do it too."

Expanding local urban agriculture through EU-level policy instruments

Trine Agervig Carstensen
Rebecca Leigh Rutt

This article explores how EU-level policies and instruments may nourish local urban agriculture (UA) initiatives. Drawing on recent study findings about the interrelationships between current policies and UA initiatives, it lists specific EU-level instruments and policies that are applicable to UA. The article also outlines some barriers to implementing EU-level policies at the local level and suggests how to overcome them.

The study took place through the European Forum on Urban Agriculture (EFUA), which aims to unlock urban agriculture’s potential through better networking, knowledge, and policies across European cities.

The analysis draws on twelve semi-structured interviews with city-level representatives from ten European countries: Belgium, Bulgaria, Denmark, France, Germany, Greece, Italy, Lithuania, the Netherlands, and Portugal. The respondents were all engaged in the field of urban development, i.e. urban planning experts located at the municipal level, city officials, or consultants who are familiar with the state of urban agriculture and/or are involved in urban greening agendas.

Interviewees were asked to reflect on whether typical municipal actors and typical urban farmers in their cities are likely to be informed about current and potential supportive EU policy and policy instruments. Their responses provided a snapshot of the level of awareness of available support from the EU level, and how policies and instruments are applicable to urban agriculture initiatives on the ground. The findings informed recommendations to actors at multiple levels about how awareness could be strengthened to better nourish the diverse practices of urban agriculture across the EU¹.

The key findings are as follows:

1) Policies can unlock multiple benefits

Enabling policies and associated instruments can enhance the multiple benefits of UA at all levels, in several ways. For instance, they may result in the mobilizing of critical funds and other resources to help initiate new or maintain existing activities. They can also assist the UA agenda through the recognition and formalization that comes with more targeted policies. Yet while some municipalities have UA-supportive policies, it is less often the case at regional and national levels, and even less so at the supranational (EU) level, where UA today is only – and to a very limited extent – embedded in other EU policies.

2) Current EU policy pathways

While there is no explicit UA policy at the EU-level, there are some existing policies, strategies, and instruments that are of relevance to the practice of UA in Europe. In another EFUA study, the most relevant policy areas in which UA plays or can play a role were mapped². The relevant policy areas identified include the Farm to Fork and Biodiversity Strategies, both components of the European Green Deal, as well as a host of instruments for regional and local development.

3) Obscured EU policy impact

Despite all respondents being engaged in cultivating and promoting the development of urban agriculture, most struggled to identify concrete, observable impacts of current EU policies. They also struggled to identify concrete potentials for the UA-related activities via



Field visit during the COST meeting in Sofia, Bulgaria. Credit: Daniel Munderlein

existing EU policy instruments. A high level of awareness of such linkages was atypical, and respondents reflected that their knowledge relates more to decentralized policy levels, while acknowledging that these are shaped, directly and indirectly, by the EU-level.

4) UA is ‘many things’

UA touches upon many policy fields. The respondents noted UA’s linkages to multiple EU agendas, including the two main aspects of urban resilience and a net-zero carbon economy, social integration, supporting vulnerable populations, and new business opportunities. Furthermore, they pointed out that increased attention to the UA agenda could unlock more funds, since UA can fit into many different financing tools at the EU-level – if municipal actors can be aware of such opportunities and act accordingly. EU resources are an important supplement to urban budgets that are often stretched thin.

5) Farmer awareness varies

Factors such as size and whether or not an UA venture is commercially oriented greatly determine farmers’ awareness of EU-level policies and instruments and their relevance. Respondents reported that typical municipal officers and typical small urban farmers are unlikely to be informed about current and potential supportive linkages to EU policy and policy instruments,

while larger-scale commercial (often peri-)urban farmers are more likely to be aware. This is telling of current policy priorities and suggests there may be missed opportunities for, and attention to, smaller-scale/non-commercial UA activities.

6) Notable EU-level policy instruments

Respondents named numerous EU-level policy instruments that currently support, or have recently supported, their local UA agenda, and which it could be useful to bring to the wider UA community. The named policy instruments included funding programmes and projects as URBACT, Urban Innovative Actions (UIA), HORIZON Europe, Interreg Europe, Urban Europe, and opportunities via awards, including the European Green Capital Award (EGCA). Many such funding mechanisms are complementary and support related activities like existing policy efficacy, and interregional learning.

7) Key EU projects

Respondents also referred to specific EU projects that are rich in lessons for other UA practitioners, e.g. BiodiverCities, entailing twelve European cities enhancing local citizen engagement in greening projects, vision building, and participatory mapping of urban biodiversity and ecosystem services. Another example is URBINAT, aiming to open up deprived areas and find most appropriate ways to co-create urban gardens in pursuit of nature-based solutions. Better

sharing of the successes (and occasional challenges) of such projects with the wider community can support budding UA agendas across the region.

8) Further EU initiatives

Other policy instruments were also seen as UA-supportive, especially toward governance and capacity building. The URBACT programme supports networks aiming to transfer good practices across Europe, and especially the RU:RBAN network is valuable to UA. Similarly, the COST action of 2013-2017 on Urban Allotment Gardening was said to be rich with transferrable lessons. In such networks, geographically distant EU cities share experiences to enhance local governance capacity, specifically in relation to organizing UA, inspiring and training people to manage urban gardens, and support for urban garden governance and regulations.

EU-supported city networks

UA often starts as small, citizen-driven initiatives, but it is common for them to stall or close due to numerous challenges. Momentum may re-emerge through the opportunities brought by an EU-supported city network, for instance under the URBACT programme. Also, municipal participation in EU-funded projects and initiatives is establishing valuable city-to-city networks across the union that accelerate developments and overcome barriers, e.g. in regulations and governance structures and inspiring new governance tools. In transfer projects like RU:RBAN, new instruments for local governments can emerge; cities follow the procedures developed in a forefront city, and regulations from one place can be adopted and adapted to other places. The shared objective is to support “inclusive, democratic, solidarity communities, through the growing of vegetables”.

EU awards boost recognition

Awards boost positive recognition of UA and can lead to tangible impacts, e.g. the European Green Capital Award (EGCA) celebrating European cities that are improving urban environments. In its assessment of applicant cities, the EU Commission has acknowledged UA’s role in multiple environmental indicators specified in the award. The European Green Leaf Award and the Good Practices Award are other EU awards with potential to promote UA. In 2017, the city of Rome received the Good Practices award for urban agriculture. This boosted the legitimacy of municipal UA efforts toward citizen-driven initiatives, and reminded the local government that the EU was seeing what was happening in Rome.

Capacity for EU policy-connections

Respondents noted the complexity of EU policy instruments as a barrier to making use of opportunities. Urban practitioners require capacity building to be able to identify and mobilize UA-relevant EU policy instruments.

Some cities have already specific people in charge of building connections and translating EU policy into their municipal context, e.g. identifying EU funding opportunities and submitting EU-level applications. However, as the funding announcements seldom invoke UA specifically, such linkages remain obscure. Hence, in addition to capacity challenges, when opportunities are sought the topic of UA is rarely foregrounded to the same degree as other themes.

How to move forward?

Greater municipal participation in EU-funded projects would be an important step towards strengthening awareness. A range of other steps are also available to actors at multiple levels which, if taken, may enable some of the barriers to be overcome – not least the currently limited role for, and recognition of, urban agriculture as a strategy at the EU-level. In the following sections, we outline some steps for improving the accommodation of diverse UA practices across the European Union and for establishing EU-policy linkages that can be of value and ease the for governance at the city level and for small-scale approaches.



Field visit during the COST meeting in Sofia, Bulgaria. Credit: Daniel Munderlein



COST meeting in Sofia, Bulgaria. Credit: Daniel Munderlein

1) Negotiating via EU strategies

A major way in which the EU inhibits UA development is through the prioritization of large-scale agriculture in current policies. Yet new EU policy strategies, such as Farm to Fork, may still serve as fodder for negotiation of UA at city level, not least in light of the broader context of concern for climate goals to which UA can contribute. Very few of the respondents zeroed in on aspects of food production, and the major EU food policies (e.g. Food 2030), and related instruments (e.g. food production projects) were given minimal attention. This indicates a disconnect from potential EU policies of relevance for UA, which could be unlocked by dedicated local food policy officers.

2) Insufficiently agricultural and rural

Urban agriculture falls between different policy areas. It appears to be insufficiently agricultural to secure support under main tools such as Pillar I of the Common Agricultural Policy and, at the same time, is insufficiently rural to secure support under typical rural development programmes. Although certain UA- and urban food system-relevant existing policy instruments do help push the UA agenda at various scales, these policy instruments are currently isolated and fragmented. Hence, to overcome the limitation of only being indirectly addressed through

UA-related activities, it would be crucial to have UA explicitly mentioned in such instruments' objectives.

More UA-specific policy instruments

Expanding the UA agenda in EU cities is inhibited by urban land and accessibility barriers and in relation to competing uses such as housing development. Hence, there is a need for more targeted city-level policies and tools that maintain and/or increase the resources that support UA-related activities, from infrastructural development to strengthening urban sharing networks. There is a need for more UA-specific EU policy instruments that incorporate substantial facilitation for linking stakeholders to build stronger connections at the regional level between municipalities.

Recognize UA's multiple benefits

It would be extremely useful if there were EU-level signalling that urban agriculture is a valued and important contribution to socio-ecological sustainability. If the EU more strongly recognized the multiple benefits of UA, this could ease the work of UA proponents and support the prioritization of UA at the level of urban governance. It is obvious to the respondents that UA supports multiple EU agendas – including urban resilience to climate change, the development of net zero carbon economies, improving social integration, supporting vulnerable populations,



COST meeting in Sofia, Bulgaria. Credit: Daniel Munderlein

establishing new and ecologically sustainable business opportunities, and more. UA, as we know, can take many shapes, and make diverse positive contributions to urban development.

Funding for citizen initiatives

In some places, UA is mainly stimulated by bottom-up citizen action. Funding and support for citizen-driven initiatives is key. Funding can focus the attention and make complementary linkages to EU-level policy, especially if they are embedded in cross-city networks. Such supportive actions may also help sometimes fragile (but essential) urban networks to endure and support specific cities to overcome competing urban agendas that often follow shifts in local politics. They can contribute to harnessing the tremendous knowledge generated by past and current initiatives and sharing it.

Strengthening UA's visibility

Overall, our study findings make it evident that if the EU signalled more strongly that UA is a valued and important contribution to socioecological sustainability, it would ease the work of UA proponents at the local city level. Such signalling would create a frame within which the UA agenda could endure for the longer term. This could happen by, for instance, naming UA within existing policies, mechanisms, and instruments, establishing new UA-targeted tools and research programmes, and

maintaining or even increasing resources that nourish UA-related activities – from infrastructural development to strengthening urban sharing networks.

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Food Trails: Enhancing urban agriculture through food policies

Andrea Patrucco
Emanuela Plebani

A number of cities involved in the EU-funded Food Trails project have created thriving urban agriculture initiatives by anchoring them to food policy processes. This article sets out four examples and provides governance recommendations for other cities seeking to replicate their success.

Eleven cities of various types, sizes, and locations across Europe have implemented pilot initiatives aimed at enhancing the sustainability of their local food systems under the European Horizon 2020 Food Trails project.

Among these, some cities have directed their efforts toward urban agriculture (UA). Some cities have begun with actions to support UA, which have contributed to momentum that has led to the establishment of new urban food policies. Indeed, implementing pilot actions allows for new ways of collaboration between departments and stakeholders to be trialled. Other cities, meanwhile, have included UA in food policies, strategies, or governance processes, then developed actions.

Sowing the seeds of change in Thessaloniki, Greece

One of the most significant accomplishments of Food Trails in Thessaloniki has been the establishment of the local Food Council and its involvement in co-designing a comprehensive food policy, with a special focus on food production and nutrition education. This process saw active participation from more than thirty individuals,



The new community gardens in Doxa Park, located near the urban vineyard of Thessaloniki. Credit: Municipality of Thessaloniki

including experts, representatives from food-related organizations, governmental bodies, and NGOs, all keen to sow the seeds of change. The city's Food Policy was eventually launched in 2023.

Thessaloniki is embracing the green wave of UA with fervour. Prior to Food Trails, in 2013, an urban vineyard was established, where four indigenous grape varieties have been cultivated in collaboration with students from Aristotle University School of Agriculture. The wine produced from the urban vineyard is used for events, such as social dinners and auctions, to raise money for social services. Moreover, every year, the wine harvesting is a big celebration in the neighbourhood.

Subsequently the city also created a community garden, Kipos3, near the vineyard in Doxa Park, where vulnerable families have access to land to grow their own vegetables.

More recently, as policymakers analyze potential sites for this agricultural renaissance, school grounds have emerged as prime candidates. From April to May 2023, four verdant vegetable havens took root, with two nestled within schoolyards (both public and private), one on a school rooftop, and one within the 'Lighthouse of the World,' a social hub for the Roma community. These green oases cultivated three hundred varieties of vegetables and a hundred botanicals, and engaged some 250 students and young community members to join the cultivation journey.

At the heart of these initiatives lies the mission to reconnect children with food production and the rhythms of nature, and to educate them in healthier diets. Edible gardens in school yards also serve as fertile ground for collaboration, nurturing bonds between teachers, students, volunteers and municipal departments. Thessaloniki food actions thus extend beyond cultivation to build a thriving ecosystem of relationships.



The first plenary session of the Bordeaux Metropole Agricultural and Food Council (14th of March 2023), where 130 local food systems stakeholders participated in the presentation of the main actions of the local food policy. Credit: Bordeaux Metropole

Bordeaux Metropole, France: A bridge between producers and canteens

To support agricultural production and the establishment of local supply chains, Bordeaux Metropole (BM) has chosen to leverage sustainable food public procurement, facilitating connections between local producers and canteens and offering training to local producers on responding to public tenders. It has done so by prioritizing local stakeholder engagement and food policy development.

In 2017, BM established a consultative Food Policy Council, giving farmers, canteens, associations, and community centres a voice in public policy decisions for the first time in France. To further engage local stakeholders, as part of the Food Trails project, BM decided to strengthen the Food Council's role, starting with its involvement in co-creating the food policy. The policy was launched in 2022, with the Food Policy Council identified as the governing body for implementation.

At the core of BM's strategy lies an understanding of the region's food system. Through mapping, BM has gained valuable insights into the current state of agriculture, production, and consumption. This groundwork provides a solid foundation for targeted interventions aimed at promoting organic and agroecological practices throughout the region.

In particular, through data collection and workshops involving municipal officers, cooks, and elected representatives, BM is transforming its approach to more sustainable public food procurement. Detailed information on local collective catering practices, such as the use of organic food and efforts to combat food waste, is gathered and used to develop targeted action plans, enhance procurement processes, and support initiatives that align with the goals of the Food Strategy.

One of BM's key objectives is for 20% of production to be organic. While progress has been made, there remains a need to address disparities within the agricultural sector. BM aims to create opportunities for producers, particularly those new to organic farming or operating on urban and peri-urban smaller scales, by connecting them with local buyers (canteens, restaurants, etc.). BM also gives financial support to farmers' projects linked to the development of local supply chains and the agroecological transition.

BM has hosted workshops with representatives from all twenty-eight municipalities in the Metropole. This collaborative forum provided an opportunity to share best practices, assess needs, and develop tailored action plans. Plans are underway for a series of workshops and visits to local suppliers, focusing on topics such as vegetable proteins and sustainable procurement practices.

Community UA and food policy in Groningen, the Netherlands

In 2012, Groningen, a pioneer in the Dutch food policy landscape, adopted its first comprehensive food strategy. Central to its vision is the belief in 'healthy and sustainable food for all', a principle that propelled the city towards embracing UA as a means to reach vulnerable communities. Concrete actions have been implemented within the food policy framework for UA.

A noteworthy initiative is *Tuin In De Stad*, a vibrant hub located in Groningen's Westpark, where community gardens and a flourishing food forest demonstrate sustainability in action. Various food-related projects have been mixed seamlessly into the neighbourhood of Westpark, transforming it into a space that fosters community engagement through food-related activities.

As part of Food Trails, the city decided to leverage existing local community-driven initiatives, connecting and supporting them to strengthen and scale their efforts. In fact, at the heart of Groningen's sustainable food system transformation are initiatives designed to bring people together over the shared joys of getting their hands into the soil, and of preparing delicious food. From weekly social dinners featuring wholesome, sustainable meals to hands-on cooking sessions and gardening activities, in 2022 alone *Tuin In De Stad* welcomed over nine hundred participants from vulnerable neighbourhoods.

Firstly, in 2023 the city of Groningen took its commitment to the next level by publishing and distributing the

"Groningen Cookbook", featuring easy, tasty and healthy recipes using food bank ingredients aimed at increasing people's food skills. This was paired with 'train the trainer' sessions and cooking classes in community centers and schools in vulnerable neighbourhoods.

Tuin in de Stad embraced the Groningen Cookbook, integrating it into their educational offerings. For instance, at the *Timmerdorp* event ('Hamertown', a creative haven for children aged 7 to 12), budding builders learned the art of constructing wooden structures, and enjoyed nutritious, locally-sourced meals.

Secondly, in June 2023, the city expanded its Food Forest, PlukN, by unveiling the Eetbaar Labyrint ('Edible Labyrinth'). This new feature is a cyclable labyrinth designed to be both educational and interactive, with QR codes that provide information about the various trees, shrubs, and fruits that can be found and picked along the way.

Thirdly, Groningen supported the Blije Bodem initiative ('Happy Soil'), a newly established vegetable garden in the Westpark area. Operating as a self-harvest garden, Blije Bodem offers fresh, unsprayed produce, alongside fragrant flowers and aromatic herbs. Here, affordability meets accessibility, as participants are invited to harvest at their leisure, ensuring a steady supply of ultra-fresh food right on their doorstep.

Disruptive ideas for UA in Birmingham, UK

In summer 2023, the city of Birmingham updated its strategy to reflect a vision of a fair, sustainable, and prosperous food system, ensuring that all residents have nutritious, affordable food options.

Among other initiatives to realize this vision, the city is working on the development of the High Rise Harvest project, which will bring food growing into the city by transforming the top level of a multi-story car park in Vyse Street. The hub will feature both community gardens and a commercial growing area with state-of-the-art cool storage facilities and a convenient purchasing platform.

The High Rise Harvest initiative will not only address the urgent need for increased access to sustainable food, but also aligns with Birmingham's broader decarbonization and public health agendas. By integrating with the city's Route to Zero carbon initiative and Our Future City and City of Nature plans, High Rise Harvest will be a catalyst for positive change.

The broad support garnered for the Vyse Street Car Park project is a testament to its potential impact and importance. As Birmingham navigates its recovery from the COVID-19 pandemic, the project cultivates hope, addressing longstanding food system challenges while



A rendering of Birmingham's High Rise Harvest project, aimed at transforming the top floor of a multi-storey car park on Vyse Street into a vibrant community growth centre. Credit: Birmingham City Council, Urban Design Hub

leveraging community-driven solutions to enhance food security for all citizens.

At the heart of the Vyse Street project is the endeavour to make locally-grown food accessible to the community. This is crucial for addressing Birmingham's food desert by improving access to nutritious food and creating a welcoming space for social interaction.

The project's roadmap included delivering a proof of concept by the end of October 2023, financed as part of Food Trails. The feasibility study involved a comprehensive analysis of the benefits and limitations of urban growing, assessing the feasibility of year-round and seasonal cultivation methods, and recommending the most suitable and cost-effective solutions. The proof of concept delved into pricing dynamics, gauging the willingness of local hospitality businesses to invest in locally produced food. It also identified potential logistical gaps, particularly focusing on last-mile delivery within the city centre.

Planning permission for the High Rise Harvest initiative has been granted for a 10-year lease on the site, which is expected to attract capital investment to the project.

Food Trails policy messages on UA

The strategic food policy documents approved by Food Trails cities represent more than just project outputs; they are tangible legacies that will shape the future of their food systems. Each city has committed to establishing UA as a fundamental pillar of its urban and metropolitan agendas, demonstrating political dedication, capacity for medium to long-term action planning, and the allocation of human and economic resources to drive and support these processes.

A message to all city officers interested in building a prosperous future for UA initiatives is to anchor actions to policy processes that incorporate at least three governance elements.

Firstly, strong political commitment is essential, not merely as support for initiatives but as an acknowledgment of the potential of UA to catalyze change in local food systems.

Secondly, it is important to involve city departments in decision-making processes to leverage physical assets such as public spaces or human and economic resources to support the initiation or management UA initiatives.

And thirdly, the presence of external managers or facilitators with diverse expertise can help create bridges between the municipality and grassroots civil society associations. This support can be crucial, especially in cities starting from scratch or where stakeholder relationships are not yet solidified. For instance, they can play a key role in coordinating the stakeholders of a food council. Experts of this kind could be economically supported by European, national, or regional funds.

Urban and metropolitan food policies are increasingly being recognized as tools not only for decision makers but also a tool for city practitioners to start concrete initiatives. They represent a collaborative and holistic effort to transform urban landscapes, enhance food security and foster local food.

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More information

- Other stories from the cities of Food Trails <https://foodtrails.milanurbanfoodpolicypact.org/cities/>
- The Bordeaux Metropole pilot actions in Food Trails <https://foodtrails.milanurbanfoodpolicypact.org/location-map/bordeaux/>
- Feel the beat in Groningen <https://foodtrails.milanurbanfoodpolicypact.org/feel-the-beet/>
- Swimming with the mermaids in Thessaloniki <https://foodtrails.milanurbanfoodpolicypact.org/swimming-with-mermaids/>
- Food Revolution in Birmingham <https://www.birmingham.gov.uk/info/50279/food-revolution>



Celebrating the launch of the Groningen Cookbook as the culmination of the pilot initiatives in the city's community gardens and food forest, with a focus on engaging vulnerable groups. Credit: Gemeente Groningen

Embedding urban agriculture into European Nature-based Solutions policies

Giusy De Grazia
Patricia Hernandez Lelli

Nature-based Solutions (NbS) and urban agriculture (UA) both have potential to help address many of the socioeconomic and environmental challenges resulting from rapid global urbanisation, but their implementation in cities still faces major barriers. Positioning UA as an effective NbS is a fundamental step to strengthening and upscaling both successfully.

NbS are defined as nature-inspired solutions that are cost-effective and “simultaneously provide environmental, social and economic benefits and help build resilience”¹. NbS must therefore deliver a range of ecosystem services and benefit biodiversity. In other words, NbS can be considered as an umbrella term for a wide range of concepts and practices – a range that remains open to any new initiative that provides benefits for both the environment and communities. However, this definition does not give any indication of how NbS can be delivered and how communities can be involved in their delivery.

Joint benefits

Certain UA practices provide the environmental and climate benefits that characterize NbS, and can therefore be classified as such. Among the six types of UA identified by the European Forum on Urban Agriculture (EFUA)², community gardens, DIY gardens/farms, community parks and, to a lesser extent, urban farms are able to deliver proven NbS benefits. For the purpose of this article, only those four types of UA will therefore be associated with NbS. The types of UA that do not support biodiversity or provide other ecosystem services such as social farms and zero acreage farms (ie. vertical farms) fall outside the definition of NbS. The types of UA identified above and NbS both increase the surface and quality of green areas within cities, thereby enhancing climate change adaptation and mitigation by reducing the urban heat island effect, increasing carbon sequestration (urban forests), and reducing flooding and stormwater runoff. Increased green areas, whether through UA or NbS, improve biodiversity and provide ecosystem services such as air and water purification and soil regeneration.

Alongside environmental and climate benefits, UA and NbS provide multiple benefits for human health, society and

economy. Greener cities in fact improve human health and well-being. While UA ensures access to affordable and fresh food, especially for socially disadvantaged and food-insecure groups, NbS such as green spaces provide recreational areas that can positively impact mental and physical health. Social cohesion and collective action are likewise enhanced when communities are fully involved in UA and NbS implementation.

Lastly, UA and NbS can create green jobs and foster business innovation and economic growth.

Drivers and constraints

Not only do UA and NbS provide similar co-benefits for health, economy, society and environment, but they also share comparable drivers and constraints.

Community participation and co-creation are major social drivers for both, while bottom-up policy making at the local level can be considered as their major institutional driver.

UA and NbS implementation also depends upon available resources – including funding for projects, employment opportunities, or knowledge – as well as access to urban space. In other words, a lack of government support and human capital can undermine the implementation of both concepts within cities.

Governance and financing are major barriers, especially for NbS. The long timeframes for financial returns of NbS as well as UA’s poor economic profitability in the short term – most UA practices are small-scale compared to rural and conventional agriculture – slow down implementation of both concepts. Although a growing number of citizens are becoming involved in the delivery



Parco Ort9 urban garden in Rome, Italy. Credit: Risorse per Roma SpA

of UA and NbS (also alleviating the costs of delivery), governance models fostering active participation and community engagement tend to be more common for UA practices.

Policies and practices at the EU level and beyond

Despite the similarities, UA and NbS have a different weight on the EU political agenda. While there have been significant advances in the integration of NbS in the EU policy framework, the same cannot be said for UA. NbS are a core element of the European Green Deal, particularly the EU Biodiversity Strategy, the EU Strategy on Adaptation to Climate Change, and the Farm-to-Fork Strategy. When entered into force, the Nature Restoration Law could also provide important legal provisions for NbS in Europe as it sets binding targets for green infrastructure. Most importantly, the new requirement for cities and towns of more than 20,000 inhabitants to adopt Urban Nature Plans (UNPs) will accelerate NbS’ development and implementation in urban areas.

With regard to UA, a policy review of EU policy areas and instruments carried out under the H2020 EFUA project

concluded that UA is largely neglected in Europe’s policies – especially in the Common Agricultural Policy (CAP), the main policy for farming and food production in the EU.

When it comes to the local level, on the other hand, there is a significant uptake of UA practices, with many EU cities having adopted and enforced relevant policies. While the adoption of UNPs will support NbS’ implementation at the local level in the long term, NbS integration into local policies remains poor to date and requires further promotion.

Another difference between NbS and UA relates to the EU Research and Innovation Programme. NbS have received and continue to receive significant EU R&I funding. The H2020 programme funded projects on NbS for a total budget of €282m. Further investments in NbS research and innovation have been delivered through other EU instruments including COST, ERDF, LIFE+ and EIB’s Natural Capital Financing Facility.

EU R&I funding was crucial to fill knowledge gaps on NbS and helped build a substantial evidence-base of NbS

through various platforms such as OPPLA, NWRM, Climate-ADAPT, Urban Nature Atlas and Network Nature³.

UA, meanwhile, has received considerably less EU R&I funding. Under H2020, €94 million were spent for 18 projects in the context of UA, €75.4 million of which funded 8 projects where UA played a negligible role. The only online atlas on UA, *Urban Agriculture Europe*⁴, was developed through the COST Action over a decade ago and never updated.

Embedding UA into NbS policies: Opportunities and challenges for UA

If UA practices were embedded into EU policies and strategies that support NbS development and implementation, there would be several advantages for both concepts. UA would finally have a strong policy coverage at the EU level, while regional disparities across relevant policies and practices in the EU would be addressed. At the same time, UA would benefit from EU Research and Innovation funding devoted to advancing research on NbS.

UA practices are already being considered as case studies

and included within existing evidence-based platforms on NbS, but this integration needs to occur at scale – not only for individual case studies – to enable UA to access all the topical R&I funding. Considering UA as a NbS is also helpful to curb unsustainable UA practices. Certain UA practices can contribute to soil and water contamination as well as being carbon intensive. NbS policies could therefore compensate for the absence of relevant local policies and provide the sustainability requirements needed to implement UA practices that are good for both nature and people.

Embedding UA into NbS policies: Opportunities and challenges for NbS

Embedding UA into European NbS policies and strategies would also benefit NbS’ development and implementation within urban settings. NbS is commonly accepted by EU institutions and Member States but it has been little explored and implemented at the city level. The adoption of UNPs is set to reverse this trend, but UNPs are still in their early stages and their impact will be seen and understood only in the long term. If UNPs increasingly engage local communities, NbS’ development and implementation can be scaled up earlier. For example,



Via Sabotino urban garden in Rome, Italy. Credit: Risorse per Roma SpA



Urban gardens in Krakow, Poland. Credit: Risorse per Roma SpA

community-based governance and bottom-up policy making processes being implemented through UA practices in Rome and other EU cities could be transferred to NbS’ delivery.

With regard to the funding barrier to NbS advancement, recent studies see the highest investment potential for NbS in the forestry and agricultural sectors. By classifying UA as NbS, access to funding can therefore be facilitated to all NbS capitalising on UA practices.

Upscaling UA and NbS through Urban Nature Plans

When UA practices deliver proven NbS benefits, both concepts should be associated with one another and upscaled jointly. Community gardens, DIY gardens/farms, community parks and urban farms should therefore be classified as NbS and be allowed to take advantage of the policy coverage and funding opportunities that are devoted to NbS.

In turn, NbS can benefit from community governance models that were successfully developed through UA practices. Adopting UNPs is the most effective tool to embed UA into NbS as these plans can include “measures to create biodiverse and accessible urban forests, parks and gardens; urban farms; green roofs and walls; treelined streets; urban meadows; and urban hedges⁵.” If the very same definition of UNPs brings together NbS and UA, the way is paved for positioning UA as an effective NbS.

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Social enterprises promoting peri-urban agroforestry in Milan

Stefano Quaglia

In Milan, urban and peri-urban agroforestry (UPAF) has gained prominence as a strategy to address pressing challenges such as changing climate, biodiversity loss, and public health. This has been made possible by innovative multi-actor and multi-level governance models promoted by social enterprises, such as SoulFood ForestFarms Hub Italia, that are committed to pursuing sustainable and resilient urbanization.

Agroforestry is a dynamic land-use system integrating woody perennials, crops, and/or livestock on the same land management unit¹. When compared to conventional farming, properly designed and managed agroforestry systems have the potential to improve soil fertility, increase carbon sequestration, and minimize reliance on external inputs. Although not an innovative discipline and one that has been practiced for centuries prior to the rise of monoculture production practices, it is now experiencing renewed attention due to its capacity for delivering multiple benefits to communities, ranging from microclimate regulation to provision of food and raw materials².

While originally prevalent as a form of edible landscaping in tropical climates, agroforestry is now increasingly observed also in urban areas of temperate regions such as Europe, United States and Australia.

In this context, Milan is not only renowned as a leading global city in finance, fashion, and design but also as a major agricultural centre pioneering the implementation of nature-based solutions, including UPAF. In recent years, initiatives promoted by Soul Food ForestFarms Hub Italia (SFFF) stand out as particularly innovative amongst numerous projects that have been implemented across the city.

SFFF is a non-profit organization comprising a social enterprise that is responsible for coordinating field activities, along with a socially-orientated association that promotes cultural and recreational services. Inspired by the theories of Swiss biologist Ernst Götsch on syntropic agriculture, SFFF's mission is twofold: i) to support farmers in transitioning towards regenerative and climate-smart agriculture through the implementation of agroforestry



CasiNet Farm. © SoulFood ForestFarms Hub Italia



Longoni Farm. Credit: SoulFood ForestFarms Hub Italia

practices; and ii) to develop carbon offsetting-related farming projects for private companies.

Collaborative projects and regenerative practices

As part of the Milano Porta Verde strategic vision, aimed at regenerating neglected public agricultural lands, SFFF has promoted the development of several UPFA systems in the southeastern fringe of Milan, within the Vettabia Park, where Milan's Southern Agricultural Park meets with the densely developed urban fabric. The implementation and management of these agroforestry projects owe their progress not only to SFFF's multidisciplinary team of experts, but also to the collaborative and participatory governance model which actively involves public authorities, nonprofit organizations, and the local community in both place-making and place-keeping activities.

The first initiative promoted by SFFF was launched in 2019 as a pilot UPAF project, in partnership with the local farm CasciNet on a two-hectare plot. In this case, one hectare is dedicated to the cultivation of fruit trees alongside poultry farming, thereby fostering a symbiotic relationship between agriculture and livestock. The other hectare is for phytoremediation and biomass production (used to power the heating system of the CasciNet farmstead).

In 2021, SFFF joined forces with another local farm, the Azienda Agricola Davide Longoni, to implement a six-hectare alley cropping system that integrates fruit and forest tree species with cereal crops. However, despite plans to incorporate sheep grazing in the near future, some economic difficulties persist.

The creation of the UPAF system also contributes to strengthening the partnership between the farm, Terzo Paesaggio, a local association dedicated to urban cultural regeneration, and Avanzi, a private company operating in the social innovation sector. This collaboration has made it

possible to launch a baking school initiative – Madre Project, Scuola del Pane e dei Luoghi – and start an urban supply chain for bread provision. In addition to ecological regeneration, a key aspect of the SFFF's mission lies in providing educational and recreational services to farmers and local residents, such as theatre shows, concerts and training courses.

SFFF also operates within a rural context. In 2022, it initiated a landscape regenerative project in the Lambro Valley Regional Park, near the city of Como, cooperating with Azienda Agricola Tuetera. During the first year of the project an agroecological system featuring officinal and ornamental plants was implemented, with the objective of creating an autonomous agricultural village. In the near future, it is also planned to renew the abandoned farmsteads in the area to provide socio-cultural benefits.

Benefits provision

All the projects described above are based on participative approaches, which maximize the delivery of cross-cutting and multiple benefits. To quantify the impact of transforming vacant and derelict land into complex socio-ecological systems, the University of Milan plays a key role in monitoring and assessing ecological and socio-cultural ecosystem services provided by the community-based agroforestry systems³. Although the UPFA projects that have been implemented are still in their evolutionary stage, they have already begun to contribute to the regeneration of these areas. Indeed, besides healthy food production, they contribute to regulating the climate (CO₂ sequestration estimated at 27 ton/ha per year), stimulating the local economy, reducing public land management costs, improving citizens' well-being, and enhancing soil fertility and urban biodiversity. Moreover, the engagement of the local community has significantly contributed to strengthening personal bonds and creating a sense of belonging³.



Tuetera Farm. Credit: SoulFood ForestFarms Hub Italia

Lessons learned

One of the most significant insights from the case of SFFF is the importance of establishing cross-sectoral networks to effectively design and manage UPFA. While bottom-up initiatives are crucial for promoting agroforestry in cities, it is also essential to integrate UPFA into strategic planning and policy frameworks for longstanding success. Through the adoption of a long-term and holistic approach, including participative processes and inter-agency collaborations, public actors must shift away from the traditional view that confines agroforestry to rural settings, as is often the case in Italy, and recognize its potential within urban environments.

This can be achieved by embedding agroforestry into urban environmental plans and policies such as green infrastructure plans and climate change and food policies. To foster this integration, several measures are necessary:

- developing innovative funding mechanisms to support UPFA projects;
- reforming existing regulations and institutional structures to create an enabling environment;
- providing cross-disciplinary education for public managers and urban farmers to facilitate an understanding of agroforestry and its benefits in urban settings.

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More information

- SoulFood ForestFarms Hub Italia <https://soulfoodforestfarms.it>
- Milano Porta Verde <https://liaison2020.eu/ambassadors/milano-porta-verde/>
- Madre Project, Scuola del Pane e dei Luoghi <https://madreproject.org>

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New spaces and plans for urban and peri-urban agriculture

Claudia Cassatella
Enrico Gottero

The EFUA H2020 project has shown the current limits to the systematic deployment of urban and peri-urban agriculture (UPA). This article identifies issues related to land access and availability, the lack of integration of UPA into planning systems, and the limitations caused by planning tools. It provides some recommendations for policy makers, public planning departments and urban planners to tackle these problems^{1,2}.

Main barriers to the development of UPA

Although the benefits and versatility of UPA are widely recognized in the academic and institutional context, there are still many formal and practical barriers to the full leveraging of UPA. The EFUA project results showed that issues related to land management and planning instruments are the main obstacles.

The lack of space in urban and peri-urban areas for UPA is on the agenda of many European cities. Soil is a primary resource, yet utilization and degradation of urban land are serious, growing problems.

Furthermore, land use conflicts over areas that are attractive both for urban expansion and for food production can impact on the availability of land for UPA. Even the land accessibility for different social groups and the nature of the land ownership (private or public) can affect UPA development.

Urban property management can often have high costs (taxes, maintenance, etc.) and create conflicts with residents.

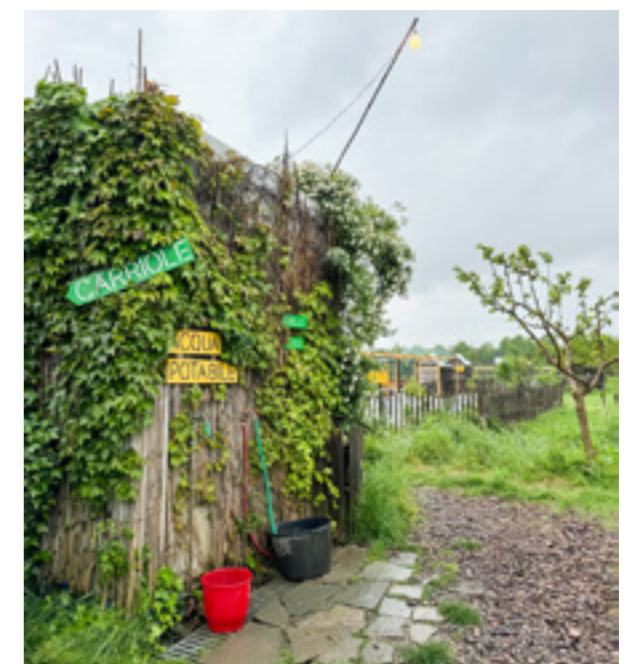
Finally, the presence of abandoned spaces and buildings can be a problem for cities – but is also a possible resource that can contribute to the reinforcement of UPA, especially for social purposes.

EFUA has shown that agriculture is not always formally recognized as an urban (professional or non-professional) activity in planning or policy frameworks. In the past, urban policies and planning tools have also limited UPA through restrictive

regulations and ordinances, favouring urban development.

Overcoming barriers with spaces and plans for UPA

Public policy for UPA should assure the availability of, and access to, fertile land by different social groups. Planning regimes can influence both land use and market value. For instance, planning ordinances can protect farmland on the grounds of its fertility, and ecological or landscape value. In urban environments, some brownfield areas and



Orti Generali in Turin, Italy. A good example of UA regulation related to environmental criteria and social issues. Credit: Claudia Cassatella



Orti Generali in Turin, Italy. A good example of UA regulation related to environmental criteria and social issues. Credit: Claudia Cassatella

abandoned spaces and buildings can also be repurposed for UPA (especially for non-food or soilless cultivation), if permitted by urban regulations.

Identifying and creating an inventory of existing and potential areas for UPA is a first, essential step. This has been done in several North American cities, which have identified existing and potential plots and urban farms, vacant or underutilized areas, and public and private properties, through inventories and land databases³. It can then be followed by further initiatives such as planning ordinances, financial incentives, or land banks.

The identification of existing and potential spaces is a first step towards designing a plan for UPA – and any such plan should identify the main goals, measures and spatial targets. UPA should be planned, coordinated and integrated into urban policies and the land use designation system. Some cities have created a new functional zone for UPA in their land use planning system, which is a powerful tool to guarantee the use of the area for cultivation and, eventually, to define spatial targets for additional incentives (e.g. tax rebates).

Urban planning tools are also useful to foster agricultural use and reuse, to avoid land use conflicts and remove unnecessary obstacles, and to provide infrastructures (access, water and sewage, energy, shelter, and markets). The plan for UPA should aim to provide a variety of spaces and opportunities, in line with current needs and available resources.

Policy- and decision-makers at the European level should provide financial incentives dedicated to the maintenance of agricultural spaces in urban and peri-urban areas. At the same time, cities should use the entire planning toolbox from drawing on the many examples at the international level, collected by EFUA project, for encouraging, promoting and supporting UPA.

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Lab on Urban Food Policies drives food systems planning in Brazilian cities

Juliana M. Tângari
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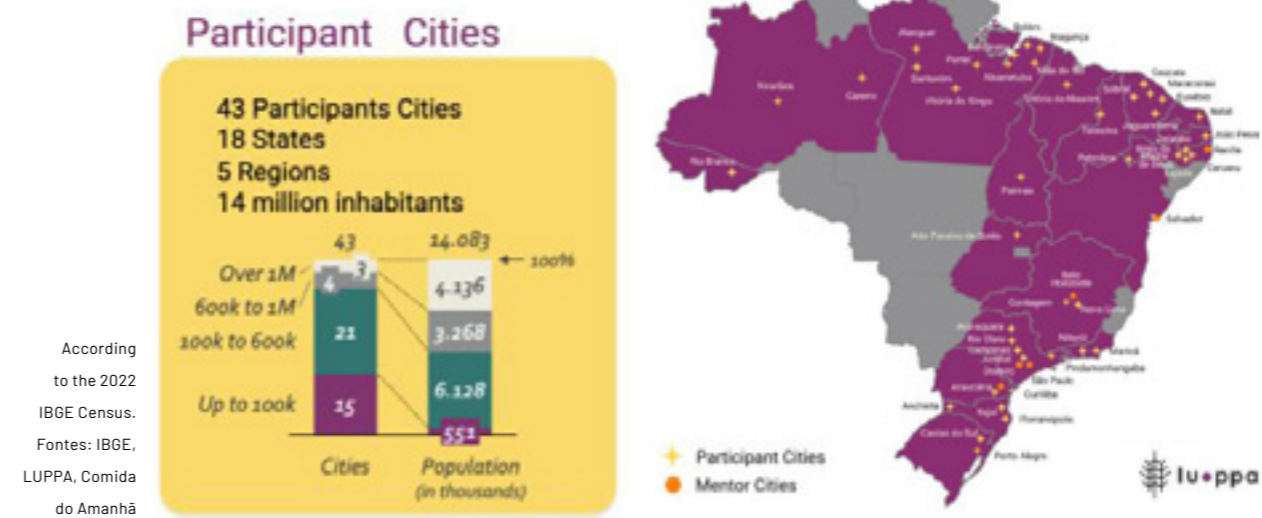
In Brazil, a civil society-led programme is supporting municipalities in medium-sized cities to advance local food policies and local food strategies centred on a food systems approach. Its work includes designing urban and peri-urban agriculture policies, enabling inclusive governance, and highlighting the connection between food and climate at local level.

The programme, called Laboratório Urbano de Políticas Públicas Alimentares (LUPPA, Brazilian Lab on Urban Food Policies)¹, launched in 2021. It comprises more than 40 municipalities and is designed to help both local public authorities and local food policy council members to foster the participatory and inclusive approach of urban food systems governance. LUPPA is guided by four principles:

- i) an intersectoral approach;
- ii) political commitment;
- iii) social participation in policymaking;
- iv) mutual learning.

LUPPA is both a capacity-building and a knowledge-sharing programme, and a platform for information and best practices on local food policies. It also has networking and support functions. It is led by civil society organization Comida do Amanhã, in partnership with ICLEI South America, and supported by philanthropy organizations. In 2023, LUPPA was acknowledged by the United Nations² and IPES-Food³ as an innovative programme to accelerate food systems transformation.

LUPPA activities are carried out in annual cycles called 'LUPPA editions'. Each edition begins with a call for 10 new



LUPPA's Participant Cities Source: LUPPA



Participants of 3rd LAB Edition. Credit: Joka Madruga, Comida do Amanhã

cities of up to 1.5 million inhabitants, four of which should be located in the Amazon region. The selection process aims to identify local governments that are committed to the food agenda, whilst including the greatest possible territorial diversity in Brazil.

The 12-month edition includes interviews and food systems rapid assessment with representatives of each local government, monthly webinars offered by LUPPA's expert partners, and immersive LAB workshops where attendees work intensively on the laboratory's activities. In addition, there are bimonthly virtual workshops, along with mentoring workshops for small groups, each led by a mentor city, for peer-to-peer cooperation.

All LUPPA cities' policy experiences are being analyzed and encouraged through a systemic approach. Moreover, LUPPA activities are designed to support and facilitate the development of local food policies and local food strategies. These are oriented to ensure resilient and democratic food systems, through systematic mapping and strengthening of governance. In short, LUPPA is a laboratory that facilitates peer-to-peer cooperation and mutual learning, rather than a course or education programme.

Outcomes to date

During its three-year journey, LUPPA has identified several good examples of local food policies and food policy innovation, and has paved the way for a deeper transformation in public management culture of food-related policies at city level within Brazil.

One example of **conservation of agrobiodiversity and cultural aspects of food** connected to **bioeconomy** comes from Alto Paraíso de Goiás (Brazil central area), where public procurement and smart school menu design are increasing the use of local produce, especially fresh fruits and vegetables, meaning they are no longer restricted to a narrow list of foods and specific recipes. Another example is Vitória do Mearim, partially located in the Amazon

Biome, where the babassu coconut breakers – usually marginalized female workers – have organized themselves into a women's cooperative for the collection and low-level processing of tropical forest food. The cooperative is supported by the municipal administration, which encourages the local preservation of genetic plant heritage through annual donations and the distribution of creole seeds.

Food policies with **gender perspectives** are also encouraged to address food systems challenges and inequities. Abaetetuba, in the Amazonian region, runs a programme that connects women farmer beneficiaries of the federally-funded Food Acquisition programme (PAA)⁴ with women living in the urban areas of the city. The women work together to create urban vegetable gardens within the city squares. The city's agroecology network is focused on women, emphasizing their role as keepers of medicinal and edible plants.

LUPPA cities also promote local **urban and peri-urban agriculture policies**. In Jundiaí, in São Paulo State, the Vale Verde Project connects local food production on public land with food and nutritional education programmes. It is a partnership between the municipality, a local university and a local NGO. The municipal vegetable garden produces certified organic food for school meals, and since 2018 has started producing native edible plants for healthier school food.

Local development is encouraged in many of the above examples, but is also driven by initiatives focused specifically on this topic. In Barcarena, in the Amazonian region, the local government has a municipally-funded food acquisition policy that promotes production chains and has created public facilities for local trading of surplus food production. These mechanisms are aimed at strengthening family farming, which makes a significant contribution to the local economy. In Palmas, capital of the state of Tocantins, also in the Amazonian region, the

decentralized trading of food takes place through mini-markets in the neighbourhoods, which act as low-cost food supply and distribution centres. These street markets work in partnership with the Municipal Department of Agriculture to trade food produced in the urban area. There is a municipal project to drive the urban expansion of Palmas with the design of community vegetable gardens as a guiding element of urban planning.

Lessons learned

Based on the experiences of three editions, LUPPA has identified a number of lessons.

- **Agroecological and food sovereignty agendas** are tools to attract young people to urban and peri-urban farming. Virtually all cities point to the challenge of retaining young people in the practice of food production, whether in rural or urban areas.
- A **gender perspective** should be incorporated into the design of local food policies, through developing municipal food system programmes and initiatives that value, prioritize and highlight the role of women.
- There is growing concern about **agrobiodiversity preservation, and increasing attention to the bioeconomy** and the **'standing forest' agendas**. These can be incorporated into the design of policies that are aimed at the creation of socio-biodiverse school menus, seed banks and the appreciation of local and regional cultures.
- Coupled with the reduction in federal budgets for the main structural programs to address hunger (between 2019 and 2022), the Covid-19 pandemic drove municipalities to increase their food security agenda and launch **food security resilience mechanisms**. These included a notable growth in food security programmes such as public kitchens and restaurants, as well as food banks and even municipally-funded food procurement programs, based on the national PAA design.
- As a response to the drastic cuts in national PAA in previous years and the loss of real value in the budget of the National School Feeding Programme (PNAE's budget)⁵, some municipalities were unable to support local production through public food procurement. Instead, they developed **initiatives to promote and support trading and distribution of local production** through municipal and street markets, as well as to increase the value of local production through technical assistance and low-level food processing. These supportive policies, aimed at local family farming, were also used in municipalities that managed to keep public food procurement (either through increasing the local budget to complement the federal budget of PNAE or by launching municipal funded food procurement programmes). Promoting trade and adding value to local produce has historically lacked emphasis in Brazilian

public food procurement structures, and interest is also clear in the municipalities with less rural areas and with a strong presence of urban and peri-urban agriculture.

- The 2023 change of political direction in the federal government, as well as the announced reform of the National Food and Nutrition Security System (SISAN)⁶ and launch of updated national Food and Nutrition Security (FNS) strategies, had a cascading effect on municipalities. Even in cities that had already joined the national SISAN (with an enabled food policy council and scheduled food policy conferences) the **opportunity for the agenda to regain prominence at the federal level** has boosted the activities of municipal agencies and councils. LUPPA's 2nd edition showed a clear leap in interest in enabling municipal participatory governance structures and even in joining and renewing membership in the national SISAN.
- One issue that is raised very often by LUPPA attendees is the need to institutionalize food policies in order to detach programmes from specific governments or political will. Food policies should be seen as the state intervention for guaranteeing the right to food. During the 2nd edition, it was observed that local authorities have acknowledged and acted for the **institutionalization of political agendas**, mainly through the adoption of legal frameworks and coordination and coherence-building of several food-related public initiatives.
- As a consequence of acknowledgement of the need of building food policy coherence, there has been a growing interest in **developing strategic FNS strategies**. Many LUPPA cities are already taking their first steps in this direction.
- Initiatives to fight food insecurity are more politically convincing than initiatives aimed at tackling the roots of the food system failures and connecting to the climate and sustainable development agendas. Nonetheless, the 2nd edition showed that local authorities are keener to identify these broader connections and to **commit to a more integrated and unified vision of the urban food agenda**.

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Two inspiring experiences from LUPPA

Santarém

Santarém, located in the Amazon/North region of Brazil, is advancing its city-level food policies from a food sovereignty approach. It is an interesting case for assessing the linkages between food policy and public land management, through a systemic perspective. The municipal government has been creating and strengthening ties with local producers and encouraging sales to public procurement programmes from local family farms, to increase the income of communities and give students access to healthy food.

The following achievements have been made towards improving access to decent and balanced food for the most vulnerable populations in the municipality:

- i) the continuous implementation and expansion since 2005 of PAA;
- ii) establishment of the public restaurant in 2014, which provides free meals made with produce purchased from local family farms;
- iii) school meals provision through the PNAE, considered by the local government as an opportunity for local development, the retention of the rural exodus, for food sovereignty and food and nutrition education.

The City Hall also supports an annual gastronomic festival, *Cozinha Tapajós*, which promotes local biodiversity in food. In addition, equipment for the Support Unit for the Distribution of Family Agriculture, which features a cold room and provides a logistics centre for the farmers' cooperatives, was funded by federal support in 2017.



Fish Market in Santarém. Credit: Gustavo Porpino

Maricá

Maricá, a coastal city in the metropolitan region of Rio de Janeiro, was originally a food producing and fishing city. Currently, one of the main territories for offshore oil extraction, the city has recently experienced a huge expansion due to the oil and gas industry. Local authorities have now committed to Food and Nutrition Security (FNS) policies, with a focus on boosting agroecological production within the municipal area.

In terms of FNS governance, the municipality has a food policy council (CONSEA), a multidisciplinary agency of policymakers for food policy (CAISAN), and a legal framework for FNS, and is currently in the process of developing a legal framework for agroecology in the city. The municipality is pushing for the design of a better local food system and to ensure the right to food for all.

The PNAE in Maricá is a success, with nearly 100% of school meal procurement from family farmers, promoting local and agroecological agriculture. The municipality supports local farmers and fishermen in obtaining necessary certifications for municipal tenders. Prioritizing local development and empowerment, Maricá has a social protection programme linked to the *Mumbuca* income transfer programme, a social currency aimed at mitigating severe food insecurity and accepted in various local markets and public facilities.

Innovative public facilities in Maricá include the Public Farm, which supports local farmers and the university in promoting agroecological production for schools and restaurants. The farm features a training unit and a municipal apiary. Additionally, the municipality operates a banana and cassava dehydration plant to ensure stable sales and prices for family farmers, reduce waste, and extend product shelf life. Maricá's urban agriculture and agroecology initiatives, managed by the Sustainable City Department, include fruit tree-lined streets, edible gardens, composting, and agroecological squares. The municipality also preserves indigenous heritage through initiatives like the municipal seed bank.

Public initiatives to improve urban agriculture in Brazil

Kelliane Da Consolação Fuscaldi
Marcel Garcia De Souza
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In Brazil, the Ministry of Social Development and the Brazilian Institute of Information in Science and Technology (IBICT) have been developing an online platform to promote public volunteering in urban agriculture activities. The digital open access platform was launched in June 2022, and has been a driving force for behavioural change in Brazilian society to help communities become more sustainable and less vulnerable.

The platform covers the cities of Brasília, São Paulo, and Rio de Janeiro, and is expected to encourage people to volunteer, contribute to the educational process in urban farming, raise awareness of how food is produced and to disseminate information about where urban agriculture is practiced and how people can improve sustainability in their neighbourhoods.

Background

Until the 1970s, there was not much disparity between the number of residents living in urban and rural areas of Brazil. Over the years this situation has reversed and, currently, most of the Brazilian population lives in urban spaces (see Figure 1).

Data from the Brazilian Institute of Geography and Statistics¹ show that in 2010 84% of the Brazilian population lived in cities. There is particularly high population concentration in the main cities of the country;

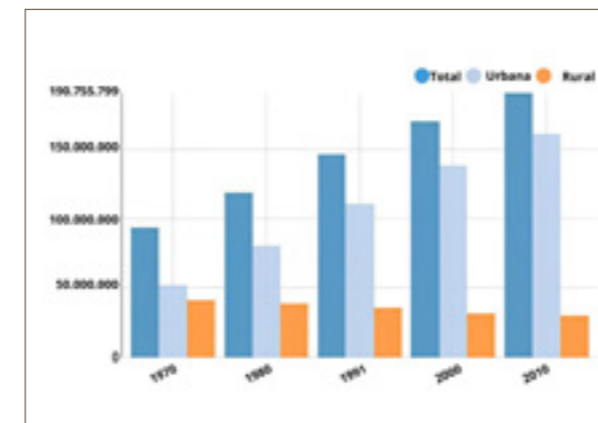


Figure 1. Brazilian urban population versus Brazilian rural population. Source: author

populations living in Brazil's state capitals increased from 29.2 million inhabitants in 1980, to 45.5 million in 2010. In 2017, 23.8% of the Brazilian population – 49.7 million people – were living in the state capitals.

This status quo creates serious concerns over food and nutritional security for the population, and sustainable development of the country. Brazil is committed to promoting sustainable development through the interrelated Sustainable Development Goals (SDGs) of the United Nations 2030 Agenda², which include (among others): poverty eradication; zero hunger and sustainable agriculture; health and wellness; sustainable cities and communities; and responsible consumption and production. These goals are directly related to the objectives of this work.

According to the Ministry of Health³, in the last decades Brazil has undergone several political, economic, social and cultural changes, which caused a rapid demographic, epidemiological and nutritional transition. The Ministry points out that, despite the reduction of child malnutrition, micronutrient deficiencies and chronic malnutrition still prevail in vulnerable populations. At the same time, the country has seen a significant increase in overweight and obesity in all age groups.

One of the strategies to influence eating behaviour is promotion of urban agriculture in different territories and spaces, providing food and nutrition for local communities. This kind of production can be practiced in and around cities, making it possible for people to produce their own food and to promote shared work actions, offering access to high quality food at a reduced cost for the community.

Open science

This programme has followed, since its beginning, the principle of open science. Open science optimizes the entire process of creation, transference, and use of universal knowledge.

The open science movement proposes to share scientific information (research data, complete scientific papers, research notebooks, free software, etc.) with the community, civil society, and companies, enabling the use and reuse of the information for scientific purposes. The pillars of the open science movement – all of which were adopted for this research – are: open access, open data and citizen science. Citizen Science – i.e. applied science with the contribution of anyone interested in a particular subject – was particularly helpful.

The platform's axes

The initial scope of the project was based on three axes:

- I. Development of a digital platform with a structured database for organizing information and mapping of existing and potential urban green areas for planting and cultivation;
- II. Construction of a distance education platform with a view to promoting online training in urban agriculture and volunteering; and
- III. Creation of a platform for managing volunteer actions in urban agriculture.

As research project activities got underway, the team realized that a content tool was needed that included news and information related to urban agriculture in the participating cities. This realization led to the inclusion of a fourth axis:

- IV. Development of a digital library on urban agriculture.

Figure 2 shows the arrangement of the axes on the platform.

Development of a digital platform

The database that supported development of the platform included the following socioeconomic indicators:

- Gross Domestic Product
- Agricultural revenue
- Level of occupation
- Registration of employees
- Family income
- Education level
- Population
- Municipal human development index
- Gini index
- Vulnerability index

This set of indicators was consolidated through the Open Observatory System for Information Visualization (VISÃO), developed in open code by the IBICT, and maintained by all public bodies responsible for their data.

The main objective of this axis is to map and make available, through an interactive map, official information

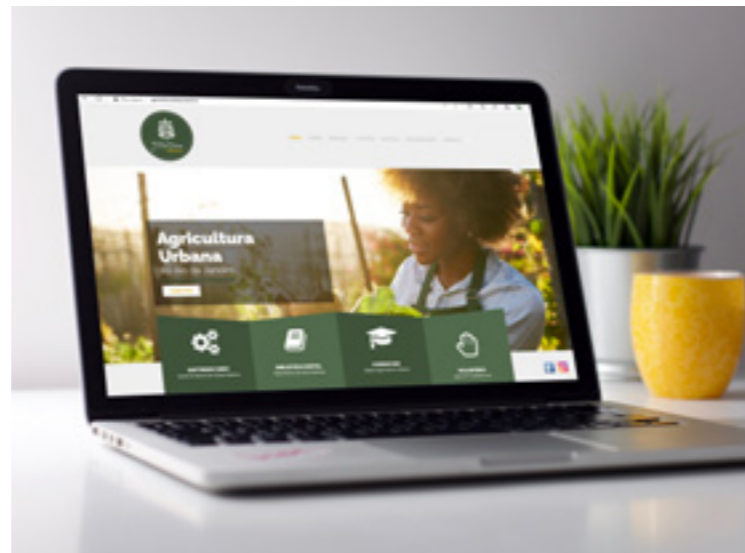


Figure 2. The platform's axes. Source: Brazilian Ministry of Social Development

produced by Brazilian public institutions to support decision making and the construction of public policies. The methodology followed the rules of spatial analysis in geographic information system (GIS) environments, for which digital files are assembled and cross-referenced to provide integrated results.

Construction of a distance education platform

Distance education is growing rapidly around the world, driven by the rise of new technologies and changes in the profile of students. New teaching and learning methodologies have been introduced. The use of e-learning tools and virtual learning environments has made learning a new discipline more accessible.

To provide free courses that are easy to access and understand, six Learning Management Systems (LMS) were thoroughly analyzed: AMADEUS, E-PROINFO; EUREKA, MOODLE, TELEDUC, and WEBCT.

The qualitative and comparative analysis included an evaluation of the interfaces, as well as the resources offered in these virtual learning environments, with the intention of providing evidence of functionality, utility, usability, and relevant pedagogical concepts for choosing the tool.

It was found that the Moodle tool outperforms competitors, obtaining the highest score across all parameters. Therefore, Moodle was selected as the delivery tool for the following courses, which were built by scholars:

- Volunteering in urban agriculture
- Fundamentals of urban and peri-urban agriculture (UPA)
- Urban agriculture principles and practices
- Social and cooperative organization in UPA practices
- Agroecological techniques in waste management and composting for UPA

- Soil and water management and conservation in UPA practices
- Microclimate analysis applied to UPA
- Phytogeography and phytosociology for UPA
- Technical principles of agroecological production in urban gardens

Platform for managing volunteer actions

Volunteer programmes are increasingly well-organized and define the rights and duties of the people who perform this service, including working conditions, codes of conduct, internal regulations, policies, premises for participation, and determination of responsibilities.

The volunteer platform was designed to encourage people to carry out different types of activity related to urban agriculture – such as, supporting the production and the organization of the garden; contributing to the educational process, including food and nutritional education; sharing activities within the community; and identifying entities that can provide some kind of support.

Digital library of urban agriculture

There has long been talk of transformations in libraries, due to the changing social context. Since the emergence of the computer, the processes, services, and organization of collections have been carried out in an automated way, giving rise to the digital library – a model that is not necessarily linked to a physical space.

Libraries and other information units have benefited greatly from the Internet, enabling them to fulfil their role in society more efficiently. Libraries have started to act according to a new paradigm that privileges information over the document itself, access instead of possession, and not being limited to the place or opening times that often served as obstacles for users in obtaining the desired information⁴.

As a strategy for the dissemination of scientific and technical documents, digital libraries have been increasingly used by government agencies and authorities to increase the transparency of their activities and disseminate scientific knowledge, as well as information of public interest.

To this end, the digital library on urban agriculture was created to provide researchers, public administrators, and the population with information on food growing in urban areas.

The library, defined as an information system, gathers legislation, news, and results of scientific research on urban agriculture, among other data. Its purpose is to contribute to the definition and implementation of public policies aimed at supporting urban agriculture.

Lessons and directions for the future

The promotion of urban agriculture, especially in large

cities, can be an alternative to improving the supply of fresh food to provide a healthier and more nutritious diet, especially for people living in socially vulnerable situations. It is possible to use food waste to produce compost for planting areas, thereby contributing to sustainable waste management.

From the moment the government encourages the creation of vegetable gardens in urban areas and people realize that they can be involved in producing their own food, there is social, environmental, and economic gain.

In addition, with access to information and proper management, people understand that they do not have to do the construction and maintenance alone, but others tend to join them. People are interested in contributing to make it work for their community. Participation in urban agriculture is also a simple way of generating and transmitting practical knowledge and boosting the quality of the lives of the people involved.

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More information

The digital tools are available at <https://www.gov.br/mds/pt-br/acoes-e-programas/ acesso-a-alimentos-e-a-agua/ programa-nacional-de-agricultura-urbana-e-periurbana>

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Mapping a greener future: how GIS enhances urban agriculture initiatives

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Laura Thomas
Emily Hastings

A bespoke GIS model developed by Virginia Commonwealth University and the City of Richmond, Virginia, USA is enabling identification of optimal sites for urban agriculture while supporting decision-making and funding bids. The data-driven approach may be adopted by other cities to create urban agriculture projects that are not only viable and productive but also equitable and sustainable.

Before the first seeds are planted, urban agriculture initiatives must often confront a series of challenges. These hurdles, including site selection and securing funding to make operations viable, are crucial in the early planning and development stages of such projects. One especially significant advancement aiding these initiatives is the increased availability of, and access to, data and their integration with Geographic Information Systems (GIS). The rich, data-driven insights provided by GIS technology offer both a compelling narrative for funding proposals and an empirically informed basis for guiding the decision-making of jurisdictions, land trusts, and farmers.

GIS models are advanced tools that enable the analysis and visualization of spatial data through multiple layers. These layers can include a wide range of information, such as environmental characteristics and demographic data. By overlaying datasets, GIS models allow for the examination of complex relationships between various factors. This integration can help in identifying locations that optimize agricultural potential, while also considering environmental sustainability and social equity. This process both enables streamlined site selection and ensures that the chosen sites align with broader goals, such as reducing food deserts and promoting equitable access to green spaces.

Urban Land Evaluation and Site Assessment in Richmond, Virginia

The City of Richmond, Virginia, in the southeastern United

States has recognized the critical role that GIS and spatial modelling can play in enhancing the sustainability, equity, and effectiveness of urban agriculture. In early 2023, Richmond began working with a research team from Virginia Commonwealth University to develop a bespoke GIS model aimed at identifying optimal sites for in-ground farming within the city. This model is called Urban Land Evaluation and Site Assessment (uLESA).

To ensure a comprehensive and inclusive approach to project development and implementation, the process included collaboration with a wide array of local stakeholders, including officials from the both the City's Office of Sustainability and Parks Department, local land trusts, individuals from the non-profit and private spheres, and farmers (both current and potential).

The Richmond GIS model is designed with a multifaceted approach to enhance urban agriculture while prioritizing environmental conservation. It integrates various data layers that encompass broad environmental and land management considerations. This ensures agricultural initiatives are aligned with sustainability goals by steering clear of ecologically sensitive zones. By assessing general land characteristics, such as land and environmental factors, the model facilitates the identification of sites best suited for agriculture. It takes into account the ecological footprint of potential agricultural locations,



Figure 1: Draft web map for communicating model results to city officials and local stakeholders. Source: Andrew Cameron

emphasizing the preservation of natural habitats and minimizing adverse impacts on the environment. Additionally, it evaluates land attributes critical for farming success, such as soil quality and topography, to ensure chosen sites are conducive to high agricultural productivity.

A key aspect of the Richmond initiative is its ability to identify the best potential sites with an eye towards enhancing social equity and accessibility of urban agriculture. GIS makes it possible, for example, to assign higher model scores to areas that are more than a 10-minute walk from either a grocery store or farmer's market, or to those areas that experienced historical 'red-lining', the discriminatory practice employed in the US during the mid-20th century that denied banking and home loan services to residents of certain areas based on their race or ethnicity. By prioritizing areas identified as having low food access and high social vulnerability, the GIS model aims to direct urban agriculture projects toward communities that have historically experienced under-investment and discrimination and thus stand to benefit the most from urban agriculture initiatives.

An important goal of this project is to effect changes to existing zoning policy and land use designations. These are viewed as fundamentally mutable characteristics of the study area, and so are not considered by the model in identifying optimal sites. Instead, land use and zoning are incorporated only after the model has identified optimal

sites. By focusing on physical and social factors, uLESA provides a compelling basis for policymakers to modify zoning laws in a way that facilitates and encourages urban agriculture projects.

GIS to support decision-making

GIS technology has advanced with remarkable speed over the last decade. Modern web-mapping tools and applications make it possible to create a dynamic interface that can be used to communicate information to local officials, non-profits, farmers, and interested community members. Such interactive web maps enable the visualization of data that has the potential to directly impact decision-making and project planning. This accessibility is important for fostering a collaborative approach to the implementation of urban agriculture, ensuring that initiatives are not only strategically aligned with the best available land but also resonate with community needs and desires. The ability to easily share and update this information promotes transparency, encourages public participation, and facilitates informed discussions. Figure 1 shows a draft version of the web map for this modelling.

Richmond's uLESA model shows the role of geospatial analysis in urban agriculture. By integrating detailed insights into land use compatibility, environmental impacts, and community needs, uLESA empowers planners and stakeholders to make informed decisions that enhance productivity, sustainability, and equity.



Figure 2: Infographic to visualize the broad structure of the uLESA model. Source: Maggie Colangelo

By leveraging GIS for evidence-backed proposals and pinpointing the best sites, uLESA can also significantly strengthen funding applications, showcasing each project's feasibility and thoughtful execution while ensuring site choices that optimize outcomes.

Likewise, the data-driven results of this kind of GIS modelling can aid land trusts in site acquisition, as evidenced by the uLESA model recently being used in support of a local land trust's efforts to identify and begin the process of acquisition of easements in a neighbouring political jurisdiction.

GIS for the future

This case exemplifies how GIS can and should play a central role in the planning and implementation of urban agriculture projects. By facilitating informed decision-making around site selection and project development, GIS enables urban agriculture initiatives to achieve their full potential. The on-going work in Richmond highlights the possibilities for other cities to adopt similar data-driven approaches, leveraging the power of GIS to create urban agriculture projects that are not only viable and productive but also equitable and sustainable.



An engagement meeting in March 2024 at which the researchers sought feedback and input on the web application, its potential uses, and the model in general, from local farmers and potential farmers. The meeting was also attended by local city officials and representatives from the United States Department of Agriculture, Virginia State Extension, Virginia Department of Agriculture, and local land trusts. Credit: Laura Thomas

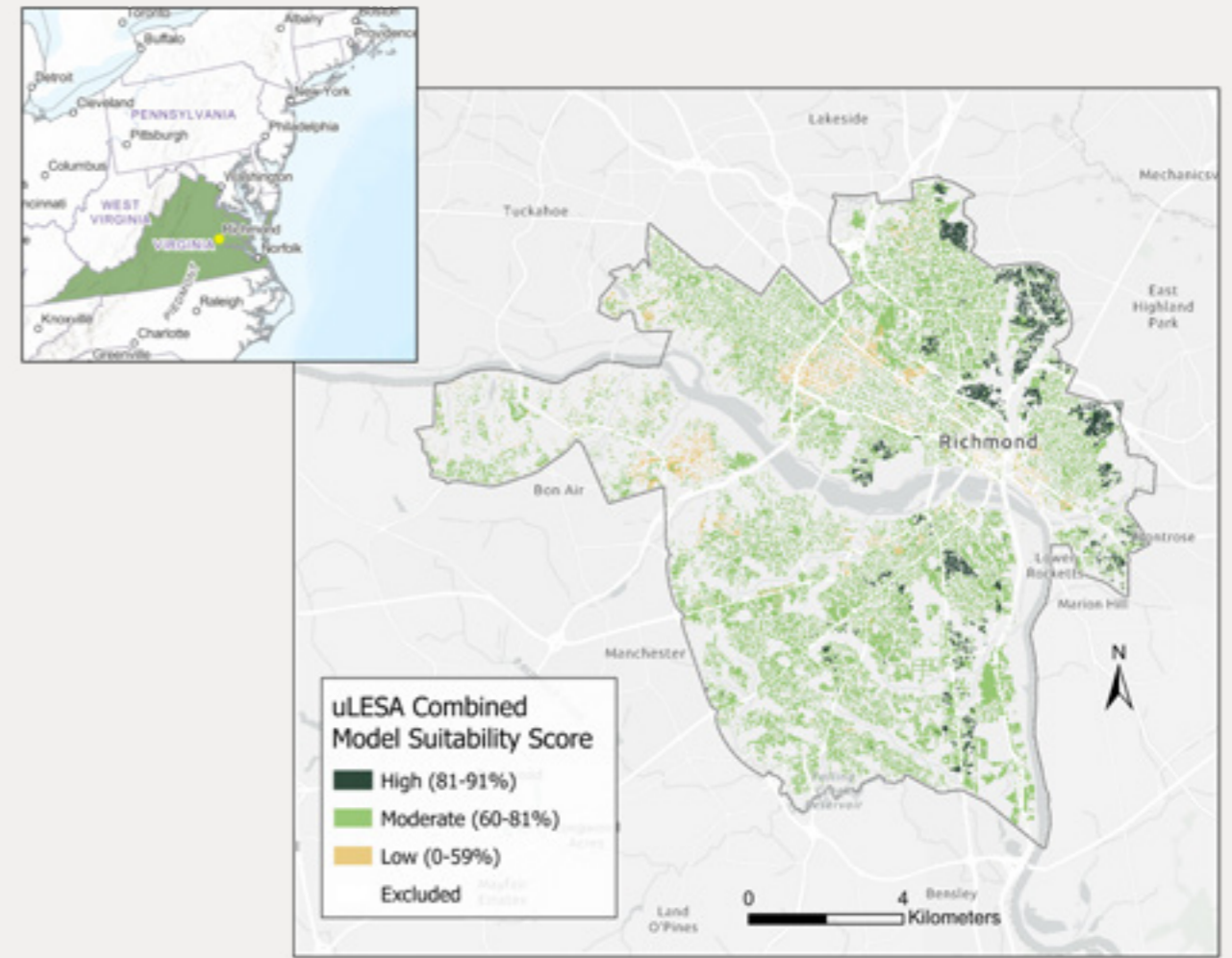


Figure 3: Map of Richmond, Virginia with uLESA combined model scoring overlaid. Inset map shows the location of Virginia within the United States (indicated by green) and of the City of Richmond (indicated by yellow dot). Source: Andrew Cameron

This integration of technology, environmental stewardship, and community engagement provides a blueprint for the future of urban agriculture, demonstrating that, with the right tools and collaborative approach, cities can cultivate greener, more resilient, and more inclusive urban landscapes.

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More information

RVAgreen 2050 <https://www.rvagreen2050.com/>
Cultivating Cities <https://rampages.us/cultivatingcities/>

Improving gender-focused policy in urban and peri-urban agroecological agriculture in São Paulo

Laura Martins de Carvalho
Márcia Tait Lima

This article highlights the gaps relating to gender in urban and peri-urban policies and programmes of São Paulo City Council, through showing the many forms in which black and indigenous women engage in and promote horticultural activities related to their ancestral heritage. The outcomes are far greater than merely food production, and include developing cultural resistance and combating violence against women.

Policies and programmes

In 2022, São Paulo City Council launched the *Sampa+Rural* programme, which includes a list of actions to strengthen and expand urban and peri-urban agriculture. In the same year, it also launched the Municipal Plan for Agroecology and Sustainable Rural Development 2023-2031, which incorporates actions from all relevant areas of city governance. The plan was developed by the Municipal Council for Solidarity and Sustainable Rural Development (CMDRSS), comprising representatives from the public sector and members of civil society.

The development of the plan began in 2018 through a series of thematic workshops with urban farmers, social organizations and civil society members who were involved in agricultural activities, with the aim of guiding discussions taking place within the technical teams. The plan outlines actions for economic inclusion and incentives to promote the growth of agroecological activities within the city, thereby enabling better working conditions for urban and rural family farmers across São Paulo. Through exploring 16 different themes, the



Women dancing in a RAPPa meeting in the community garden É Hora da Horta, October 2023. Credit: Laura Martins de Carvalho



Creole seed corn, July 2023. Credit: Laura Martins de Carvalho

document presents strategies to be implemented, and goals to be achieved, over the next 8 years.

Women in urban agroecological farming

Since 2018, women community gardeners have taken a leading role in promoting urban agroecological approaches in peripheral regions of São Paulo, culminating in the formation of the *Rede de Agricultoras Periféricas Paulistas Agroecológicas (RAPPa)*. RAPPa is a self-managed network of agroecological and urban fringe female farmers that has also helped to trigger a process of emotional and psychological recovery from domestic violence and foster economic emancipation of women. This has resulted in profound transformations in the lives of female urban farmers, who were previously exposed to violent situations, structural oppression, poverty, and often placed in vulnerable circumstances^{1,2}.

The activities undertaken in the community gardens, and the participation of the women in the network meetings, led them to a better understanding of the multiple forms of violence and oppression to which they were exposed on a regular basis. Furthermore, the women's participation facilitated the formation of a collective identity based around a popular feminist ideology, in which the participants identified themselves through the circumstances that they collectively endured. These included situations within their own homes involving male partners, difficulties faced with accessing land, and difficulties with the management of the community gardens. Additionally, these women had to deal with organized crime groups and many other factors that posed a threat to their existence and emancipatory activities^{1,2}.

Nearly all the women involved are descendants of African populations and native indigenous people who have

perpetuated a wealth of knowledge and traditional agricultural practices carried down through the generations. Horticultural activities have a significance that goes far beyond food production; they also represent a revival of ancestral knowledge that has been historically suppressed, and that now can emerge.

Indigenous women cultivating resistance through agriculture

The *Guarani-Mbyá Kalipety* indigenous village – part of the indigenous territory of Tenondé Porã in the southern region of São Paulo – is currently part of a community-based ecotourism programme organized by the São Paulo Tourism Board. Through this programme, tourists visit the village and learn about the Guarani people's resistance history, their culture, way of living, and land cultivation systems.

Until the 1970s, this village was home to Guarani families but it was predominantly used by non-indigenous squatters for the cultivation of eucalyptus. Today, eucalyptus trees are still strongly evident in the landscape, with the timber being utilized for house construction. However, the community is gradually replacing excess eucalyptus trees through the planting of native Atlantic Forest species, thereby demonstrating a commitment to longer term environmental preservation.

When tourists arrive, the female leader of the village regularly invites them to the Casa de Rezo (House of Prayer), where she introduces the community's ongoing path of resistance, which has often been defined through the collective struggle for land and cultivation rights. She explains the challenges of representing women's interests within otherwise patriarchal chiefdoms – but also emphasizes that indigenous politics is imbued with



The female leader of the Guarani-Mbyá Kallipety village talks to a group of tourists, July 2023. Credit: Laura Martins de Carvalho

spirituality, the cultivation of feminist resistance and the organization of the village through horizontal decision-making processes, in which all members of the village are granted an equal voice.

From indigenous education to agriculture, the female village leader has sought to regenerate the collective culture across the whole community through the adoption of agroecology and agroforestry principles. Consequently, 50 types of *jety* (Guarani sweet potatoes) are now cultivated, having been rescued through a series of exchange trips to Guarani villages in different regions of Brazil and Argentina. The community also grows a type of creole seed corn, which also provides links to ancestral heritage traditions.

Analysis

An exploratory analysis of the Municipal Plan for Agroecology and Sustainable Rural Development 2023-2031 and the ongoing actions of the female urban farmers network and indigenous women in São Paulo has highlighted both the progress and challenges faced by current policies and actions. On one hand, the emergence and consolidation of various policies and actions during recent years demonstrate citizens' capacity for action within their own collectives and women's networks. These groups have proven to be effective for exerting political pressure and facilitating community action, thereby showing the benefits of policies formulated in response to social demands.

On the other hand, the analysis also has revealed the ongoing need for action involving diverse actors from civil society – i.e. black and indigenous women – with mediation by the government, to create policies that meet the specific needs of these communities and their territories. These actions are crucial for strengthening the promotion and mainstreaming of policies that have already been developed and implemented, thus ensuring a more comprehensive and inclusive approach.

Specifically, there is a need to incorporate an intersectional feminism and equity-based approach, especially regarding environmental and agricultural issues in urban and peri-urban areas and along rural-urban interface.

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Empowering female youth through urban agriculture in Kampala

Christopher Burke

Urban agriculture is burgeoning in Kampala, Uganda. Through a pilot project with 20 girls and young women, the local non-governmental organization (NGO) WEHAT aims to address the pressing challenges of unemployment and economic disenfranchisement among young women through capacity building in urban gardening. The project promotes food security and economic empowerment, and fosters community resilience and environmental sustainability.

Kampala is a thriving metropolis with almost two million people in the inner city. Greater Kampala and its environs have a population of over 10 million. It is primarily a subsistence economy characterized by limited resource availability, informal economic activities, self-sufficiency, barter and informal exchange. Public services are poor or non-existent.

The group, aged from 5 to 23 years, focuses on cultivating a range of vegetables such as lettuce, cabbage, tomatoes, onions, kale, spinach, potatoes and bananas. The majority of these crops can be harvested within a relatively short period, around 45 days after transplanting. The project emphasizes the use of good quality F1 seed stock. The

seedlings are raised in nurseries and transplanted into bags and plastic containers for efficient space utilization and better control of soil nutrition.

The project provides training on urban agriculture techniques suitable for small spaces covering various aspects, including soil preparation, crop nutrition, pest and disease management, pre- and post-harvest handling, market identification, and marketing strategies.

Overcoming obstacles

Scaling is a critical factor in making urban agriculture economically viable. Victor Lubega, a trained agronomist from Afrifruits, an investment company supporting the project, highlights that one of the biggest challenges is the need to expand urban and peri-urban agricultural practices. To overcome this challenge, collaboration and innovation are essential.

Catherine Nakato, CEO at KABConsult, an agri-business consultancy firm providing technical support to WEHAT, describes the lack of capacity and available land as major obstacles. She argues that a change in mindset is necessary to realize the economic potential of urban agriculture. Nakato stresses the importance of demonstrating the economic viability of urban agriculture and raising awareness among the population. Urban agriculture is growing across Kampala, driven by the increasing population and the need for food security.

To strengthen the sustainability of urban agriculture, the project aims to train community members to reach the necessary scale required by market demand. This involves raising seedlings and selling surplus produce to generate income. Water scarcity poses a significant challenge. Access to readily available water is limited and purchasing water is expensive. The project promotes water conservation and management techniques. Beneficiaries



Planting seedlings. Credit: Christopher Burke

are taught techniques such as harvesting and reusing runoff water from roadsides, using natural filters in vegetation for water purification, and establishing water reservoirs to collect rainwater.

Diverse impacts and outcomes

The urban agriculture project in Kampala serves as an example of innovation, collaboration and empowerment, showcasing the multiple benefits that urban agriculture brings to overcrowded African cities. Providing comprehensive capacity building, promoting food security and fostering economic empowerment among young women, this initiative unlocks opportunities, builds resilience and creates lasting positive change in the community.

The project has had a profound impact on the participating young women. They have expressed their passion for urban farming and their desire to receive training in this field. It equips them with valuable farming skills and instils an entrepreneurial mindset, enabling them to break the cycle of poverty in their communities. By fostering independence, self-sufficiency and leadership development, WEHAT addresses immediate challenges and contributes to the long-term well-being of the participants and community.

Urban agriculture addresses the pressing issue of food security, ensuring that fresh and nutritious produce is



Planting lettuce. Credit: Christopher Burke

available locally. By cultivating crops within the city limits, the project reduces reliance on distant rural areas and mitigates the risks associated with long supply chains. This empowers urban dwellers, particularly marginalized communities, with access to a sustainable source of food, alleviating poverty and improving livelihoods.

The project recognizes the potential of urban agriculture to be a significant source of employment. By equipping young women with agricultural skills and entrepreneurial knowledge, it creates income-generating opportunities along the agricultural value chain across the community. For example, 13-year-old Sharina Owomugisha said her mother “copied the use of growing potatoes in sacks at home”. Beneficiaries have an opportunity to engage in production, processing, distribution and marketing their own produce, reducing dependency on external sources of income and contributing to economic development.

.....
 “Before the project, we very rarely ate greens.”

Tracy Nabalanzi, 16-year-old high school student who aspires to join the Uganda She Cranes national netball team.

Moreover, urban agriculture enhances environmental sustainability in overcrowded cities. By growing food locally, the project reduces the environmental impact associated with long-distance transportation, packaging and storage. It promotes sustainable practices such as organic farming, composting and efficient water management. The emphasis on water conservation and management techniques addresses challenges of water scarcity and offers practical solutions to optimize resource utilization. Since US\$500 (US\$0.13) to fill a 20 litre jerry can is expensive, WEHAT organized a 2,000-litre water tank to harvest water from surrounding rooftops.

The impact of urban agriculture extends beyond the individual participants. It fosters community building by providing shared spaces for interaction, knowledge exchange and collective decision-making. Through community gardens and urban farming initiatives, residents can develop social connections, strengthen cooperation and build resilient communities. Esther Nakidodo, an 18-year-old housewife who lives in the neighbourhood, expressed strong interest in the project. She is eager to become involved and make use of some of the practices she’s seen utilized by WEHAT to sell vegetables and make money.

The project also prioritizes health and nutrition. By cultivating and consuming fresh, locally grown produce,



Harvesting mangoes. Credit: Faith Ariho

participants and the wider community have access to healthier food options, helping combat malnutrition and diet-related diseases. Engaging in urban agriculture promotes physical activity and outdoor engagement, contributing to improved overall well-being. The initiative contributes to waste management and resource efficiency. By utilizing organic waste products as inputs for soil fertility, the project encourages recycling

.....
 “I had no interest in farming before this project. No other business can support me like this.”

Evelyne Katusiime, football coach.

and waste diversion, thereby reducing environmental pollution. General house waste is collected and sorted. Organic products are used for compost and plastic containers are used as pots. This fosters a circular economy approach and promotes sustainable waste management practices.

The project not only creates economic opportunities but also contributes to long-term skill development and

capacity building. The experience provides valuable education and skill development opportunities for young women. By equipping them with agricultural knowledge, entrepreneurship skills and sustainable farming practices, the project empowers participants to pursue agricultural careers or start their own urban farming businesses.

The urban agriculture project in Kampala demonstrates the multi-faceted benefits that urban agriculture brings to overcrowded African cities. By addressing food security, poverty alleviation, employment generation, environmental sustainability, community building, health and nutrition, waste management and education, the project empowers female youth and creates a pathway to sustainable development.

Through strategic partnerships, community involvement and leadership development, WEHAT is now looking to up-scale the project to maximize impact and help address some of the challenges associated with rapid urban growth.

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More information

www.wehatfoundation.com

How city regions can govern urban agriculture for equity

Patrick Baur, on behalf of the JUST GROW Consortium

The JUST GROW Consortium presents a conceptual framework to help city regions view urban agriculture as a holistic governance system, comprising inclusive processes for developing indicators, upstream investment in data infrastructures, and downstream responsibility to act to ensure equity in urban agriculture.

Localizing food production for urban populations promises to shorten supply chains and reconnect producers with consumers, improving sustainability and resilience. This requires technologies that decouple food production from environmental constraints such as seasonal climates and available land base. Proposed systems range from capital-intensive approaches such as vertical farms, to more knowledge-intensive approaches such as urban agroecology. City regions need innovative governance approaches that encompass the full social-ecological ramifications of these systems in order to sustainably and equitably manage the emerging mosaic of urban agricultural activities.

To aid this effort, many cities demand practical methods for evaluating the environmental sustainability, economic performance, and socio-cultural implications of different forms of urban agriculture.

Developing equity indicators

The framework embodies the principle that equity must be intentionally designed into all activities in governing urban



Bitter balls grow at Potter's Community Garden in South Providence, Rhode Island (USA). A popular crop among immigrant communities of West African origin, this member of the nightshade family is also known as a garden egg. Credit: Ann-Kristin Steines

agriculture, beginning with indicators. City planners, policymakers, resident communities, and other stakeholders need timely, trustworthy, and accurate information on how city region food systems change over time. Indicators aid in evaluating progress toward increased equity (i.e. directing the most benefit to the least well-off) and justice (i.e. empowering the most disenfranchised).

Distributional justice for food systems is characterized as ensuring that the benefits and risks of where, what, and how food is grown and produced, transported and distributed, and accessed and eaten are shared fairly¹. Our framework calls for developing indicators for distributional justice that also provide a whole-system perspective, and seeks to ensure that this process itself is equitable by operationalizing procedural and knowledge justice^{2,3}.

Procedural justice refers to flattening hierarchies in who may participate in decisions about the food system, particularly in policy-making, governance, and administration.

Knowledge justice refers to dismantling power asymmetries in who has access to what kinds of information, whose facts and truth count, and who may claim expert authority.

Urban public health is best promoted through participatory approaches in developing “context-specific measures accountable to local needs,”⁴ and by the desire to enhance food democracy⁵. Our framework calls for inclusive processes for designing indicators that actively empower communities, particularly those who have been frequently marginalized in urban decision-making.

While the scope of this article does not extend to specific methods for designing inclusive processes, it may help to organize public deliberation around a preconfigured, yet open, model of how urban agriculture impacts the everyday lives of people in city region food systems. We therefore suggest focusing deliberation on the fair distribution of

distinct types of benefits provided by urban agriculture (Box 1). We developed these categories as a starting point to intuitively invite conversation on multiple functions of urban agriculture, while leaving ample room for communities to specify how and by whom each category should be assessed, or even to redefine categories.

Box 1

Categorizing distinct types of benefits provided by urban agriculture can guide the process of developing indicators for distributional equity

Nutritious food: How well does urban agriculture improve access to and local control over healthy and culturally appropriate food?

Land access: How well does urban agriculture allow all individuals, organizations, and communities to benefit from land by claiming and realizing the capacity to produce food?

Livelihoods: How well does urban agriculture provide fairly-compensated, safe, secure, and dignified employment and livelihood opportunities?

Ecosystem services: How well does urban agriculture enhance positive ecosystem services and minimize negative environmental impacts in city regions?

Sustained food cultures: How well does urban agriculture empower city region residents to sustain diverse and valued foodways and cultural landscapes?

Democratically and equitably choosing indicators is a first step. While food system indicators abound, ensuring that indicators are used to guide decision-making faces two barriers: lack of quality, up-to-date, and appropriate data to inform indicators; and disconnect between indicators and responsibility for acting on those indicators.

Data infrastructure

Data infrastructure refers to the technologies, personnel, and processes required to collect, verify, clean, format, curate, and share information about the state of city region food systems. Developing this infrastructure entails an initial investment of time and resources plus significant ongoing costs. As such, most discussions of food system indicators emphasize using existing data.

However, assuming that the available data is a fixed, exogenous variable to governance both disempowers food democracy and unnecessarily limits the range of what could be known, and therefore what can be managed. Rather than allowing the data infrastructure status quo to determine which indicators to use, ensuring procedural and knowledge justice means that collective decisions about what indicators are desirable should drive the development of data infrastructures.

Clarifying this relationship between data infrastructure and indicators will help city regions understand that they should consider strategically investing in technologies, personnel, and processes that can yield good data on the distribution of important services from urban agriculture. City regions can also pursue opportunities for data democracy, such as citizen science initiatives that enable direct public participation in data infrastructure and proactively supporting urban publics in accessing and utilizing data.

Responsibility for action

Indicators are only useful if they are used to advance the transition toward more equitable and sustainable food systems. We conceptualize how ‘governance networks’ can better construct ‘responsibility for action’.

Policies can establish rights, authorities, mandates, entitlements, and incentives, but require human agency to implement. We see the human agency that sets and implements policies and acts within and upon policy landscapes as a governance network, comprising the various government, business, community, and civil society stakeholders active in ‘steering’ city region food systems.

Scholars and practitioners have critiqued governance networks for being too diffuse to hold specific actors accountable for real outcomes. Without clear roles, boundaries, and accountability mechanisms, powerful interest groups might simply ‘colonize’ and subvert networks. Claims to serve the public interest may be seen as illegitimate or not credible, particularly if governance networks are perceived as beholden to entrenched actors with little interest in rectifying injustices. Our framework focuses on correcting these failings of accountability through the construction of responsibility for action, which describes the extent to which authority to act, capacity to act, and motivation to act in response to a particular indicator all align within the governance network.

‘Authority’ refers to the legally defined role of a particular actor. For example, a municipal department may have legal authority conferred by the executive branch of city government.

‘Capacity’ refers to the resources – financial, human, infrastructural, sociocultural, information – that a given actor can mobilize. A short-staffed, underfunded government agency may thus have authority but lack capacity.

‘Motivation’ refers to the incentives that drive a particular actor to action, which could be legal, political, economic, or normative. For example, a community-based organization whose members live and work near or in urban agriculture may be highly motivated but lack authority.



(Left) Members of the JUST GROW Consortium learn from growers at Potter's Community Garden during a tour organized by Southside Community Land Trust (www.southsideclt.org). (Right) Dan, a staff member at Southside Community Land Trust, and JUST GROW researcher Ann-Kristin Steines learn about the innovative high tunnels used by farmers at Urban Edge Farm to grow culturally appropriate warm-climate crops in this northerly location. Credit: Ann-Kristin Steines

Our framework views responsibility for action as a characteristic of governance networks that can be evaluated, and not just by experts. Importantly, authority, capacity, and motivation do not need to be unified in a single group – responsibility for action may be achieved by a tightly linked cluster of actors within the network that possess complementary attributes and can form a like-minded coalition.

By identifying and visualizing the relationships among individuals and groups in the network, city regions can open up a conversation about who is positioned where and with what influence within the network. This process can be diagnostic as well as prescriptive, for example revealing opportunities for a community-based organization to motivate a city council to use its authority to direct a municipal transportation department to add new bus lines connecting residences with community garden sites.

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Local is as local does: Growing local food in the age of trans-localism

Julian Agyeman
Esther Veen

What are 'local foods'? Are they what should be grown locally according to the predominantly ecologically-focused local food movement? Or are they what our increasingly diverse populations want to grow – or buy – locally as forms of culturally appropriate foods? In this article we argue for the latter, stating that immigrants bring their 'local' foods and cuisine with them, known as 'trans-localism'. Using examples from the multicultural city of Almere, the Netherlands, we contend that urban agriculture can play an important role in making sure that local foods fit the requirements of all local people.

The world's cities have become more multi-/intercultural and their populations more diverse'. As this leads to an increasing range and diversity of food, both grown and in stores, defining what counts as 'local food' is not straightforward: diets, populations and resulting local foodscapes are in a constant state of flux. An example is the Chinese-Indonesian dish 'babi pangang', that is officially recognized as being of Dutch heritage, or 'curry and chips' in the UK.

One way of acquiring culturally-appropriate food for immigrants is via the growing number of popular restaurants that characterize the 'ethnic foodscapes' of our cities. The other is for immigrants to grow this food themselves. By doing the latter, immigrants are challenging and changing the food movement's concept of local food, especially in European and US cities, through urban agriculture. We refer to the process of immigrants literally bringing their local tastes with them as 'trans-localism'.

Local food: inclusive or exclusive?

In literature on alternative food networks, rural development, multifunctional agriculture and food systems transformation, local food systems are often described as (part of) the solution to the destructive tendencies of global capitalist industrial agriculture. Shorter geographic distances between producer and consumer are considered more environmentally sustainable. Moreover, such shorter chains often involve fewer steps between local farmers and their consumers, thereby promoting increased dialogue, trust and mutual understanding between city and countryside. Local food is thus believed to involve ecologically sound agricultural practices, increased support for small-scale family farming, locally-focused economic development, fresh healthy food for the public, and a more holistic

connection between consumer, farmer and the rural landscape. As a result, support for local food systems (such as 'Buy Fresh, Buy Local' or farmers' markets) is perceived as overwhelmingly positive and contributing to sustainability in the Global North.

However, the seemingly benign, even inclusive concept of localism is also associated at its extremes with the darker, exclusive and anti-democratic notion of 'nativism', less so in Europe than in the USA. Nativism promotes, protects, and prioritizes the interests of 'native-born', established inhabitants, over those of immigrants. While not a new phenomenon, nativism received increased support during the anti-immigrant upsurge during the Trump years and is arguably at the heart of the pro-native born 'Make America Great Again' movement².

Moreover, many of the proponents of the local food movement belong to the largely white middle/upper middle class, who can afford to uphold the mantra 'Vote with Your Fork'³. Hence, where low-income populations are mainly looking for affordable healthy food, many local food proponents have the financial room to access niche market organic and local foods, with a common focus on providing ecological sustainability and sustainable incomes for small scale farmers³.

Whose definition of 'local'?

The framing of the local food movement in popular discourse has often confused the outcomes – a more sustainable and socially just food system – with the means that is, the localization of food production and consumption. In other words, the goal of the affluent local food movement has become the creation of a local food system, rather than the creation of a more sustainable and just food system for all, based upon localization. This has been termed 'the local trap'⁵.

We propose that a more sustainable and just food system would use the trans-local, cultural definition of local, driven by observable practices in most cities in the Global North. The medium-sized Dutch city of Almere provides an example. Almere aims to transform its food system to become healthier and more sustainable. Moreover, while a typical Dutch city in terms of socio-demographics, its multiculturalism is atypical. About one in five inhabitants were born overseas, and almost half of the population has a 'migration background', meaning that either they, or one of their parents was born outside the Netherlands. The Surinamese community is particularly large (12% of the population). Other sizeable groups include people with a background from Morocco, Indonesia, the Netherlands Antilles, Turkey, and India. As a result, Almere's diet is highly diverse. Dishes as varied as couscous, roti and curry can therefore be considered local staple foods.

Almere's cuisines

In a number of studies, we interviewed immigrants and their adult children living in Almere. Respondents were lukewarm on 'Dutch food' and considered food from their home countries to be tastier. Moreover, to immigrants food plays an essential role in the cultural, historical, and social traditions that surround food. As their 'foodways' encompass various religious, cultural, and ethnic festivities, these maintain ethnic identities and carry that heritage forward to the next generation.

Respondents stated that the local foodscape offers them most ingredients they need to cook meals from their own cultural background. The product range has improved vastly over the years, illustrating how the influx of people from different countries influences local foodscapes. Importantly, these ingredients are not only bought and eaten by immigrants; dishes stemming from countries with a large diasporic population in Almere are widely embraced. Clearly, Almere's cuisine has moved beyond traditional local products such as potatoes, carrots, and onions.

Trans-locality

Considering that the concept of local food can be misused to propagate exclusionary ideas of who and what belongs, and that immigrants can bring their own local foods into their new localities, we argue in favour of embracing the concept of trans-locality more widely. In that sense we echo Agyekum and Awuh, who argue that food systems planning should take daily food choices into account because these are "tacit expressions of one's ethnic or social orientations"¹. When speaking of local food, it is therefore important to carefully consider what 'local' actually means: the concept of localism should reflect the eating patterns of diverse, contemporary local people.

Trans-locality "deliberately fuses the boundaries of the local in an effort to capture the increasingly complex nature of spatial processes and identities"². Simply put, immigrants bring 'their local' and their food traditions with

them in the form of foodways: recipes, memories, and food provide a grand stage for the celebration of trans-local identities⁴. This happens everywhere in the world. Almere is a clear example; another is Filipino immigrants in San Diego, California, who also carry with them the idea that Filipino food is local food, which they cook at home or eat in restaurants. They also exercise this trans-localism when they tend their fruit and vegetable gardens⁵.

Flevo Campus: trans-locality in practice

Research institute Flevo Campus is bringing trans-locality into practice. Teaming up with local businesses, it has hosted several experiments in which locally-grown wheat (not suitable for baking bread) was used to create a range of typical Indian batters, a tempeh and a tortilla. Using locally-grown crops, and in cooperation with local chefs from non-Dutch backgrounds, the institute also designs products to fit specific ethnic cuisines, such as a potato sambal and a sopropo chutney.

Producing (new) foods to fit specific ethnic cuisines not only caters to local immigrant communities, it also helps in discovering new ways of working with locally grown crops, or in learning about crops that – while uncommon – can be locally grown.

Growing local food for local people

One way to perform trans-locality is through urban agriculture; when urban residents grow their own food it is, by definition, local. Growing local food can be specifically important for immigrants, as access to products that are part of one's normal diet can help immigrants to create a home in a new place. There are numerous cases of urban agriculture projects, such as community gardens, around the world that cater to, or are mostly used by, people from migrant backgrounds. The social effects of such gardens (meeting others, being active) have been documented, along with the satisfaction of growing produce that reminds people of home. Moreover, growing one's own food means that one is not dependent upon, or limited to, whatever is available in local stores.



Surinamese meal. Credit: Esther Veen



Unripe chocolate reaper chili. Credit: Rineshkumar Ghirao on Unsplash

Looking at Almere, there are several examples of how urban agriculture facilitates trans-localism – but also how this can be difficult. For local residents living in the Oosterwold neighbourhood it is compulsory to set aside half of their land for urban agriculture. In fact, the municipality intends that Oosterwold will produce around ten percent of Almere's food needs. However, the neighbourhood's population is not very diverse, and local growers are struggling to reach local consumers. That said, they do receive requests from local, bicultural chefs and restaurant owners, for instance to grow Madame Jeanette peppers for Surinamese dishes. They are, therefore, growing local foods for local flavours.

Another example is the allotment complex *ONZE volkstuin onder glas*, ('Our allotment under glass'), located in a former rose nursery – a greenhouse of 3.5 hectares – where local citizens can rent plots. The advantage of growing in a greenhouse is that it is easier to control pests and diseases, and the higher temperature makes it possible to grow tropical plants. Not surprisingly, most of the 1000 plots are rented by people of Surinamese descent, who grow traditional Surinamese vegetables like sopropo or tayer leaf. Several women reported growing vegetables here because those available in local ethnic supermarkets are too expensive. The allotments thus help increase availability and accessibility of trans-local crops.

Take home message

As immigrants bring their local foodways with them, urban foodscapes are adapting and becoming more 'trans-local'. Decision-makers should carefully consider *contemporary* demographics: who the local people are *today*, rather than conjuring up a more homogenous past. Failure to do so, and focusing on a narrow view of local food, will cause exclusion. Indeed, local food should not be seen as a means in itself. Rather, acknowledging and supporting diverse foodways, localization of food production and consumption can be a way to reach a more sustainable and socially just food system. Consumer-oriented urban food planning thus helps in creating social acceptability of the food system transition, while simultaneously creating feelings of belonging in hyper-diverse cities.¹

Urban agriculture offers a good illustration of how to envision and practice such localization. Local immigrant communities may themselves grow crops from their own

cultural, ethnic, or culinary background, which also helps them create a home in a new place. However, trans-locality is also an important concept for a future-proof urban agriculture that offers culturally appropriate foods to a diverse population in a place like Almere. Moreover, non-immigrant locals may also appreciate a more diverse product range, and the ability to buy locally-grown products with which to try cooking different ethnic cuisines.

Finally, growing crops that are relatively new to the Dutch landscape brings numerous opportunities for new products, such as the sopropo chutney developed by Flevo Campus. The introduction of new crops that fit local growing conditions, as well as local flavours, can also support the 'protein transition' – towards more vegetable, rather than animal, sources. An example is the chickpea, which is currently grown close to Almere. Looking for products that can be grown locally is therefore not only beneficial for creating a more sustainable and socially just food system but can also contribute to transformation of the food system at large.

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More information

- <https://flevocampus.nl/>
- <https://www.aereshogeschool.nl/onderzoek/onderzoeksprojecten/almeres-multiculturele-voedselomgeving>

Exploring the motivations of foreign-born urban gardeners in Lombardy

Valentina Cattivelli

This article assembles a thorough database of gardening initiatives and presents insights into the motivations of foreign gardeners to become involved in local gardening activities in Lombard municipalities. Such information will help municipalities implement urban gardening projects that align with their requirements.

The motivations behind urban gardening are rooted in perceived social, health, environmental, and food-related benefits. Research has tested these motivations with reference to the whole community of gardeners, without creating any distinction for gender, age, origin, or other background and social characteristics. Occasionally, it has examined certain distinctions, focusing on educational and therapeutic initiatives and their beneficiaries at the local level¹. Less frequently, research has made distinctions based on the nationality of the gardeners. The few studies on migrants' perspectives focus on four areas: crop preferences, land access, effects on integration and social cohesion^{2,3}.

The limited knowledge related to the motivations of a singular social subgroup, and especially of migrants and foreign people, prevents municipalities from implementing urban gardening projects that align with their requirements. For a region like Lombardy with a significant foreign-born community, this shortfall is an obstacle to developing inclusive policies and initiatives. Urban gardening projects aligned with the specific requirements of these groups could serve as valuable tools for aiding new arrivals and facilitating their integration into the community.

The motivations of urban gardeners

Social motivations for engaging in urban gardening include the desire for increased socialization and interaction (with family members or others) to alleviate feelings of loneliness. For some, they include the desire to reinforce both individual and collective identities and to foster social capital and cohesion within local communities.

Health-related motivations involve gardeners' desire to enhance both their personal health and that of their communities. Gardeners recognize that the bond between humans and nature reduces stress, enhances physical and mental well-being, and encourages more sustainable and nutritious food choices.

Environmental motivations include gardeners' desire to contribute to the regeneration of vacant lots. Cultivation prevents these lots from being converted into residential areas or parking lots, enhances their aesthetic appeal, and aids in reducing pollution.

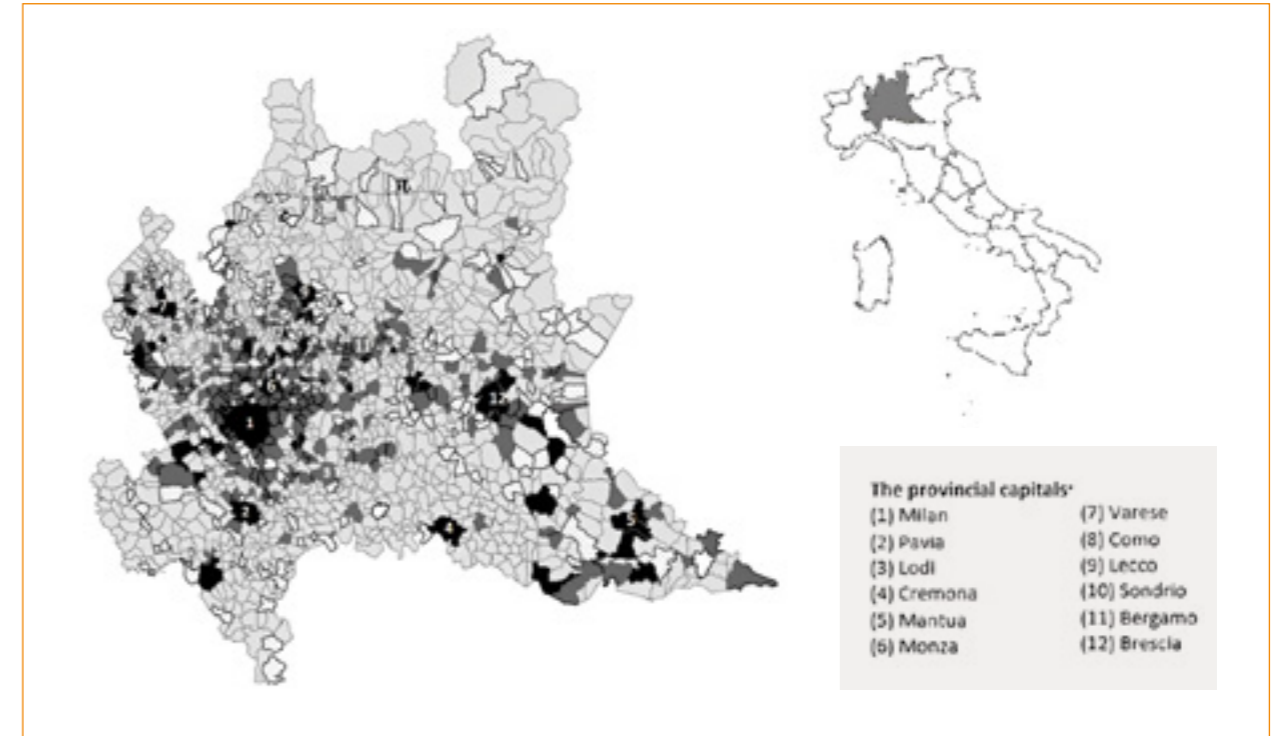
The final set of motivations revolves around food security. Gardeners often cultivate land to enhance food accessibility, reduce the need for transportation, and promote more sustainable production methods as an alternative to resource-intensive farming systems.

Why Lombardy?

Lombardy Region has officially recognized the significance of urban gardens and is providing financial assistance for their advancement. In 2015, it became the first region in Italy to enact a dedicated law concerning urban gardening (*L.R. Gli orti di Lombardia. Disposizioni in materia di orti didattici, urbani e collettivi n. 18/2015*, Regional Law The Gardens of Lombardy. Prescriptions about school, urban and collective gardens n.18/2015). Six years later, it approved the law on urban, peri-urban and metropolitan agriculture (*L.R. Agricoltura urbana, periurbana e metropolitana n. 21/2021*, Regional Law The urban, peri-urban and metropolitan agriculture n.21/2021). The region also provides measures that will further stimulate the establishment of urban gardens, in addition to urban forests and vertical farms, in urbanized areas.

In approving these laws, Lombardy Region continues its path towards environmental sustainability and urban regeneration. The legislation promotes the establishment of educational and urban gardens, emphasizing their role in teaching younger generations about food sustainability, while encouraging community bonding. It also supports small-scale food self-sufficiency for families and revitalization of abandoned areas to preserve biodiversity.

With these legislative efforts, Lombardy recognizes the potential of urban gardening to educate youth, encourage



Lombard municipalities with urban gardens and specific focus on those with foreign gardeners. Source: Valentina Cattivelli

healthy diets, and stimulate discussion on food rights and waste reduction. Ultimately, Lombardy is striving to foster social connections, and cohesion among local population.

However, the potential of urban gardening to enhance minority integration is hardly mentioned despite emerging research on its positive impacts, especially for migrants. Given the substantial migrant population in Lombardy, around 1.2 million residents, representing about 12% of the regional population, leveraging urban gardening for social inclusion could be valuable.

The research method

The research method involved administering two questionnaires.

The first questionnaire was distributed to municipal offices across Lombardy's municipalities to gather data concerning the existence of foreign gardeners in 2020. Approximately 80% of Lombard municipalities (out of 1,523) responded to the first questionnaire; 288 municipalities confirmed the presence of urban gardens within their boundaries. Fifty-two of these municipalities together revealed the presence of 161 foreign-born gardeners.

The second questionnaire was sent directly to 66 foreign gardeners to explore their individual attributes, including their nationality, duration of residency in Italy, age, and family composition. Additionally, it aimed to assess their crop preferences and delve into the motivations influencing their decision to engage in plot cultivation. The motivations were categorized into four sets: social benefits, wellbeing and health effects, urban regeneration, food security^{4,5}.

The results

Location of urban gardening projects

The municipalities actively promoting urban gardening are mainly provincial capitals and urban areas, spanning from Varese to Bergamo, including Milan. These densely populated areas with many businesses implement such initiatives to ease environmental and economic strains. Conversely, urban gardens are scarce around southern provincial capitals like Pavia and Cremona, except Mantua with more municipalities involved.

The municipalities hosting gardens cultivated by foreigners are primarily provincial capitals or large towns near urban hubs across Milan, Pavia, Mantua, Varese, and Brescia provinces, some close to the capitals, others further away.

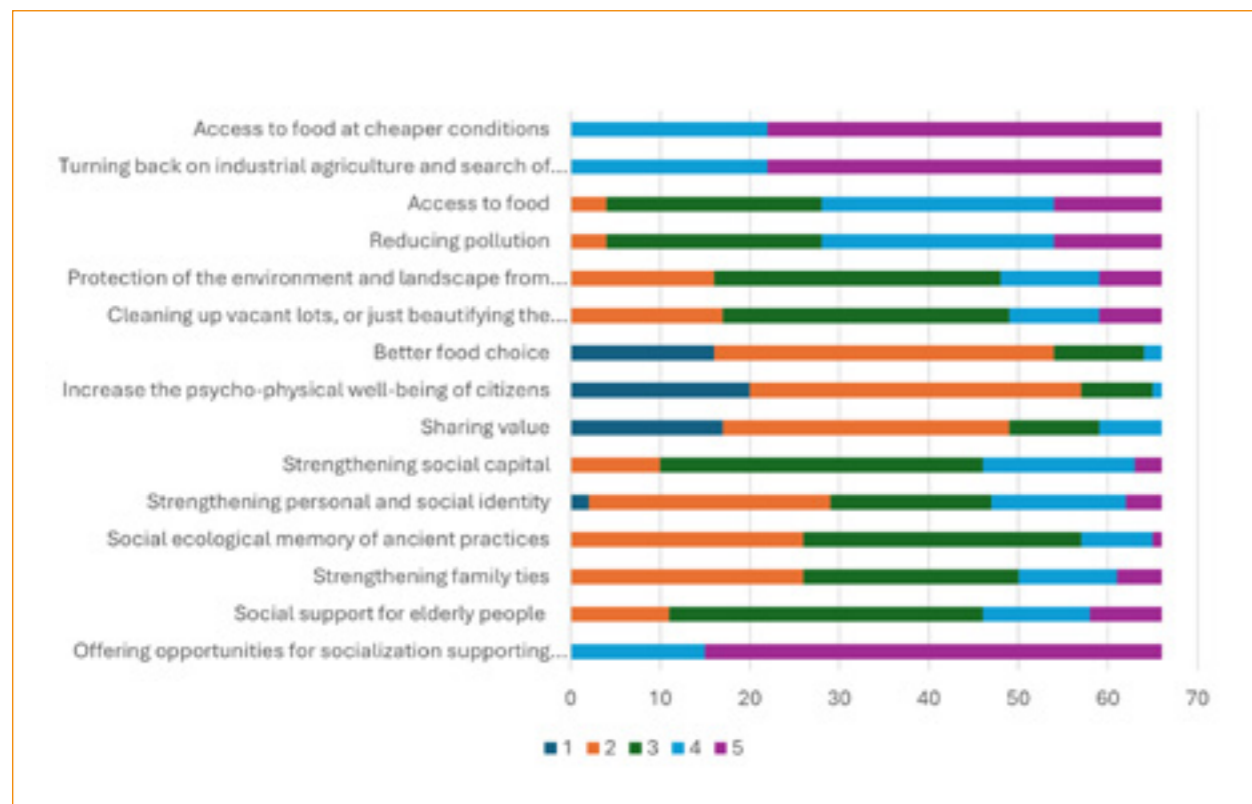
Profiles of foreign gardeners

Most foreign gardeners surveyed are aged over 40 and are married with children, although there are a few exceptions who



- Aged between 40 and 60 years old (68% of respondents, in contrast to 15% under 40 years old and 17% over 60 years old)
- Married with children (82% of respondents)
- Have been living in Italy for more than 5 years (75% of respondents)

The profile of foreign gardeners in Lombardy. Source: Valentina Cattivelli. Graphic reproduced under license from iStock.



Motivations of foreign gardeners – grade distribution. Rating given by the interviewed foreign gardeners. Source: Valentina Cattivelli

are single or without children. Only six of the gardeners interviewed are female. Most of the gardeners originate from North Africa (primarily Morocco) or Eastern Europe (including Albania, Romania, Poland, Ukraine). Others come from countries such as Argentina, Ghana, the Dominican Republic, Peru, Ecuador). They have typically been residents in Italy for an extended period, often exceeding five years.

Foreign gardeners' motivations

Overall, foreign gardeners view the gardening experience positively in terms of social interaction. They see gardens as spaces for socializing, facilitating communication, exchanging ideas. They appreciate the increased time spent with family in these settings.

However, foreign gardeners remain doubtful about whether gardening can strengthen their personal identity. Foreign gardeners feel more confident engaging in community activities and informal social gatherings. They note an increase in relationships with other gardeners, facilitated by discussions during cultivation, where linguistic, cultural, social differences do not hinder interactions. As they become more involved in community activities, they also make greater use of municipal facilities and participate in waste management.

Finally, foreign gardeners emphasize the importance of food access and cost savings as motivating factors and recognize the role of gardening in urban regeneration and pollution reduction.

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Urban care farming: Fostering health and well-being through urban agriculture

Lenneke Vaandrager, Daniel Munderlein

Urban agriculture has a lot to offer for recovery, prevention of illness and health promotion. This article discusses the mechanisms for the benefits and available empirical evidence. It makes the case for coupling farming and care by developing innovative funding models at the national and EU levels, and new ways for acknowledging urban care farming as medical treatment and promoting health.

Urban care farming (also referred to as social farming) combines care of agricultural production with care of people. Besides healthy and fresh food, an urban farm can offer a restorative green environment and opportunities to interact with animals. It can also help people either to become socially involved in gardening or to get engaged in the daily business and routine of the farm.

Although agriculture is often associated with rural areas, there are many health care farms near cities. Some of these have specialized in the treatment of city dwellers. Urban healthcare farms are in contrast to the hustle and bustle of the city. When talking about urban agriculture, it makes sense to include urban health care farms and their benefits.

The urban care farming model began in various European countries in the 1990s. The Netherlands and Austria were early pioneers and the number of green care farms, clients, and involved citizens rose rapidly. It is estimated that there are currently over 1,000 care farms in the Netherlands and several hundred in each of Austria, Belgium, Norway, and Italy³.

Health-promoting mechanisms for a wide range of groups

Urban care farms offer a natural environment that, in itself, reduces feelings of stress and enhances a positive mood. The agricultural activities on the farm promote physical exercise and facilitate social contact amongst clients, and also with the farmer and citizens from the wider community.

Farms offer a safe and welcoming place for children to learn, especially children who have dropped out of the mainstream school system. For adults, urban care farms can be a place to learn life skills, or they can be sheltered places for employees with disabilities or for employees



An urban care farm on the outskirts of Vienna in Austria. Credit: Daniel Munderlein

who are reintegrating after burn-out. Urban care farms also sometimes offer daycare for elderly people with dementia⁴, which is not only health-promoting for the elderly themselves but also provide respite for primary carers.

Furthermore, structured therapy programmes can be offered at care farms. These programmes offer evidence-based therapies with or without animals, but always use the outdoor environment and activities at the farm as a 'treatment room'.

For volunteers, care farms offer a place where they can meaningfully contribute to societal goals.

Table 1 provides a structured overview of the various health promoting mechanisms of urban care farms, sorted by dimensions of health and well-being.

Dimension of health & well-being	Urban care farm characteristics and benefits
Physical	Availability of fresh and local food
	Physical activities on the farm or in the garden
Psychological	Contact and interaction with plants or animals
Social	Building of social capital and transfer of agricultural or gardening skills
Spiritual	Gaining a deeper connection to nature and the environment. Resonance experiences and the attainment of purpose in life or self-esteem

Table 1: Health benefits of urban care farms

Available evidence

The body of evidence on urban care farms' outcomes and effectiveness is growing^{1,2}. The treatments are positively evaluated, and reports on their contribution to the recovery process and overall health have led to the spread of the urban care farm movement. In addition to increased social interaction, and physical well-being, surveys and observations indicate that urban care farming can decrease anxiety and stress, relieve depression, trauma and grief, and boost self-esteem and self-efficacy.

Contemporary research not only aims to generate empirical evidence but also to shed light on the causal relationships between identified benefits and the characteristics of urban care farms. Recent studies highlight meaningful work, social interactions and encounters with animals as drivers of the therapeutic effects of urban care farms. Animals are described as being 'the fabric of the urban care farm'³. Several empirical studies explain that physiological states, morale, and overall feelings of self-worth and self-esteem are significantly increased through contact with animals. Some care farmers have even argued that human-animal interactions on farms are superior to sophisticated concepts like dolphin therapy, as farm animals have been

domesticated and bred for generations by humans. As a result, they are very adapted to, and familiar with, humans and their needs and requirements.

Outlook on future policies

Despite the benefits and potential of urban care farms, they face various challenges. The biggest challenges are bridging the gap between different sectors (such as the agricultural and healthcare sectors, or the agricultural and education sectors), developing professional organizations for care farmers, and creating sustainable financing structures.

These challenges underline the necessity of creating better policies at national and EU levels, which help to establish a regulatory basis for coupling care and farming.

Urban care farming is not acknowledged as a medical treatment or as health-promoting in all countries, and often care farms are not eligible to receive money from the national healthcare system. Countries like the Netherlands and Austria are pioneers in this regard, having created regulations to overcome the financial barrier. In other countries, the urban care farming movement is still considered a novelty or niche phenomenon and is overlooked in medical treatment and health-promotion programmes⁵.

At the European level, new cross-sectoral policies are needed that address food growing benefits alongside health-benefits. Emerging urban care farming networks, which combine and link the efforts and interests of individual urban care farms, can help to stimulate innovations in healthcare. Urban care farmers can exchange their experiences within these networks, which also help to raise awareness for their work in regional care institutions.

Examples from the Netherlands and Austria indicate that a new interest in urban care farming emerged through networking activities of individual urban care farms. This has resulted in the establishment of the Green Care umbrella organization, which has brought the linkages between farming and care to a professional level. The Green Care networks have paved the way for a quality system, professional training for care farmers, the production of books and official public relations materials, and new empirical research.

Despite this, urban green care is still a loose framework, under which fall a wide range of therapeutic and health-promoting interventions. Consequently, future policies at national and EU level should deepen the coupling between urban farming and care by developing innovative funding models and new ways for acknowledging urban care farming as medical treatment and promoting health. The certification and evaluation of urban care farms and their benefits are foundations for future policies.



Contact with animals at an urban care farm in Austria. Credit: Daniel Munderlein

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Urban gardens promote health in metropolitan areas

Letícia Machado
Cláudia Maria Bógus

A study in São Paulo, Brazil has shown that urban gardens are food environments that contribute to health promotion in a variety of different ways, regardless of location or user demographics. The findings add weight to claims that urban gardens encourage healthier eating habits and should be supported by government policies.

Urban agriculture is an ancient practice whose primary function was originally to assist in the food supply of cities. Despite the urbanization process tending to expel and exclude everything related to nature from cities, urban agriculture has found ways to adapt to the urban context – and thus to resist and remain. Today, urban agriculture is multifunctional, both combating food insecurity and

strengthening urban ecosystem services. Another function, still little explored, is its ability to promote health by creating healthy food environments in urban spaces – that is, where people acquire food and are exposed to external factors that influence their food choices such as price, quality, advertising, and food availability¹.

Health promotion

The concept of 'health promotion' emerged in the 1980s from a revolution in the understanding of what health is. The concept was developed collectively with support of researchers, technicians and civil society that understood health not as the absence of diseases, but rather linked to people's quality of life and social well-being. From this point, the concept of health began to be analyzed based on four major determinants: human biology, environment, lifestyle and organization of the health system².

The Ottawa Charter was created at the First International Conference on Health Promotion. The charter is the main reference in the development of ideas and actions to promote health throughout the world. It contains several recommendations, including five central fields of action³.

Fields of action	Summary
Build healthy public policy	Create laws and public policies that guarantee access to goods, services and healthy environments.
Create supportive environments	Protect natural environments and build spaces that promote health.
Strengthen community action	Empower communities technically and politically so that they are able to participate in decision-making within the health sector.
Develop personal skills	Health promotion supports personal and social development through the provision of information, health education and improving life skills.
Reorient health services	The health sector must move towards health promotion, beyond the provision of clinical and curative services. Health services need to have a broad approach that is sensitive and respectful of cultural needs.

At the Second International Conference on Health Promotion, the topic of food and nutrition gained importance, becoming a central axis for health promotion. Encouraging nutrition has several fronts, including the expansion of spaces that allow for healthy eating habits.

Creating spaces in the city that enable individuals to connect with nature is one of the ways urban gardens can help promote health. Giving them the possibility to access healthy food and facilitating people to make healthy choices regarding their diet corresponds to a health-supportive environment.^{2,4}



An urban farmer in her garden in the east of São Paulo. Credit: Letícia Machado

Research produced between 2020 and 2022 investigated the potential of urban gardens to promote health in the city of São Paulo. The municipality has more than 700 urban gardens with different functionalities; for this study, five gardens were investigated, one in each macro zone of the municipality, in areas with different levels of social vulnerability. The criteria for selection were that gardens must open to the public, sell food, and have ecological management focused on urban sustainability.⁵

To investigate the role of each garden in health promotion, interviews and field visits were conducted. A total of 29 interviews were conducted with farmers and consumers, and 202 selected interview excerpts were analyzed.

Each garden had its organizational particularities, but they presented similar characteristics. For instance, all farmers practiced ecological management, always seeking the greatest efficiency and sustainability of their properties. They also all held fairs in the garden space at least once a week, to strengthen the trade of organic food in their neighbourhoods.

Urban gardens as healthy food environments

When urban gardens are open to the public and people can access healthy and fresh food, they become a health-supportive food environment. Urban gardens are physical spaces that enable people to make healthier food choices. This happens when these spaces grant physical, economic, and social accessibility for their consumers. This study focused on four axes of health promotion that are

strengthened through urban gardens (see Box). The fifth axis, 'reorient health services', is not directly connected with the food environment topic.

1) The creation of supportive environments

All interviewees emphasized that gardens facilitate access to organic food and contribute to people making healthier choices. Some interviewees said that having these places near their homes is central to increasing the consumption of vegetables. In addition, gardens are seen as pleasant environments that enable connection with nature, and parents can take their children to observe the plants, and feel comfortable letting them run free, explore, and connect with nature.

2) Development of personal skills

People reported acquiring new knowledge and social ties through their experiences in the garden: 87% of consumers said they had learned about the seasonality of food, and many of them revealed that they had discovered new foods through exchanges and conversations with farmers, who encouraged them to make different choices. In addition to learning and exchanging, many garden visitors highlighted a close relationship and connection with farmers, building their trust that the products are truly organic.

3) Strengthening of community action

The urban gardens might contribute to achieving community empowerment in different ways. In São Paulo, the urban gardens spaces are used by the farmers to connect with other farmers and organize their political and technical demands. From a consumer food environment perspective, this is invisible. Most of the interviewed consumers just visit the gardens to buy organic food and are unaware of any other activities.

4) Development of healthy public policies

Testimonies referring to the demand for, and strengthening of, public policies aimed at increasing urban gardens were made only by farmers who talked about their struggles to maintain the garden and obtain support from the municipality. Consumers said there should be more urban gardens but did not make the connection between maintenance of gardens and government support. This is an important factor because people still do not acknowledge how public policies can influence the accessibility to healthy food.

In conclusion, the presence of urban gardens in cities ensures green areas in highly urbanized territories. They are spaces where visitors feel welcomed and connected to nature, and consumers get to know the food cycle and understand that it is not possible to consume certain products year-round. This knowledge comes from observing the garden beds and actively listening to the information provided by farmers. This exchange of information makes consumers feel closer to farmers and



Urban garden in the west of São Paulo. Credit: Leticia Machado

other garden visitors, establishing a connection based on trust.

The consumer's food environment is a suitable space to promote policies and actions that facilitate dietary changes, as it is the place where the connection between the consumer and food occurs⁵. Urban gardens have such strong adaptability power that even in different socioeconomic realities, they provide similar feelings and actions to their visitors. In other words, regardless of their location, in rich or poor neighbourhoods, health promotion occurs in the same way and with similar intensities. This demonstrates the potential of urban gardens to encourage healthier eating habits across different territories.

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Making urban agriculture thrive through integrated services for innovation

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As urban and peri-urban agriculture (UPA) gains popularity around the globe, the lack of access to essential knowledge, innovations, and support networks underscores the key role of extension and advisory services (EAS) in overcoming obstacles and fostering the sustainable uptake of food growing in and around cities. In this context, many non-traditional services providers emerge with the pivotal role in urban Agricultural Innovation Systems (AIS). This article introduces the concept of Integrated Services for Innovation (ISI), going beyond traditional extension by encompassing broader knowledge and skills needs, and fostering capacities to co-create innovative solutions to urban agrifood systems challenges.

The landscape of urban and peri-urban agriculture (UPA) is as diverse as the cities it inhabits, encompassing a myriad of practices and stakeholders. UPA can be considered at the forefront of sustainable urban development, offering a multitude of benefits ranging from food security, to improved and more resilient livelihoods, to environmental sustainability. However, amidst this diversity, common challenges persist – such as land scarcity, regulatory hurdles and the need for sustainable water management.

Urbanization manifested during the 19th century and has been increasing exponentially since then, especially in the last 80 years. According to the FAO Framework for the Urban Food Agenda, published in 2019, 56% of the world's population lives in cities, a number that will grow to 70% by 2050¹. With an increasing number of people living in urban areas, we have also seen an increase in UPA. From rooftop gardens and community allotments to controlled-environment agriculture (CEA), UPA reflects the socio-economic and environmental contexts of urban environments. These practices cater to a variety of motivations, including economic, food security and nutrition, social, cultural and environmental.

Unfortunately, UPA has sometimes been frowned-upon by governments and many urban residents, who feel that agriculture is incompatible with cities. Until recently, UPA was rarely present in planning documents². Furthermore, traditional EAS systems, primarily designed for large-scale rural agriculture, have struggled to adapt to the evolving landscape of UPA, leaving practitioners underserved and disconnected from crucial services and support networks. However, while rare and often unstructured, some forms of advice and support exist to equip UPA practitioners with

necessary skills and services, with providers from the public, private, and civil society, and more. Box 1 showcases some promising practices of knowledge and innovation provision around the world.

Diverse landscape of innovations actors in the urban setting

The UPA innovation and knowledge ecosystem in the cities is unique, and agricultural knowledge adapted to urban practices is not abundant. Traditional advisory systems, tailored for rural agriculture, are struggling to adapt to the evolving and diversified landscapes of UPA. The entities specialized in agriculture may be distantly located. Moreover, actors engaged in rural extension and urban agricultural advice are often disconnected, with the former lacking knowledge concerning unique specificities of the UPA, and the latter not being specialized in agricultural development as it may not be their core business. In this context, many non-traditional services providers emerge with the pivotal role in urban AIS.



A farmer and her daughter tending crops. Credit: FAO/Longari

Box 1: Practices of knowledge and innovation provision around the world

In **Arusha, the United Republic of Tanzania**, the city council partners with farmer cooperatives, private sector organizations and training institutes. The city has 18 demonstration plots and provides training that is mostly free of charge. More than 90% of respondents have access to technical services for good agricultural practices. The city has also provided licences for selected input providers who offer services, mostly concerning food safety and the application of chemical inputs.

The Participatory Urban Agriculture Project (AGRUPAR) in **Quito, Ecuador**, exemplifies an integrated approach to knowledge development and resource support. Comprehensive training programmes are offered on technical topics such as the construction of greenhouses, the installation of drip-irrigation systems, the preparation of organic fertilizers, the starting of seedlings, and the control of disease and pests. Processing is improved through training on food safety and handling, compliance with regulations to enable quality certification, and development of a variety of harvested products (including snacks, baked goods, meats, and dehydrated foods). Marketing support ranges from packaging and display of harvested products to knowhow on dealing with customers at the point of sale.

AGRUPAR empowers households to develop urban agriculture as a sustainable livelihood option. By bridging the gap between knowledge acquisition and resource access, Quito demonstrates how municipal support can catalyse innovation and resilience in urban agriculture initiatives.

In **Kerala, India**, the Haritha Keralam Mission of Kerala used Facebook Live share classes on vegetable farming to encourage people to start farming to improve their nutritional options during the COVID-19 lockdown.

Civil society

The vibrant urban agriculture movement in **Toronto, Canada** epitomizes the power of civil society in driving innovation and knowledge dissemination. NGOs like FoodShare and The Stop integrate food growing into their programming and serve as hubs for community engagement. Through initiatives like the Community Engagement and Entrepreneurial Development (CEED) Garden Program, Toronto pioneered localized knowledge exchange and hands-on training to empower individuals to navigate the complexities of urban agriculture.

Non-public actors

In **Nairobi, Kenya**, a key actor in research and dissemination of knowledge on urban agriculture is the Mazingira Institute, a local non-profit organization established in 1978 to

focus on knowledge and policy work with a focus on food and housing in urban settlements. A central mechanism for capacity building and knowledge sharing in the past two decades has been the Nairobi and Environs Food Security, Agriculture and Livestock Forum (NEFSALF), hosted by Mazingira. Trainings are offered in areas including group dynamics, record keeping, gross margins, animal husbandry, raising crops, and value-added production. More recently the organization has conducted training in gender and the food system, and a gender-sensitive extension service workshop.

The advocacy for governance changes through NEFSALF and Mazingira led eventually to the passing of the 2015 Nairobi City Council Urban Agriculture Promotion and Regulation Act, and then to the inclusion of a range of planning objectives in the 2018 Nairobi County Integrated Development Plan. A significant accomplishment of this process has been the establishment of the Nairobi City County Food, Agriculture and Forestry Sector as a municipal office where civil servants with various competencies related to urban agriculture provide technical support for urban and peri-urban farmers.

Educational institutions

Kerala Agricultural University made available online educational videos on horticulture in kitchen gardens, and helplines were operated by extensionists.

In **Paris, France**, educational institutions like *L'Ecole du Breuil* and *AgroParisTech* play a crucial role in advancing knowledge and expertise in urban agriculture, contributing to the city's reputation as a leader in the field.

Private sector

In **Sofia, Bulgaria**, the Bulgarian organic beekeeping association has established a long term 10-years cooperation with Hilton Sofia hotel under which the association provides technical assistance for the hotel's rooftop hives. The hotel is now able to offer guests home-harvested honey.

The **Tanzania Horticultural Association**, a private sector organization, also developed a mobile application that provides marketing information such as up-to-date prices, contacts and available markets.

Multistakeholder initiatives

In **Gaza**, before the intensified conflict that began in 2023, urban agriculture was supported by a web of governmental, educational, and civil society actors. The Gaza Urban and Peri-Urban Agriculture Platform (GUPAP) exemplifies this collaborative approach, providing technical support, establishing local networks, and facilitating capacity-building initiatives. Despite challenges, Gaza's urban farmers demonstrate resilience and innovation, leveraging urban agriculture as a means of livelihood and food security.



Urban farmers in Dhaka harvest tomatoes in their small urban garden. Credit: FAO/Saikat Mojumder

Recommendations

Traditional EAS systems, tailored for rural agriculture, are struggling to adapt to the evolving and diversified landscapes of UPA. There is a pressing need for EAS to transcend traditional models and adopt a pluralistic approach that caters specifically to the diverse requirements of urban and peri-urban farmers. These services should encompass a broad spectrum of areas, including technical assistance, regulatory guidance, land tenure, market access, entrepreneurship training, food safety and climate resilience.

Encouraging innovation is a crucial component, particularly in the complex urban environments where UPA operates. For this reason, it is recommended, firstly, to go beyond traditional extension and adopt instead an integrated services for innovation (ISI) approach, which includes advice on a wide range of topics relevant to the urban and peri-urban settings and aims at empowering UPA stakeholders to innovate to come up with sustainable, tailored and impactful solutions for their challenges.

Secondly a paradigm shift in policy and institutional frameworks is needed to acknowledge the pivotal role of diverse ISI providers in bolstering UPA and adapting to its unique landscape. Policymakers must bridge the knowledge gap and foster inclusive, responsive ISI systems. By embracing a pluralistic approach and

adapting policy frameworks, policymakers can empower UPA practitioners to unlock the full potential of urban agriculture as a driver for sustainable urban development, food security, and social equity. By designing clear and inclusive local ordinances, policymakers can create an enabling environment for urban agriculture to thrive. Initiatives like the Urban Agriculture Promotion and Regulation Act in Nairobi demonstrate how policy interventions can support UPA and promote inclusive urban planning. ISI actors have an important role in advocating for such improved and UPA-relevant policies, by connecting urban policy makers, research and UPA practitioners to better understand their needs and jointly innovate to find relevant solutions.

Thirdly, UPA should also be well considered in the education system to ensure that ISI providers have relevant knowledge and skills to work in urban settings with their unique specificities. The diverse, traditional and non-traditional urban providers of knowledge and innovations (ISI) need to be recognized and supported with targeted capacity development to enable them to be innovation brokers and facilitate networking and entrepreneurship.

In conclusion, there is a critical need for tailored ISI to bolster the sustainable development of UPA globally. By



Mitigating the effects of COVID-19 to protect the food security and livelihoods of vulnerable households in urban centers. Credit: FAO/Max Valencia

embracing a pluralistic approach and adapting policy frameworks, ISI actors can empower UPA practitioners to harness the full potential of urban agriculture as a catalyst for sustainable urban development, food security, and social equity. This holistic approach is imperative for addressing the unique challenges faced by urban and peri-urban farmers and fostering innovation in the ever-evolving landscape of UPA.

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Maximizing urban agriculture benefits through strategic networks

Jessica Moreira Maia Souto

Social Harvest Ottawa (SHO) is an urban farm and social enterprise established in November 2019 by the Rideau-Rockcliffe Community Resource Centre (RRCRC). Despite many challenges, including a lack of resources and closures during the pandemic, SHO has prospered and is now a local reference in sustainable food programming and agricultural youth employment training.

Achieving food security sustainably requires financial investments and practical change, yet the broader complexities of the food system, including its role in nutrition, security, and resource use, lead to divergent forms of taking up the challenge. In Ottawa, Canada, over the past 10 years, food and shelter costs have risen much more than the average cost of all consumer items combined. This scenario fostered the rise of strong local food systems, working towards making local, fresh, and nutritious foods accessible for all residents.

Leading community urban agriculture

SHO is an innovative and community engagement urban farm in Ottawa growing fresh, local, and nutritious produce, while empowering the community to plant their own fruits and vegetables.

SHO operates a 713ft² (66m²) urban greenhouse, 50 community garden plots, a sensory garden, a vermicomposting facility, and a 750ft² (70m²) indoor vertical growing room. Utilizing diverse methods such as aeroponics, hydroponics, ebb-and-flow systems, and conventional outdoor growing, SHO ensures year-round cultivation of fresh produce and provides youth with valuable employment and training.

Originating as a microgreen grower, SHO has evolved into a holistic enterprise, reinvesting profits to offer food literacy training and establish subsidized community gardens for marginalized populations. Now in its fifth year, SHO has a closed-loop operation committed to sustainable organic practices, championing environmental stewardship, while promoting health and well-being through accessible urban farming initiatives.

This was no easy task, and it was only possible due to a close-knit network of partners and the grit of the people involved. SHO received CN\$45,000 (approx. US\$33,000) from Agriculture and Agri-Food Canada in 2021, which allowed the social enterprise to purchase equipment to grow leafy

greens vertically indoors. This investment doubled the production capacity to 249kg of microgreens and leafy greens a month, distributed by the in-house Emergency Food Bank and the Good Food Box and MarketMobile programmes.

A space for innovation

Situated within a community centre, SHO is a hub for innovation, providing a space to test and refine cutting-edge agricultural technologies for small businesses.



SHO indoor growing systems for microgreens. Credit: Michelle Hartman

Several partners are drawn by the mission as well as to the possibilities of testing ideas and creating proof of concept.

The latest prototype uses software, developed by youth participating in Incubator13, another RRCRC programme, to help identify produce at the local Food Bank that becomes waste. It also optimizes the point of collection and uses data to prevent food waste at the source.

Over the next phase, SHO will implement technology using sensors to monitor all points of collection identifying the food source and quantity, while applying AI, robotics, and data analysis to measure the conditions of two worm bins. One of these bins is indoors while the other is outdoors. These tests and data will help automate the vermicomposting process so it can transform food waste into worm castings faster and continue to integrate a closed-loop production, besides serving as a pilot. Being able to winterize a worm bin outside in Ottawa means keeping the worms alive at below-freezing temperatures, which can have a huge impact on community gardens across Canada and other communities.

Networks to amplify benefits

Synergetic partnerships with universities and colleges promote an environment in which students use SHO as a study case platform. In return, SHO benefits from resources such as students' and professors' time and expertise to further advance projects. In 2023, university students helped transform a woody patch into an interactive sensory garden – a self-exploratory space where community members of all ages and abilities are welcomed and encouraged to venture through, touch, admire, listen, and taste the diversity of living and growing ecosystems.

Besides academia, other not-for-profit organizations, local shops, and entrepreneurs come together, often on a voluntary basis, to support the programme and ensure it continues to transform the urban space and encourage residents to act towards sustainability. By leveraging non-monetary resources and strategic alliances with local stakeholders who bring expertise, time, and resources to the project, SHO has cultivated a thriving ecosystem that maximizes the benefits of urban agriculture.



SHO senior programme participants planting vegetables. Credit: Michelle Hartman



SHO's intern caring for the aeroponics Grow Tower. Credit: Michelle Hartman

Moreover, SHO's connections with the City of Ottawa and key food system initiatives underscore its role in shaping policy discourse and mobilizing resources towards improved nutrition and food security through RRCRC.

Dealing with risk

While SHO's progress is commendable, it navigates challenges typical of social enterprises, including resource limitations, workforce dynamics, and market penetration hurdles. SHO's social mission is well developed and it has put structures into place to ensure quality and reliable services. However, the financial side of the operation still needs improvement. Currently, SHO has one full-time employee and relies heavily on grants as well as on the support of volunteers and the youth it trains to keep the operation going.

Frequent changes in programme delivery, the lack of pre-established health and safety protocols, staff shortages, and turnover are a few of the daily struggles. Also, volatility in volunteers creates heavy workloads, and stress concerns. Disruptions and shortages in the supply chain coupled with shy revenues also contribute to difficulties in scaling up operations. Vandalism can also disturb production and, consequently, prevent residents in need from having access to fresh produce.

Year after year, SHO has doubled its production and tripled the number of clients served – yet it is still not quite breaking even from sales alone. The current year of 2024 seems to be the right moment to start increasing the quantity of greens SHO brings to market by selling at local grocery stores to boost revenues towards a sustainable enterprise – not only environmentally and socially, but also financially.

Key takeaways and recommendations

- *Community-centric approach:* SHO's emphasis on community engagement and empowerment serves as a blueprint for inclusive urban agriculture initiatives globally.
- *Innovative practices:* Leveraging technology and partnerships can optimize production, enhance environmental sustainability, and drive social impact.
- *Resilience and adaptability:* Flexibility and strategic planning are vital for social enterprises to navigate challenges and achieve long-term viability.
- *Collaborative ecosystems:* Building strong networks with stakeholders, governments, and educational institutions fosters innovation, learning, and resource-sharing.

Readers are encouraged to reflect on the transformative potential of urban agriculture in addressing food security, environmental stewardship, and community well-being. Engaging with and supporting local initiatives like SHO not only enriches communities but also contributes to a more sustainable and equitable future.

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More information

Ottawa Insights by Ottawa Community Foundation:
<https://www.ottawainsights.ca/themes/basic-needs-and-standard-of-living/food-security/>

How to raise career aspirations in farming via digital media

A closer look at social media savvy urban farmers

İlkay Unay-Gailhard
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Farming is facing a generational renewal problem, with an increasing proportion of farmers near retirement age and a lack of people who are able or willing to take over farms. The low percentage of young farmers in the EU and the US impairs resilience in farming and threatens food security. Findings from a study in the EU and the US identify two main challenges: a global difficulty in attracting youth into farming, and the increasing pressure on institutions to provide efficient knowledge transfer to youth via online platforms.

What is the best way to connect with Gen Y or Gen Z and pique their interest in farming? In the EU, under the Marie-Curie-funded YOUNG FARMERS project, researchers from the Leibniz Institute of Agricultural Development in Transition Economies, together with partners from the University of Chicago, and Pennsylvania State University, are working on the digital communication dimension of the generational renewal problem. With studies on urban agriculture movement, they are exploring how digital media contributes to shaping the career paths of urban and rural youth and the role of social movements in influencing career choice in farming.

Informal education initiatives, such as internships and apprenticeship programmes for those interested in farming careers, have increased in recent years. However, the average age of farmers in the EU and the US is still between 50 and 60 years. Besides economic factors such as access to land, the challenges faced by aspiring new farmers are also strongly tied to societal and cultural norms. This generational renewal problem signals a need for strategic career communication approaches, with honest conversations about the challenges – as well as the opportunities – of a farming career.

The YOUNG FARMERS Project

Today's youth are known for their extensive use of digital media, including for knowledge acquisition and sharing information on careers and jobs. Hence, it is important to explore the digital communication revolution and understand its effect on the career aspirations of the youth. Scrolling through digital media will show that

there is still a knowledge gap in interactions that can successfully influence young people's career aspirations in the farming profession.

The YOUNG FARMERS project aims to explore how digital media interactions might attract a new, younger population to farming and create opportunities for overcoming generational renewal problems, through comparative studies in the EU and the US. The outcomes of the project activities shed light on the broader question, "What can digital communications do for generational renewal in farming?". The answers are presented below under three pillars:

Pillar I: Digital communication as a tool to establish farming as a career of choice

An interdisciplinary literature review enabled the project to explore the reported impacts of digital communication on attracting young talent towards a career in farming¹. The project used the preferred reporting items for systematic reviews and meta-analysis (PRISMA) method with three objectives:

- i) develop an inventory of digital communication tools used to create farming careers for the youth;
- ii) the key ideas and rationales behind these tools; and
- iii) the reported impact of these tools in creating career initiation in farming.

The study found that mainstream online career communication supported individuals who were already within the farming profession. However, digital career communication paid little attention to fostering a wider interest in farming careers. Careers in farming could be

better integrated into digital communication strategies through online agricultural, environmental, and science communication and public engagement campaigns. The findings suggest three pathways that might promote successful online interactions:

- 1) Consideration of the changing nature of career motivations amongst today's youth is essential. The current trend toward working in sustainable sectors, which are associated with self-fulfilment and personal achievement, could be a major motivator for the youth.
- 2) Communication campaigns targeted toward specific groups such as young females, urban youths, and young people not in employment, education, or training (NEET) may help shape more positive perceptions of a farming way of life.
- 3) Highlighting innovative and commercial urban farming practices, such as greenhouses, indoor farming, and hydroponic farms, may encourage young people to pursue farming careers outside traditional rural regions. The geographic flexibility of innovative urban agriculture is reported to be attractive to young people.

Pillar II:

The value of online social movements as motivators in creating farming careers

Based on interviews with experts and young farmers in the EU (France, Greece, Portugal, Slovenia, and Cyprus), the project results were encouraging. Online social movements such as agroecology, back-to-the-land, and food movements were found to be valuable in motivating individuals to make farming career decisions.

In the context of the back-to-the-land movement, individuals migrate from urban to rural areas to adopt an alternative lifestyle, where some become involved with full-time or part-time farming. The pursuit of subjective career success contributes to a positive view of farming as a career for both professional and personal accomplishment². Digital media creates awareness of social and environmental challenges, provides inspiration

from other farmers, facilitates unplanned careers in farming, and motivates individuals to start farming as a second career or a part-time job³.

The primary results, based on interviews with experts and small-scale young farmers in the US (Pennsylvania), show that social movements can inspire those who haven't grown up on farms to make career decisions in farming. Narratives underline that alternative food movements play a role in farming career decision by providing career aspirations, online training opportunities, and career progress with online marketing opportunities. The role of social movements in career construction supported by the recent US National Young Farmers Coalition report that young farmers are motivated by environmental conservation, anti-racism, and social justice topics. Among the young farmers nationwide, 31% are located in sub-urban land that includes home gardens, urban lands, and community gardens⁴.

To gain a more profound understanding of the relationship between online social movements and career creation in farming, the YOUNG FARMERS project narrowed down the research focus. It investigated one of the important alternative food movements: the urban agriculture movement.

Pillar III:

The portrayal of urban farmers on Instagram

Even though alternative food movements have motivated many farmers to go online about their environmental concerns, farmers are generally still learning the ropes when it comes to Instagram and other social media channels⁵. Therefore, to investigate the online communication strategies of urban farmers, the researchers first interviewed professionals from urban agriculture networks. They spoke with experts in community gardens, school farms, rooftop gardens, urban farmers market initiatives, aquaculture, and hydroponics across Pennsylvania and Chicago.



Growing Home Farms, Chicago, IL. Credit: The Female Farmer Project

Second, the researchers studied the Instagram pages of four players in urban agriculture:

- i) a university students' farm and farmers' market in State College;
- ii) a high school students' farm and farmers' market in Chicago;
- iii) a Black-owned and led nonprofit urban farm and fishery in Pittsburgh; and
- iv) a nonprofit farmers' market initiated by chefs and urban farmers in Chicago.

A total of 1100 Instagram posts between January 2022 and January 2024 were analyzed. The initial results are as follows:

1) Urban agriculture networks are highly connective and inclusive.

Instagram accounts of urban agriculture networks serve as highly integrated and inclusive online hubs. Their posts connect with viewers through inclusive messages involving families, people of different genders, races, cultures, refugees, and marginalized groups. They connected people from all age groups and socio-demographic backgrounds in different locations. The accounts studied consistently displayed the personal values, attitudes, and beliefs of urban farmers. As one of the professionals from a nonprofit farmers' market in Chicago said:

"One of the greatest things about social media, especially when it comes to farming and farmers, is your ability to very transparently show who your farmers are. [...] And, we're able to reach a lot of people. [...] If you live in another place and are still interested in urban and sustainable agriculture [...] you can listen to our stories."

2) It is not solely about farming careers but includes multiple career exhibitors.

The Instagram accounts of urban agriculture networks highlight farming careers and also present multiple career opportunities. They connect with other careers (e.g. agricultural specialist, environmental scientist, ecologist) through online and on-site events, including workshops on farming, cooking, summer schools, field trips to urban farms, and organized dinners. Events might also include talks from different professionals such as farmers, writers, chefs, journalists, food educators, plant and food scientists, and artists.

The Instagram feeds of these accounts feature national and local professionals from urban agriculture networks, such as successful farmers, leaders, and scientists who have contributed to the agriculture sector. The feeds also include award-winning local professionals from urban gastronomy initiatives, schools, and hospitals who collaborate with urban agriculture sites. Instagram feeds of more specific and involved network participants, such as students,



Malcolm Evans, Iron Street Farm, Chicago, IL. Credit: The Female Farmer Project

interns, and graduates on their career development paths, detail their farming career experiences through short interview posts. An urban farm educator from Philadelphia said:

"We found that just getting the documentation of photos of apprentices on farms really increases the amount of engagement. [...] The written interview posts where we sort of talk through their experience, their motivations, their goals [...], we saw just some really big bumps in engagement and interest to our farming programmes."

3) Urban agriculture networks encourage a sense of responsibility.

The Instagram accounts of urban agriculture networks have been highlighting the importance of taking responsibility for the negative effects of not acting in a pro-social and pro-environmental manner. The posts convey a sense of control through messages about 'professional responsibility', 'civil responsibility', and 'personal responsibility'.

The professional responsibility messages communicate the good qualities of a profession while applying skills for, or on behalf of others, as professionals. Such posts include information on the actions taken as professionals on the topics of accessing clean energy, reducing water and pesticide use, undertaking soil testing, and reducing emissions in urban agriculture sites. The following quote illustrates this:

"Did you know synthetic fertilizers used at factory farms release a greenhouse gas 300x more potent than CO2? In response, our sustainable, local farmers are working directly to reduce emissions."

The civic responsibility messages encourage active participation in public life to improve one's community or address broader public issues beyond individual responsibility. These messages promote involvement in urban agriculture networks to enhance the community through civic actions such as donating to the Supplemental Nutrition Assistance Program (SNAP), subscribing to Community Supported Agriculture (CSA), and volunteering at local food kitchens. As a consumer,



Stacey Kimmons, Legends Farm, Chicago, IL. Credit: The Female Farmer Project

one can support organized dinners, concerts, cooking demonstrations, and urban farmers' markets, especially during the winter months. This is illustrated by the Instagram text message:

"You are the patrons of local farmers during winter sales."

The self-responsibility messages were strong in terms of their sentence structure and word choice. They indicated certain behaviours by presenting ideas that aimed to be both thought-provoking and engaging, as demonstrated by the quote below:

"Sustainability is not about driving expensive electric cars. It's about making life choices on a daily basis."

General conclusions

- The current literature doesn't give much attention to the potential of digital media in attracting young people to pursue a career in farming.
- Most research focuses on supporting existing farming careers, rather than exploring how digital media can inspire people to choose farming as a career. Careers in farming could be better integrated into online agricultural, environmental, and science communication strategies.
- Online social movements play an important role in inspiring career choices in farming as well as contributing to career break adaptability.
- Social media messages from urban agriculture networks increase the awareness of the negative consequences for oneself, and others, when not acting pro-socially and pro-environmentally. These messages also encourage a sense of responsibility for self, others, and the environment.
- Urban agriculture networks represent a population interested in farming with a decreased intergenerational knowledge transition. Online profiles of urban farmers provide an opportunity for them to connect with people interested in farming and bridge this knowledge gap.

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Agricultural innovation and digital marketing: New strategies for promoting local economic development

Gu Yi
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Sun Jinyu

In the digital era, the agricultural product processing industry in China is encountering unprecedented opportunities and challenges. This article tells the story of Grandma's Sauce, a successful agricultural product processing enterprise from Henan Province, China, that has harnessed digital marketing and, in the process, made significant contributions to regional economic development by sourcing ingredients from sustainable farms in urban and peri-urban areas to cater to demand.

The rise of the internet and social media platforms, particularly the widespread adoption of short video and live streaming sales models, has revolutionized marketing strategies. How these innovative tools can be effectively utilized to foster sustainable growth and positively impact the local economy throughout value chains is a critical issue for both local governments and businesses.

In 2019, the Li brothers from Lang Chenggang Town, Zhengzhou, Henan Province, China, utilized traditional techniques recognized as Intangible Cultural Heritage by Zhengzhou City to develop a distinctive melon bean sauce (Figure 1), a seasoned condiment developed from traditional soybean paste and watermelon pulp. It serves as a staple condiment for daily meals among the people of Henan, Shandong, and the northern part of Anhui provinces in China. Characterized as a fermented condiment, it boasts a shelf life of a year. Its production period is limited to the months from June to September (Figure 2).

The development of the Li brothers' sauce led to the

establishment of Grandma's Sauce Food Company (Figure 3). With raw material sourcing and processing in suburban areas, and marketing in the urban core, the company is contributing to strengthening urban-rural connections. Its growth trajectory provides a case study for exploring how the combination of sustainable, commercial urban agriculture on the one hand, and digital marketing strategies on the other, can jointly advance local economic development.

Sourcing from sub-urban farms

The procurement of raw materials for Grandma's Sauce is primarily focused around Zhongmu County in Zhengzhou City and its neighbouring areas. These regions feature a unique agricultural landscape that blends urban and rural characteristics, creating an intermingling of city and countryside. The company's annual production of watermelon sauce is around 250,000 kg, with 80% of the main ingredients like watermelons and soybeans sourced locally, and nearly 100% of other associated fresh ingredients like ginger, onions, and peanuts from outside



Figure 1. Factory producing watermelon sauce using traditional techniques. Credit: Gu Yi



Figure 2. The main process of making watermelon sauce. Credit: Gu Yi

of the area. This high rate of local sourcing not only supports local production and market prices but also reflects the company's commitment to stabilizing its supply chain. This geographical setup allows the company to purchase fresh ingredients directly from farmers, ensuring product quality and supply stability.

The relationship between the company and local farmers is one of the key factors in the success of Grandma's Sauce. By establishing long-term collaborations, the company enjoys a steady supply and quality of raw materials. The pre-purchase agreement provides farmers with a stable income and market security. It also offers farmers reliable sales channels and, more importantly, a commitment to purchase the watermelons needed for each production season – 2.3 million kg – at a higher-than-market price. This cooperation model reduces market risks for farmers and enhances the traceability and reliability of raw materials for the company. Additionally, by supporting local agriculture, the company indirectly promotes continuous cultivation, which helps maintain agricultural ecology and enhances land use efficiency.



Figure 3. Factory and corporate leader. Credit: Gu Yi

From social and environmental perspectives, this direct procurement model reduces transportation distances, lowers the carbon footprint, and supports local economic development.

Beyond agricultural support, Grandma's Sauce provides about 200 job opportunities locally during the production season, effectively alleviating urban unemployment and fostering sustained economic growth. The company also regularly invests in public welfare projects, demonstrating its commitment to sustainable development and environmental protection.

Digital marketing to drive demand

With the rapid development of the internet in China over the past decade and the transformation of consumer shopping habits, agricultural product processing enterprises are facing both challenges and opportunities in adapting to the new emerging market environment.

The founding of Grandma's Sauce coincided with the rise of short video platforms in China. The company has fully harnessed the new media platform on the internet not only to establish the popular brand through marketing and sales channels, but also to continuously explore innovations in developing new products and to offer better customer service.

By so doing, Grandma's Sauce quickly gained market attention and achieved rapid growth. Its annual production increased from 9,000 kg in 2019 to 250,000 kg in 2023 (Table 1).

Year	Production (kg)	Growth Rate
2019	9,000	
2020	37,500	416%
2021	55,000	147%
2022	75,000	136%
2023	250,000	333%

Source: Grandma's Sauce (verbal report to author)

Product sales are concentrated in Henan province and those cities with a high influx of migrants from Henan, such as Beijing, Shanghai, Guangzhou, and Shenzhen.



Figure 4. Live show of the product via Douyin. Credit: Gu Yi

Since its inception, Grandma's Sauce has adopted an exclusively internet-based sales model, primarily utilizing short video platforms like Douyin (the Chinese counterpart of TikTok) to do the live stream selling (Figure 4). These marketing videos not only showcase the product's uses but more importantly, they emphasize the organic quality of product with local sourcing and natural ingredients. By frequently featuring images of farmland and the harvesting process, the video conveys the freshness and healthiness of the products to consumers. Additionally, the packaging notes clearly state that the soybeans used are non-GMO, establishing consumers' trust and loyalty. This aligns well with the current demand among urban residents in China for more natural food products and less artificial additives.

The live show facilitates not only the direct interaction with consumers but also enables the production process and application scenarios to be displayed in real time and make viewers much more likely to buy products. In 2023, the company managed four product SKUs, with each SKU achieving approximately five hundred thousand orders per year, with two to three bottles of sauce for each order. The company now operates four digital media marketing accounts across platforms like Douyin and Kuaishou, with a cumulative follower count of approximately 750,000.

The company's marketing strategy also includes social media marketing, content marketing, search engine optimization (SEO), and search engine marketing (SEM), all implemented on online platforms. Digital marketing enables the company to rapidly gather market feedback, which in turn allows for the flexible adjustment of marketing strategies to adapt to market changes.

It is important to highlight that over the past five years (2019-2023), the COVID-19 pandemic did not adversely affect the sales of Grandma's Sauce; on the contrary, it facilitated a certain degree of growth. The lockdown measures imposed during the pandemic shifted consumer preferences towards purchasing shelf-stable foods online. Advanced home delivery logistics enabled minimal direct contact, inherently aligning with the requirements of social distancing, although the overall effectiveness of such lockdown measures warrants a further objective analysis and evaluation. The technology to store products for extended periods, reliance on internet-based sales, and end-to-end logistics are the three crucial marketing factors ensuring the rapid growth of Grandma's Sauce even during the pandemic.

Challenges and limitations

Despite the significant achievements of Grandma's Sauce, its development journey has been marked by several challenges.

Firstly, Grandma's Sauce has successfully captured a specific market, yet its primary audience is concentrated in Henan Province and a few major cities with large populations of migrants. This restriction in audience scope could potentially hinder the brand's long-term growth and market expansion.

Secondly, the rapid growth facilitated by short video platforms like Douyin has also highlighted the risks associated with over-dependence on a single online platform. Changes in platform policies, uncertainties in logistics distribution, and potential increases in advertising costs could adversely affect the enterprise's marketing effectiveness and cost control.

Thirdly, in the development planning from 2019 to 2023, government support has fostered the growth of certain enterprises. However, projects that are heavily reliant on government subsidies face challenges in maintaining operations when support diminishes or policies change, exposing the risk that over-reliance on government subsidies may weaken enterprises' market adaptability and innovation capacity. The case of Grandma's Sauce shows its advantage in this regard, since from the very beginning the company relied on its own development based on market demand and without support from government. Additionally, asymmetries in policy-making and delays in decision-making sometimes result in a misalignment between government support and the actual needs of enterprises, thereby limiting the maximization of policy effects.

Conclusion

In the contemporary era, characterized by rapid technological advancements and an ever-evolving market environment, the case of Grandma's Sauce demonstrates how harnessing new sales and marketing techniques can create market demand for a locally produced product. Close interconnection between enterprise operations and community development through several strategic measures has resulted in approximately 200 job opportunities for local residents during peak production periods, a significant reduction in local unemployment rates; signing stable pre-purchase agreements with local farmers to ensure continuous procurement of agricultural products like watermelons and soybeans, providing farmers with stable economic income and mitigating economic risks associated with market fluctuations; and the adoption of a local sourcing strategy that significantly reduces carbon emissions from logistics, thereby mitigating the overall environmental impact.

As such, it makes a strong case for taking an integrated approach to value chains, in order to support both

agricultural production in and near to cities, and to cater to a sophisticated consumer base that is strongly influenced by emerging media.

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UA Magazine is a vehicle for sharing information on urban agriculture and urban food systems. It publishes good practices and impact stories.

UA Magazine welcomes contributions on new initiatives at individual, neighbourhood, city and national levels. Attention is given to technical, socioeconomic, institutional and policy aspects of sustainable urban and peri-urban food production, marketing, processing and distribution systems. Although articles on any related issue are welcome and considered for publication, each UA Magazine focuses on a selected theme (for previous issues, visit www.ruaf.org).

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In memory of our dear, late colleague Lucia Lenci, who made a valuable contribution to publishing this magazine. Her kindness, sunny optimism and superb organizational skills will not be forgotten.