Academic Research in Urban and Peri-urban Agriculture in the Mediterranean region

White Paper

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1. Introduction

Urban and peri-urban agriculture is an emerging field of academic research. Its interdisciplinary and complexity nature make it a very interesting and challenging topic for students and researchers. At the same time, the results of this research –both in the physical and the social dimensions of agriculture– have an enormous potential for guiding and improving current initiatives in this area, from community gardens to territorial policies.

This report has been prepared in the context of **MADRE, a capitalization Interreg Med project that addresses urban and peri-urban agriculture in 6 metropolitan areas** (Barcelona, Montpellier, Marseille, Bologna, Tirana and Thessaloniki) with the objective of sharing good practices and creating a Mediterranean network of cooperation. Building on local participatory diagnoses, a series of transnational meetings were held in order to discuss different aspects of this issue. This report is one of the 6 'white papers' deriving from these meetings. In particular, **the academic research dimension was addressed in a workshop held in Thessaloniki on 13 and 14 February 2018 with the participation of about 40 participants** from different stakeholder groups of the 6 metropolitan areas: farmers and business sphere (5%), academia and research (66%), civil society (13%) and public authorities (16%). The case studies presented in this document are included in the 'Urban and Peri-Urban Agriculture Best Practice Catalogue', a collection of 36 key initiatives from the 6 MADRE metropolitan areas. The analysis presented here also complements a more succinct policy recommendations report. All these documents can be accessed through MADRE's website.

The review of the topic and recommendations that follow aim to address all Mediterranean metropolises. As they emerge to a great extent from the discussions held in the context of the project's participatory meetings, their relevance and comprehensiveness might be somehow limited by the diversity, expertise and geographic scope of participants. Nevertheless, they pursue a regional dimension of the issue.

The report consists of a general description of academic research in the context of urban and peri-urban agriculture, after which the main discussions from the project are presented. The last section presents succinct recommendations for researchers and policy-makers on how to further foster this dimension.

2. What is academic research in metropolitan agriculture?

Academic research in urban and peri-urban agriculture covers very diverse dimensions and disciplines, ranging from natural sciences (agronomy, chemistry, physics, biology, geology and others) to social sciences (sociology, anthropology, political sciences, geography…).

Research and inventions in industrial ecology, hydroponic agriculture, biological control, urban ecology or biodynamic agriculture, among other, belong to the **technological dimension** of this thematic. Many science academies, research organisations and universities all over the world are dealing with agronomic research and introduce new technological methods to be applied in agriculture. Furthermore, architects and urban planners seek new responses to cities' needs such as vertical farming or rebalancing metropolitan planning between urbanized, green and agricultural areas.

Social sciences also contribute to academic research with state-of-the-art articles on territorial development, on organisational innovation in urban and peri-urban agriculture, as well as with project assessments. The positive and negative externalities of natural and/or agronomic science findings, new architectural designs and urban planning models are discussed extensively in these publications.

While nutritional sciences deal with health issues (food systems, obesity), environmental and social sciences address ecological issues like pollution, soil quality or water recycling and propose to strengthen the link between urban and peri-urban agriculture and energy transition via permacultural and agroecological techniques or through the introduction of circular economy principles (i.e. long-lasting design, maintenance, repair, reuse, remanufacturing, refurbishing, and recycling).

Urban and peri-urban farming research programs can also be interesting for conventional agricultural researchers and for farmers, public authorities and society as a whole. Indeed, the most innovative aspect of research in this field is its potential for integration into society by the transfer of this academic knowledge and its adoption by other stakeholders. **Active collaboration between researchers, producers and policy-makers is essential in order to put research outputs in use** and, at the same time, provide academics with evidence and innovations to further advance their research.

3. How to foster academic research: lessons and challenges

Academic research on metropolitan agriculture is flourishing all across Europe. In the context of MADRE, a participatory analysis with local stakeholders from the metropolitan areas of Thessaloniki, Tirana, Bologna, Marseille, Montpellier and Barcelona highlighted a number of elements that hamper and foster such research initiatives. The following table presents the **most relevant common factors from each local analysis**, which can be adopted as a first approach to the situation of this issue in the Mediterranean area.

+ Strengths and opportunities

- An important **availability of funds** from national programs and European cooperation and research projects.
- The **existing connections between researchers and local managers, decision-makers and citizens**.
- **Increasing interest amongst researchers** and opening of training offers for postgraduate students.
- **Advances in promising research areas**, such as the impact of policies on consumers or the improvement of soil quality for convertibility to agriculture.

- Weaknesses and risks

- **Limited and unconnected work** in many key areas of research.
- **Lack of networking between researchers** and difficulties for coordinating findings, equipment or lines of work.
- Challenges for establishing fruitful **collaborations between researchers and non-academic stakeholders**.
- **Insufficient knowledge transfer** from academia to the rest of society.
- Uncertainties and contradictions around the **definition of metropolitan agriculture** (different models and political approaches lead to opposed solutions).

The combination of these factors opens up a number of issues that are highly relevant in any effort to support and enhance research projects in urban and peri-urban agriculture. In order to further develop these strengths and weaknesses, representatives from the MADRE metropolises developed a transnational analysis which led to more in-depth discussions around 5 main topics: orienting research towards relevant issues and approaches (3.1), exploring new forms of knowledge generation and transfer (3.2), adopting meaningful and effective communication strategies (3.3), connecting researchers and policy-makers (3.4) and exploring alternative ways to develop impactful research (3.5).

3.1 Orienting research towards relevant issues and approaches

Research in the field of urban and peri-urban agriculture is very diverse and challenging. The **multi-disciplinary and interlacing nature of this area of knowledge demands for an equally broad research approach** (see example 1). Architects, agronomists, environmental scientists, geographers, sociologists, economists, political scientists, anthropologists and many other professionals can and should do research in this area. One of the challenges, then, is **how to integrate all this knowledge into holistic, coherent results and recommendations** (see example 2). Participation poses another big challenge. Researchers should design bottom-up approaches to these issues, ask the right questions and respond to the demands of different stakeholders. **Co-constructing the agenda with non-researchers** (see point below) is necessary in order to achieve meaningful results.

A number of **approaches** appear as especially promising for gaining a better understanding of metropolitan agriculture: ecosystemic or environmental services (which could highlight all the benefits that urban and peri-urban agriculture provide to the city)[1], circular economy (in particular for the management of land and resources), environmental metabolism (tracing the fluxes of energy and water and their nexus with food), health and food (the impact of pollution, how can urban agriculture improve nutrition of communities and families), climate change (effects and possibilities for reducing the local impact[2]), life cycle assessment (comprehensive analysis of food produce, from production to consumption or disposal), social and solidarity economy (for thinking the socioeconomic aspects of metropolitan agriculture from a wider perspective), food as a commons (as opposed to a commodity), etc.

These and other approaches can be used to analyse the many aspects that are important in this field of knowledge. A few of these aspects are already well-researched, while most of them still require a lot of attention. Some of the **issues that deserve special attention** are water management (recycling and purification systems, efficiency measures…), conflicts over land use (urban construction vs agriculture, issues of scale), short supply chains and other marketing channels, informatics (how to make the best use of new technologies in the sector), green roofs and soilless methods, the role that private enterprises can play in urban agriculture, how to increase local food provision, issues of perception (how do consumers think about local or organic produce, their differences with politicians and other stakeholders, and the factors that make them change), labelling, new economic models for high value products, food identity (what constitutes it, how does it change due to migration), regional integration and territorial issues, sea products and aqua-culture, urban agriculture planning, etc.

Example 1
Fertilecity (Barcelona, Spain)

Led by universities and research centres from the metropolitan area of Barcelona, and with the participation of private companies and different municipalities, Fertilecity is a research project aimed at evaluating an eco-innovative concept for improving the sustainability of buildings in urban environments and producing high quality vegetables. In the first phase of the project (2014-2016), the flagship action has been the implementation and assessment of a rooftop greenhouse lab that integrates energy, water and CO_2 flows in the metabolism of the building, located at ICTA-UAB. The project is interesting because it bridges urban innovation (farming on roofs, reducing pressure on fertile soil, urban greening) with technological innovation (building interconnection, energy modelling, use of waste and water recirculation) from an industrial ecology approach. The second phase of the project (2017-2019) will analyse suitable economic models for this kind of production and will transfer them to national and international entities.

More info on MADRE online catalogue (link in the last page)

Example 2
JASSUR (Marseille, France)

This research project developed between 2013 and 2016 studied the functions, uses, modes of operation, benefits and potential dangers of urban associative gardens in 7 French cities. The main innovation of the project was its transdisciplinary approach, with the participation of 13 partners from research centres and associations. The project concluded that urban associative gardens need to be more integrated into urban policies, in view of their significant positive externalities. JASSUR led to several other collaborative projects and experimentations, as it addressed an emerging and innovative issue.

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1 An example of this issue can be found in the results presented in this article around the provision of ecosystem services by urban gardens in Barcelona - https://www.sciencedirect.com/science/article/pii/S1462901116300089

2 This issue will be addressed by a new Interreg North-West Europe project, GROOF (Greenhouses to Reduce CO_2 on Roofs). More information here - http://www.nweurope.eu/projects/project-search/groof/

3.2 Exploring new forms of knowledge generation and transfer

Knowledge transfer processes denote how knowledge and ideas move from their sources to the potential users. Traditionally, one of the biggest criticisms of academics is that their teaching and writing has a lack of practical insights and application, in the sense that the outputs of their research might not be useful or understandable enough to its final users. Avoiding this obstacle is especially important in the case of urban and peri-urban agriculture, a field in which the results of academic research are most meaningful when they are put in use by civil society and farmers.

Over the last decade, the meaning of knowledge transfer has widened to encompass the collaborative and iterative nature of its creation and exchange, a process that has proved to have very positive impacts on research results. The adoption of this approach requires to include some concerns about the **dynamic processes by which knowledge on metropolitan agriculture is co-created and exchanged across different disciplines and stakeholders**. Instead of simply communicating academic results, it is important to think about knowledge transfer as an empowerment process for urban and peri-urban farmers and civil society in general, especially if they are involved from the early stages and they are able to define objectives and methodologies according to their needs and concerns. Thus, it is necessary to find and experiment with **methodologies that allow knowledge co-generation** by establishing horizontal relationships between researchers, civil society and policy makers (see example 3). Avoiding knowledge hierarchies is an essential step (and probably one of the most difficult as well) in this shift towards a broader and richer understanding of knowledge creation and transfer.

The lack of cooperation between different research institutions is another aspect of this issue. It is not uncommon to find several universities studying the same subject without having an active coordination on the definition of the subject, the methodology or the communication and result dissemination processes. While this is not specific about research on metropolitan agriculture, the specificities of this field of knowledge make it particularly interesting to reverse this tendency of isolation. Thus, it is important to find ways to cooperate between universities in order to step forward existing knowledge, share and enrich the network of non-academic contacts and improve the social impact of research outputs (see example 4). A possible way to do that would be the **creation of research clusters on metropolitan agriculture**, which could identify and map research processes, build consensus on which are the most appropriate research areas and decide how to distribute efficiently its components between different universities.

Example 3
Abeille Project (Montpellier, France)

Abeille is an action-research project that started in 2015 and aims to highlight the obstacles to the development of agro-ecological food systems in small municipalities of the Hérault and Gard Departments in France. Led by a research centre from Montpellier, the project adopted a very horizontal and broad approach right from the start, involving private land-owners, farmers and local public authorities in the design and development of their actions. The results include a guide on agro-ecological initiatives and practices dedicated to local institutional players and a typology for the implementation of agroecology in farms of the studied area. The tight connection between the researchers and local authorities is regarded as one of the strengths of the project.

More info on MADRE online catalogue (link in the last page)

Example 4
Ces.Co.Com (Bologna, Italy)

The Centre for Advanced Studies on Consumption and Communication (Ces.Co.Com) was established in 2013 to analyse and promote the culture of sustainability and responsible consumption, new media, social and environmental cooperation, participation, urban regeneration and social innovation. The centre is part of the University of Bologna but has strong links with the municipal and metropolitan governments, with the results of its research having a strong influence on local decision-making. Ces.Co.Com tackles urban and peri-urban agriculture from a consumer's perspective and to do so it makes use of a strong network of experts and collaborators from other national and international scientific institutions and fields of knowledge.

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3.3 Adopting meaningful and effective communication strategies

Another central concern regarding the dissemination and use of academia's outputs is how to adopt effective communication strategies. A proper communication plan can help to **engage effectively different stakeholders, involve society into the research process and thus generate a meaningful social impact**. On the contrary, poor or misguided strategies can be a waste of resources and undermine the relevance of research results. Although communication is widely regarded as a major part of research projects, too often it has to deal with insufficient economic resources. Without proper budgets, communication campaigns have to be even more well-designed and imaginative.

First of all, researchers should bear in mind that it is easier to communicate the results of a project to those who have been involved in some stage. In this sense, **research processes that focus on the co-generation of knowledge** between academics and non-academics (see previous point) have more probabilities to engage these partners in their communication plans. Apart from having a continuous dialogue about the objectives, methodologies and implementation of the research, it is important to include the communication strategy in those discussions as well. Farmers, activists, policy-makers and other stakeholders will be keen on sharing the outcomes of a project in which they have participated (even more if they can do it in their own terms) with their organisations, unions, municipalities and other social and professional spaces. Pilot tests, workshops and forums are also interesting ways to get directly in touch with potential users of this knowledge.

Communicating the results of a project outside its research community can be more difficult yet just as important. To do so, it is important to have a clear idea of the type of stakeholders that need to be addressed. **Targeting the audience** is key in order to adopt the most effective channels and language. This process implies thinking about social groups (other researchers, farmers, activists, urban citizens, administration officers, etc.) and the scale of the communication actions (from national to local campaigns). After that, **translation work** is essential to ensure that the research outcomes are presented in an understandable and attractive way. Language, common sense and people's perceptions need to be addressed at this point.

Taking all of this into consideration can be quite challenging for some researchers. Asking for **expert advice** in the design, implementation and monitoring of knowledge transfer processes can be a useful resource. Research institutions, for example, could provide this kind of mentorship or support to specific research groups and their projects. Specialized journalists, in particular, have very useful knowledge and expertise and can be key collaborators in this process.

3.4 Connecting researchers and policy-makers

The idea that policy-makers know everything they need to know and researchers only think about sky rockets could not be further from truth. Even more so in the field of urban and peri-urban agriculture, where policies need to deal with a high degree of uncertainty and research has to be grounded on real experiences and dynamics. However, connecting researchers and policy-makers in fruitful and effective ways is often a big challenge. The different dynamics and needs of the two groups of stakeholders can provide a number of obstacles, no matter how good their initial intentions are.

Realizing that there is a **potential in the joint work between research and policy-making** might be the first step to overcome these obstacles. On the one hand, public workers and elected officials have to deal continuously with different options for settling problems and allocating funds. The more informed they can be, the more effective their decisions will be. On the other hand, research projects in the field of metropolitan agriculture tend to have an advocacy intentionality, in the sense that they tend to analyse issues that affect public life. If they are developed in partnership with policy-makers, it is then more likely that the results of the investigation have an impact on specific policies and debates.

From the perspective of researchers, **academic structures create a number of opportunities for establishing such connections**: local policy-makers can be invited to attend the presentation of students' thesis at postgraduate (or even undergraduate) level, and then be asked about their opinion on whether or not the conclusions are significant or possible; masters students can be offered to make short stays in local public offices, for intensive exchange of ideas and experiences; doctoral thesis can be linked to public service and public authorities; policy-makers can be involved in research projects, such as EU-funded LIFE program, and so on. In all of these cases, it is important to **recognize the diversity within the public sector**. Not only different institutions and departments exists, but also different types of peoples: elected officials and public servants. Approaching the appropriate profiles is important to ensure fruitful collaborations, since there might be a diversity in terms of interests and priorities (short term / long term, certain topics, etc.) and also, for example, some individuals might have a research background, making them far more eager to collaborate with the academia.

Joint tables or working groups can also be fruitful spaces of exchange between researchers and policy-makers. These experiences build on the ideas that stable, continuous conversations are better than isolated encounters, and that small contexts tend to create closer relationships than very numerous meetings. Both of these factors help to **build trust between the stakeholders**, an element that is essential for collaboration. Such spaces can be used only for sharing knowledges and experiences over time, with little risk for conflict. They can also be more analytical, producing non-binding recommendations for other stakeholders (see example 5). They can even become spaces of joint work between policy-makers and researchers, from developing demonstration projects to solving specific problems.

Another possibility for long-term collaboration is the **transference of funds from public administration to research centres**. This can take the form of specific agreements to develop certain projects or it can imply the participation of public institutions in the structure of research centres (see example 5). While receiving public funds can grant stability to researchers, it can also put them in a difficult position. Addressing conflicts of interest and having clear regulations to this matter is essential. If managed properly, such collaborations can allow public authorities to have a say in the setting of the research agenda, while researchers ensure that their activity has an effective impact on policy-making.

Example 5
Metropolitan Area of Barcelona (AMB) (Barcelona, Spain)

AMB is the metropolitan authority of Barcelona and has a good history of successful collaborations between public authorities and researchers. On one hand, AMB has been hosting for some years a series of 'working tables' that address specific issues at a metropolitan scale (one of them dealing with urban and peri-urban agriculture). These tables have a set periodicity and they bring together researchers, private actors and decision-makers from different institutions (municipalities, metropolitan and regional governments) in order to share information and produce non-binding recommendations. They have proved a very useful tool for establishing connections, solving conflicts and advancing certain debates. On the other hand, AMB is one of the members (along with other public administrations and 3 universities) of a public research consortium –IERMB– that analyses processes and dynamics of various types at a metropolitan scale. IERMB is an interesting example of a bridge institution between the academia and policy-makers, and while this duality can sometimes generate conflicts of interest, overall it is a very successful and fruitful experience for both parts.

More info in: http://www.amb.cat/en/home - https://iermb.uab.cat/en/

3.5 Exploring alternative ways to develop impactful research

Direct collaboration between academic researchers and policy-makers is a clear possibility for achieving impactful research. Some people even consider that the participation of public authorities is essential in order to achieve proper governance processes and a good dissemination of research results.

However, policy-making and governance in the field of metropolitan agriculture can be understood in a broader sense if organised farmers and civil society are recognized as actors that can also generate significant social and economic changes. This approach has two consequences. Firstly, that **working with organisations already linked to local authorities can be a way to have an indirect effect on policy-makers** –researchers can then channel their knowledge through those organisations, or even act in a moderating role between the two. The second consequence of this broad approach to metropolitan governance is that not only policy-makers do policy-making. Because of that, **researchers can engage with such groups and even be an integral part of civil society and social movements**. Finding non-institutional ways to affect policy-making (e.g. getting involved in school food councils, which might already have power and an impact on local policies) implies working at a cultural and societal level in order to create the conditions for certain political changes (see example 6). It can also be interesting in order to avoid the effect of shifting governments due to electoral cycles.

The relationship between researchers and policy-makers has similar problems to those of the relations between researchers and other stakeholders. Urban and peri-urban agriculture is complex enough so that is becomes necessary to take into account all the stakeholders that are involved. Sometimes it might be useful to adopt one-on-one approaches, while in others it can be best to organise governance boards that bring together a diversity of stakeholders. In any case, academic research can play a key role providing information and assessment.

Example 6
Aristotle University of Thessaloniki (AUTh) gardens (Thessaloniki, Greece)

In 2012 the Aristotle University of Thessaloniki (AUTh) embarked on a strategic plan to become a green university. As part of this effort, it converted 6 hectares of the University Farm into 100 m^2 plots that were later allocated to city dwellers through open calls. More than 5000 plots of land are being cultivated today by almost 2000 citizens from Thessaloniki, who must comply with the principles of organic farming and can hold their plot for a maximum of 3 years. This successful initiative has been a great opportunity both for the city dwellers (who make use of the land for leisure, health or even professional purposes) and for students of the university (who practice their knowledge by assisting gardeners in growing their own vegetables). This initiative is a good example of how researchers can meet civil society and work with them without the intervention of public authorities. By doing so, the university has also helped raise awareness on environmental issues and the need to adopt sustainable farming methods such as organic agriculture.

More info on MADRE online catalogue (link in the last page)

4. Recommendations

Metropolitan agriculture has multiple dimensions and its development brings together a wide range of stakeholders. Academic research, as already explained, can provide key insights into this process. The recommendations that follow are some of the actions that can help to foster this activity, with a particular focus on the specific topics discussed in this report.

Researchers:

- Include farmers, civil society and other stakeholders in the entire process of a research project (objective setting, methodology, implementation, evaluation and communication).
- Address knowledge transfer as a major part of the research activity and devote sufficient resources and planning to communication strategies.
- Foster networking and cooperation with other research groups and universities, with the aims of coordinating research topics and ensuring that there is no repetition or overlapping.
- Embrace the diversity of issues and approaches of metropolitan agriculture from a transdisciplinary, holistic, horizontal approach. Recognize its specificities.
- Engage in different forms of collaboration with policy-makers, recognizing the potential benefits of such initiatives and the diversity of profiles within the public administration sphere.
- Collaborate with civil society and private actors and explore the multiple benefits that such relationships can generate, from providing assessment to enriching research or foster political action.

Public authorities:

- Capitalize the results of previous research in order to improve plans and programmes.
- Engage in different forms of collaboration with research institutions, recognizing the potential benefits of such initiatives in terms of acquiring better information and a deeper understanding in the field of metropolitan agriculture.
- Make clear commitments about the political results of research collaborations and stick to them.
- Offer possibilities for researchers in training to develop part of their work in public administration spaces.

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