

Joint Programming Initiative  
on Agriculture, Food Security  
and Climate Change

FACCEJPI.NET

# URBAN AGRICULTURE AND FACCE-JPI

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FACCE-JPI  
White paper

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# BACKGROUND

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**FACCE-JPI first addressed urban agriculture through the “*Exploratory Workshop on Urban Agriculture and Adaptation to Climate Change*” described in the FACCE-JPI 2018-2020 Implementation Plan under Core Theme 4 (Exploratory Workshops on Urban Agriculture). At the time, this action was identified to explore the opportunities urban agriculture can offer in the challenge to provide healthy, nutritious and sufficient food for a growing population under the aspect of climate change.**

**A first workshop in January 2020 in Wageningen brought together a broad selection of stakeholders and experts (academics, industry, policymakers, funders, retailers, land & urban planners etc.). Together they discussed what urban agriculture could offer, the main challenges and the type of instruments needed to strengthen its role e.g. through FACCE-JPI.**

**To continue the work on this topic, a follow-up meeting took place on June 14<sup>th</sup> 2021 bringing together a similarly diverse but smaller audience to further address the recommendations and outcomes from the 2020 workshop. Specifically, the participants addressed the definition of the policy environment around urban agriculture, attempted to identify the place of urban agriculture within FACCE-JPI remit, Strategic Research Agenda and Implementation Plan, and provided input on external activities such as Horizon Europe partnerships with a potential relevance for the area. Following the expert meeting, the FACCE-JPI Secretariat has prepared this white paper connecting the outcomes from the workshop and a JRC report with FACCE-JPI in order to aid decision making for the Governing Board.**



# A CHANGING LANDSCAPE - AGRICULTURAL DIVERSITY

## The needs and challenges of current and future agriculture

Current “conventional” agriculture is often a trade-off between production capacity / yield and sustainability. It is not climate resilient enough, can pose a threat to biodiversity and is a big contributor to climate change<sup>1</sup>.

This is further aggravated by the fact that global population is increasing, requiring more food and space to accommodate the increased population as well as for food production. Land use and land use change for food, feed and fuel production have been discussed for a long time and policies around these issues are in place. Figures show that in 2018 about 55% of the global population lived in urbanised area (ranging from 82% in North America to 43% in Africa) with predictions showing this number to rise to 68% by 2050<sup>2</sup>. This will put increased pressures on rural agricultural areas in terms of food production and land use change.

The last few years have also brought a greater interest of consumers in the origin and the ingredients of their food. Ethical, sustainable and traceable production and resulting diet are expected to become more important and consumer pressure is likely to change primary food production in the future. With nearly 70% of the population expected to live in an urban setting, it is easy to assume that the change will be driven from the urban areas and urban areas will shape a large part of the agricultural system. This notion has also led to an increased attention for urban and peri-urban agriculture (UPUA) as a possible factor in a changing production and consumption system.

## The policy context of urban agriculture

Urban agriculture is mostly dealt with at a regional or local level: the 2015 Milan Urban Food Policy Pact<sup>3</sup> is an international agreement of city and town leaders, composed by a preamble and a Framework for Action listing 37 recommended actions, clustered in 6 categories. For each recommended action there are specific indicators to monitor progress in implementing the Pact. The Milan Urban Food Policy Pact is linked with the FAO who has had a long-term interest in urban farming practices, likely driven by its global focus – urban farming is more common practice in less

developed areas.

Several COST Actions and regular calls under Horizon 2020 have stimulated R&I on urban agriculture. The European Forum on Urban Agriculture builds upon work through the European COST Action “Urban Agriculture Europe” and brings together a network of researchers, practitioners and citizens from all over Europe with the aim of increasing knowledge and awareness of Urban Agriculture and its potential to deliver Sustainable Development Goals (SDGs).

While most of the attention for urban agriculture in the European Union remains focussed at the subnational levels, supranationally, it has begun to gain attention as well. The European Green Deal refers to urban agriculture through its Biodiversity Strategy and the Climate Pact, though the emphasis there is on sustainable and biodiverse urban environments and greening urban spaces. In the Farm to Fork Strategy as well as FOOD2030, urban food systems are mentioned explicitly, as an area where (more) research is warranted.

## What is urban agriculture?

Urban agriculture is a multifaceted collection of different types of agriculture, at different scales, that serve different goals, and can be executed for a multitude of reasons. At the heart of the concept lies the **understanding that urban agriculture involves food production in urban or peri-urban areas**. This overarching description incorporates the general term ‘agriculture’, defining the various forms of farming and gardening most commonly undertaken in rural areas<sup>4</sup>.

Urban agriculture is also described as a “**primary production process [that] can be viewed as a component embedded in the urban food system, which further includes processing, packaging, distribution and retail**. These closely interact with urban material and resource streams such as water, energy, and organic waste. The practice of urban agriculture also entails various institutional norms, government and private sector policies, and cultural attributes in any city region.” (Weidner et al; 2019)<sup>5</sup>.

According to the FAO, urban and peri-urban agriculture (UPUA) “*comprises food production in and around urban areas, ranging from leisure to commercial activities. Scale, intensity, use of technology and output vary considerably depending on the type and the focus of UPUA.*”

*Distinctive features are explained through location factors and different degrees of professionalism.*

<sup>1</sup>FACCE Strategic Research Agenda

<sup>2</sup>68% of the world population projected to live in urban areas by 2050, according to the United Nations Department of Economic and Social Affairs (UN DESCA)

<sup>3</sup><https://www.milanurbanfoodpolicypact.org/>

<sup>4</sup><https://link.springer.com/content/pdf/10.1007/s10460-015-9610-2.pdf>

<sup>5</sup><https://doi.org/10.1016/j.jclepro.2018.11.004>

UPUA developed from a means of self-supply in times of crises to a multifunctional land use resulting in manifold benefits on a social, economic, ecological and cultural level. Although, especially in peri-urban areas highly productive commercial farms exist, the commercial potential has not fully unfolded yet and is facing several constraints.”<sup>6</sup>

A recent foresight report by the Joint Research Centre (JRC) of the European Commission (EC), identified 12 types of farmers for 2040<sup>7</sup>, with many new ones already currently existing in niche areas. Over half of the identified types (58%) are able to operate in an urban/peri-urban setting (Table 1).

**Table 1:** Twelve Profile types according to the JRC Foresight study. In yellow, urban and peri-urban farming modalities.

TYPE	SCALE	YIELD	LIVELIHOOD	GOAL	BENEFITS
INTENSIVE	large	high	rural	Food production	Feed the world
PATRIMONIAL	large - medium	high	rural	Food production	Feed the world, rural development
CORPORATE	large - medium	high	rural / (peri-) urban	Food production	Feed the world
ADAPTIVE	medium	high - medium	rural	Ecological focus on food production	Feed the region, ecological principles
REGENERATIVE	medium	medium	rural	Sustainable focus on food production, biodiversity	Feed the region, preserve ecosystem, resilience
SOCIAL CARE	medium	medium - low	rural / (peri-) urban	Food production and social aspects, connection	Feed the region, build the community
CELL	medium	medium	urban	High-tech food alternatives	Feed the region, preserve ecosystem, animal welfare
URBAN	medium - low	medium - low	urban	Food production, resilience, green urban environment, biodiversity, access to food	Feed the region, build the community, circularity, shorten chains
CONTROLLED ENVIRONMENT	medium	medium	(peri-)urban	High-tech food production	Feed the city, new business model, preserve ecosystem
COMMUNITY PROVISIONING	medium - low	medium - low	(peri-)urban	Local food production, access to food	Feed the city, build the community, resilience
LIFESTYLE	low	medium - low	(peri-)urban	Local food production, social welfare	Feed your neighbours, health, build your neighbourhood
SERIOUS HOBBY	low	low	(peri-)urban	Local food production	Feed your neighbours, build your neighbourhood

These twelve different types of farmer profiles provide a structure in which different types of urban farming practices can be assessed. For discussion purposes, the authors of this white paper grouped these types across two scales: large scale to small-scale production methods, and intensive to extensive farming types:

<sup>6</sup><https://op.europa.eu/en/publication-detail/-/publication/960abc78-b7cb-11e8-99ee-01aa75ed71a1/language-en/format-PDF/source-76962665>

<sup>7</sup>Farmers of the Future doi:10.2760/680650

**Table 2:** Arranging the 12 types across two axes; from intensive to extensive production, and operability at a large scale versus individual production. In yellow farming types that have a clear social component.

		LARGE-SCALE ← → INDIVIDUAL	
INTENSIVE ↔ EXTENSIVE	INTENSIVE	PATRIMONIAL CORPORATE ADAPTIVE REGENERATIVE	
		SOCIAL CARE CELL URBAN CONTROLLED ENVIRONMENT	COMMUNITY PROVISIONING
		LIFESTYLE	SERIOUS HOBBY

In addition to identifying farming types based on the expected output and likely production scale, in the analyses of the possible role of urban agriculture, a third aspect plays a role: the sustainable livelihood / social / wellbeing element that is often described as an added value of (low-tech) urban agriculture. This aspect prompts to facets of health, wellbeing, education and sustainable livelihoods: grow your own food, community binding, community service, safe neighbourhoods, et cetera. It also related to persistent worries over consumers' distance to the origin and production of the food they consume, and urban agriculture is seen as a way to (re-)connect citizens to their food origins.

**What can urban agriculture offer, what are dilemmas?**

There are potential benefits, risks and dilemmas of both indoor and outdoor urban farming approaches, and their transformative potential. How this is assessed varies widely.

Technology approaches such as vertical agriculture, aquaponics, and others have great **potential in closing several gaps**: they promise almost circular systems, controlled environments and **resource use efficiency**. In potential, such approaches could be beneficial for food and nutrition security: crop selection and technologies to maximise nutritional yields and minimise environmental impacts. However, energy resources are a trade-off at the moment. Current production costs are still high though and a significant consideration is that vertical agriculture is no substitute for con-

ventional staple crop production. The former may change if energy production is sustainable (e.g. through solar or wind).

**Climate change impacts on food supply and the urban environment** could be mitigated to some extent through urban farming practices. Such practices may also result in shorter chains and more resilient local or regional food systems, in terms of accessibility of food. However, again the question whether total production is enough to feed millions, is warranted.

The **social and economic implications** and/ or ramifications of the above-mentioned aspects: these range from changes in global markets to shifts in demography resulting in more urban food consumers and less rural food producers (changing entrepreneurs, business models, new farmers, rural impacts), and awareness about food sources and diets.

In terms of yield capacity, it seems without contradiction that UPUA alone cannot achieve global food security. However, it is argued that urban food production on a large scale could take some pressure from rural agriculture (Specht et al. 2013)<sup>8</sup>. It could support reaching a balance between food availability in rural and urban areas and contribute to cities' sustainability and food security. There are several limitations in addition to yield capacity restraints. In previous discussions on urban agricultural practices, three major dilemmas were considered:

**Dilemma 1: To be circular...or not? (That's the question)**

Circularity in terms of agriculture refers to the cycling of nutrients in a closed system. There are opportunities and challenges in an urban circularity approach. However, food is explicitly omitted from several policies and agreements such as the European Circularity Pact. Knowledge about the opportunities and challenges are limited e.g. on availability of different forms of nutrients, urban waste streams and health risks, urban waste flows such as heat and nutrients and making use of them.

**Dilemma 2: Land use versus soil use**

Is there enough land in urban and peri-urban areas that can be adapted to farming land? What should be the quality of this land? Why should expensive urban land be converted to food production? Isn't that what farmland is for?

In addition to land use, there is the continued

<sup>8</sup><https://link.springer-com.ezproxy.library.wur.nl/article/10.1007/s13593-014-0273-y#Sec15>

question on the production potential of urban agriculture. What is the potential of urban agriculture in relation with land use, and what choices can be made?

In what way could urban agriculture contribute to adaptation to climate change? More clarity is required on different ways in which climate goals can be met and their impact on environment (biodiversity, soil health etc.) and urban food systems.

### **Dilemma 3: Conflicting policies**

In broad terms, there is a lack of coherence in policies that support agri-food systems and urban sustainability, which may not be surprising as they cover policy arenas from different, often sectorally organised ministries. However, current challenges demand a holistic approach that includes coherent and inclusive policy-making. European agricultural policies might need some critical assessment to propose more facilitative alternatives.

The link between climate change policies and urban agriculture is not always obvious: the framing of climate policies in terms of reduction of GHG emissions tends to disregard ecological dimension of sustainable food production. There are potential synergies and conflicts with different forms of land use and economic activities and policies need to be harmonised accordingly. In addition to the lack of coherence in overarching policies, there are conflicting interests at the local level, for example the real estate policies versus liveable cities (urban development agendas).

## **A FOCUS FOR FACCE-JPI**

In order to discuss what urban agriculture can offer, and if and where FACCE-JPI should actively contribute to the discussion, it makes sense to regard the different modalities of UPUA on their respective contributions to the FACCE-JPI goal.

The FACCE-JPI Strategic Research Agenda states: *“The FACCE-JPI mission statement implies that research activities and resources will be concentrated on agricultural production systems but with a strong consideration of interactions with i) the food system, ii) the climate system and iii) the ecosystem and possible system shocks. A systems approach will include a strong link between the production and the climate system. The*

*pledge to climate neutrality, as remarked in the Farm to Fork strategy, requires a clear identification of agricultural systems that have the potential to meet this standard.”*

The focus of FACCE-JPI is on the whole production system, which needs to deliver enough good quality food to feed the world. Its view is less focussed on the livelihood aspects in urban environments, and this raises the question whether all types of urban farming methods should be taken up as potentially significant in contributing to the goals of FACCE-JPI.

To put it more clearly: **should FACCE-JPI focus on a systems approach towards urban agriculture, or should it focus on those types that have the potential for high to medium yield or have the potential for a high impact in changing the food system?** This question should be addressed in the Scientific and Stakeholder Advisory Boards, as well as in the Governing Board. If the FACCE focus would be restricted to high and medium yield approaches, five types of UPUA could warrant further investigation: Social Care, Cell, Urban, Controlled Environment and Community Provisioning (see Table 1).

In the sessions that were organised in exploring UPUA in the FACCE-JPI context, two major angles were identified. A third angle could be centred around scenario studies, foresight studies and bringing together the already existing body of knowledge on UPUA systems:

- The urban angle: how can urban agriculture support an urban set of needs (e.g. in terms of food security, greening of cities, urban biodiversity)?
- Can UPUA systems act as a laboratory for more ‘conventional’ agricultural practices?
- Do we need scenario studies to assess UPUA systems in their contribution to future global food security?

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This white paper was produced by the FACCE-JPI Secretariat to support discussions on urban agriculture in the FACCE-JPI Scientific Advisory Board, the Stakeholder Advisory Board and the Governing Board.

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