

EFUA – Next Conference 20-21 April 2023

Setting the Scene: EFUA findings of types and benefits of UA



Multiple benefits of Urban Agriculture.

An overview

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Understanding the benefits of UA

- Task 3.2.1: benefits of UA
- Task 3.2.2: UA links to other urban oriented concepts, UA benefits adds to those concepts and policy fields
 - **D3.2 - type-benefit matrix**, including set of indicators and benefit leaflets (April 2022)
 - D3.3 - Report on links to other urban concepts (October 2022)

Research questions:

- What are the **benefits** of UA and its possible disservices (or unwanted effects)?
- How are these benefits **monitored and assessed**?

Task 3.2.1 aims to identify, collate and systematize the benefits and possible unwanted effects of UA

Categorizing the benefits of UA

5 dimensions



Socio-cultural



Environmental and climate



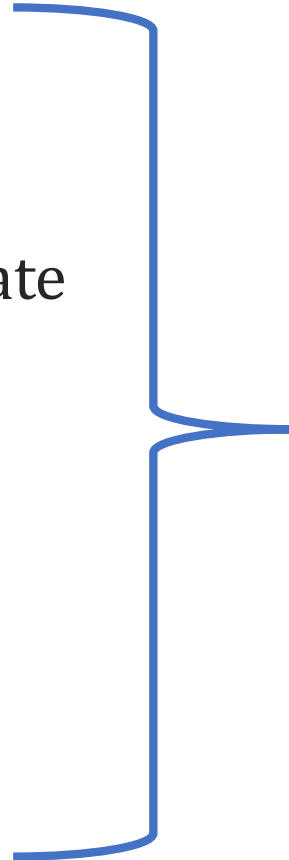
Food



Health and well-being



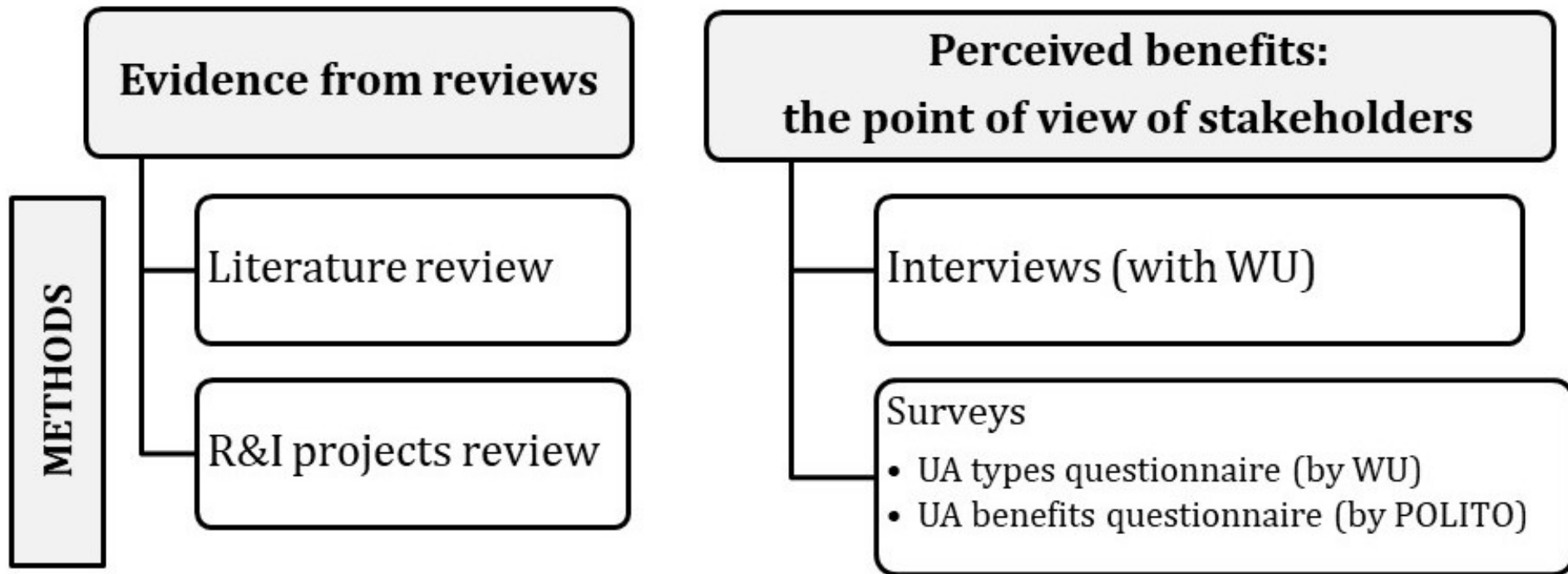
Economic



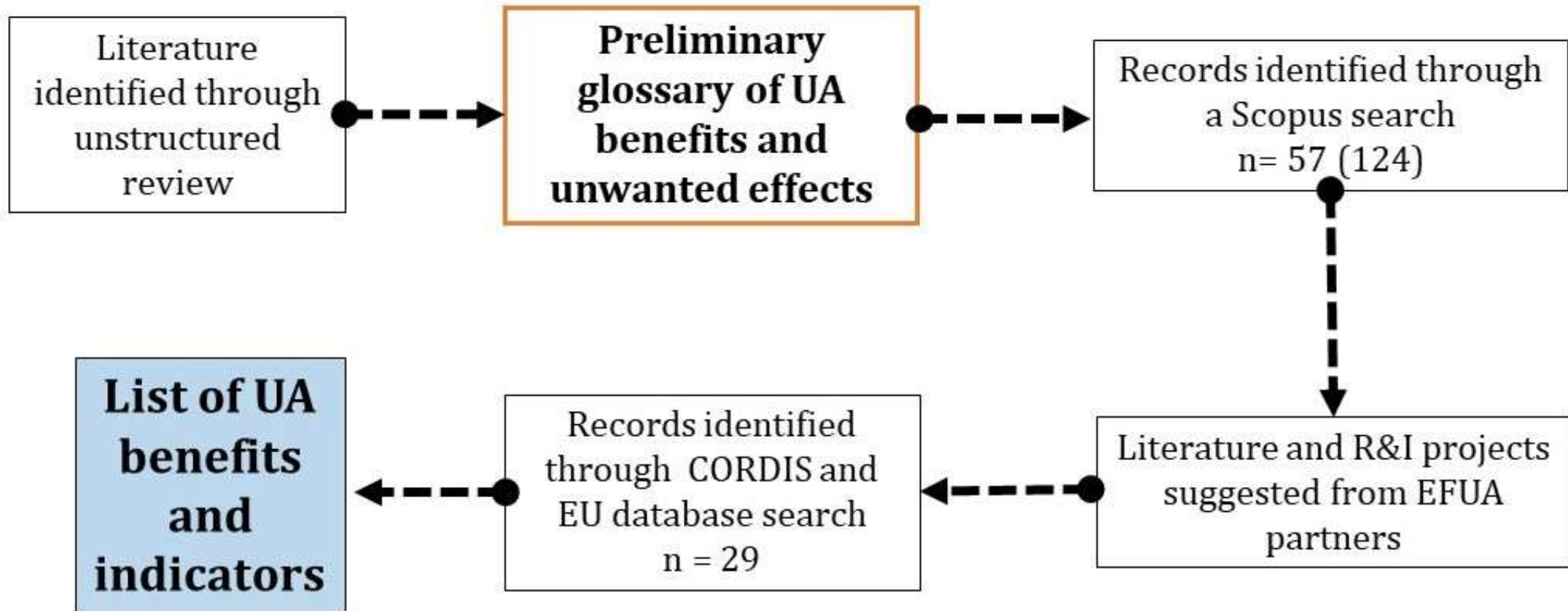
Why this categorisation?

- relationship with urban policy themes
- benefits not as compartments
→ overlaps and connections
- more targeted policy recommendations
- consultation of EFUA partners and stakeholders

Methodological approach





Review process



The list of benefits (and indicators)

Socio-cultural benefits




SC01 - Redevelopment of degraded neighbourhoods
 SDG11; UAF8; UAF13
 SC04; EN09

Description

Zero acreage farms and urban food gardening, particularly DIY gardens, community parks and gardens, can be a tool for neighbourhood beautifications and the redevelopment of degraded or abandoned areas (Ohmer, et al., 2009; Provè, 2018).

Urban food gardening, particularly DIY gardens, community parks and gardens, can strengthen interaction and networking between people, as well as social engagement (Drake & Lawson, 2015; Draper & Freedman, 2010; Gasperi, et al., 2016; Kingsley, et al., 2021; Krikser, et al., 2019; Petit-Boix & Apul, 2018; Rogge, et al., 2018; Spilková, 2017; Uhlmann, et al., 2018; Veen, 2015). DIY gardens, community parks and gardens can contribute to bridge social capital, strengthen citizen participation and trust in the city administration (Colinas, et al., 2019). They can strengthen feelings of belonging (Partalidou & Anthopoulou, 2017), develop or improve a sense of community (Menconi, et al., 2020), a sense-of-place among citizens (Bendt, et al., 2013; Pungas, 2019; van Veenhuizen, 2006; Veen, 2015), as well as the place attachment (Colinas, et al., 2019), especially through the processes of place-making based on the cooperation and participation of several stakeholders (Acton, 2011; Provè, 2018; Turner, 2011; Palau-Salvador, et al., 2019; Saldivar-Tanaka & Krasny, 2004). Urban food gardening can also contribute to develop community coalescence (Glennie, 2020) and to foster collaborative approach between gardeners, citizens and municipalities (Artmann & Sartison, 2018; Caputo, et al., 2021; Giacchè, et al., 2021; Hodgson, et al., 2011; Koopmans, et al., 2015; Lawson, 2007; Menconi, et al., 2020; Sanyé-Mengual, et al., 2018; Sartison & Artmann, 2020; Smit & Bailkey, 2006; Specht, et al., 2015).



SC02 - Improvement of social cohesion and developing feelings of belonging and a sense-of-place
 SDG10; SDG11; SDG16; SDG17

• 5 Benefit categories, 37 benefits + 15 unwanted effects

1. **Socio-cultural:** Improvement of social cohesion, developing feelings of belonging and a sense-of-place, Development of education, knowledge, innovation and awareness on food, agriculture and environment, Improvement of leisure, recreation activities and tourist attractions, etc.
2. **Environmental and climate:** Reduction of the urban heat island effect, Increased quality and quantity of urban green spaces and green infrastructures, Preservation of urban biodiversity, etc.
3. **Food:** Improvement of food security and quality, Enhancement of short supply chains and alternative food networks, Ensuring food sovereignty and improving access to healthy, ethnically and culturally appropriate food, etc.
4. **Health and well-being:** Improvement of quality of life, Improvement of physical and mental health, Reduction of agrifood products toxicity, etc.
5. **Economic:** Diversification of agricultural income and activities, Improved local economies, Creation of job opportunities, Improvement of city branding, etc.



Inter-related benefits



policy targets

• a list of 231 indicators

The type-benefit matrix

Category	ID	Benefits and unwanted effects	Urban farm	Community Park	DIY garden/farm	Zero Acreage farm	Social farm	Community garden
socio-cultural	SC01	Redevelopment of degraded neighborhoods						
	SC02	Improvement of social cohesion and developing feelings of belonging and a sense-of-place						
	SC03	Improvement of social inclusion and gender equality						
	SC04	Improvement safety of neighbourhoods and public spaces						
	SC05	Development of education, knowledge, innovation and awareness on food, agriculture and environment						
	SC06	Reduction of food poverty						
	SC07	Maintenance of open spaces, landscape diversity and traditional landscape features						
	SC08	Improvement of leisure, recreation activities and tourist attractions						
	SC09	Maintenance of local knowledge, traditions, memory and cultural heritage						
	SC10	Labor exploitation						
	SC11	Neighbourhood gentrification or green gentrification						
	SC12	Loss of landscape features						
	SC13	Visual impacts						
Environment and climate	EN01	Reduction of food carbon footprint						
	EN02	Reduction of emissions and improvement of air quality						
	EN03	Reduction of the urban heat island effect						
	EN04	Recycling and closing nutrient cycles, improving efficient use of resources						
	EN05	Decreasing agricultural pressure on the environment						
	EN06	Decreased flood risks						
	EN07	Increased quality and quantity of urban green spaces and green infrastructures						
	EN08	Prevention and/or reduction of land consumption						
	EN09	Regeneration of brownfield sites and contaminated land						

COMPONENTS:

- 6 UA types (By WU, task 3.1)
- 5 Benefit categories
- 37 benefit types
- 15 unwanted effects

Evidence based (literature)

green = benefits

red = unwanted effects

Supposed/expert estimation

light green = supposed benefits

orange = supposed unwanted effects

→ All UA typologies produce benefits

The benefit leaflets

Environmental and climate benefits of urban agriculture



UA, in particular DIY gardens/farms, organic or environmental-friendly urban farming, community parks and gardens, can foster the management, preservation, improvement or growth of **urban green spaces and green infrastructure**. The additional surface of plants and green areas can contribute to **decrease storm water runoff**, improve rainwater retention and **prevent erosion**.



UA plants and greening practices can contribute to a **reduction in the urban heat island effect**, temperature regulation and climate adaptation. UA plants can contribute to the **carbon sequestration** and **decreased air pollution** filtering fine dust particles. Local food production and direct selling of some UA types, such as DIY gardens/farms and community gardens, as well as local farms and vertical farms, can contribute to a **reduction in food miles**.



UA, particularly organic or environmental-friendly farming, as well as community parks and gardens, can significantly contribute to preserving **urban biodiversity**, as well as habitats and species, especially through professional urban farming in protected areas. Organic or environmental farms can also contribute to **increase diversity** of plants and native species in urban and peri-urban areas. In addition, Urban gardens could provide **pollination services** to other crops and/or habitat for pollinators in urban and peri-urban areas.



The presence of UA practices can foster the conservation of urban green spaces and **prevent land consumption**. In addition, some UA types, such as Zero Acreage farms and Building-Integrated Agriculture systems (BIA), don't require additional land. Urban food gardening can also foster the **environmental regeneration of brownfield sites** and contaminated land, derelict spaces, abandoned buildings, improving the quality of soil.



Issues for attention

The local food systems could be less energy and water efficient than other production systems. For example, some Zero Acreage farms and rooftop gardens, could increase electricity use or require **high energy demand**. Some UA types and specific production methods, such as high input agricultural practices, could use inefficient irrigation systems, **produce pollutants and contaminate soil** and water bodies. Intensive UA practices could significantly reduce urban biodiversity, as well as habitats and species, also introducing **alien and invasive species**.

Environmental and climate benefits of urban agriculture



The Belvedere park is located in Cologne (Germany), as a part of its green infrastructure system and network of green spaces. This park contributes not only to increase recreational and **ecological network**. It also defines boundaries to urbanized areas, as well as **preventing land consumption**, increasing **biodiversity** and the aesthetic qualities of landscape, promoting the cultivation of traditional crops.



Orti Generali is a community garden in the south area of Turin (Italy). It is situated within an urban park and in a post-industrial neighbourhood. The gardens are cultivated exclusively through organic methods and managed by associations, gardeners and volunteers. Orti Generali is a good example of **nature-based solution and regeneration** of degraded areas. It contributed to **soil conservation and fertility**, increased and managed **green spaces**, as well as providing pollinator-friendly spaces, reducing pesticide use and increasing **urban biodiversity**.

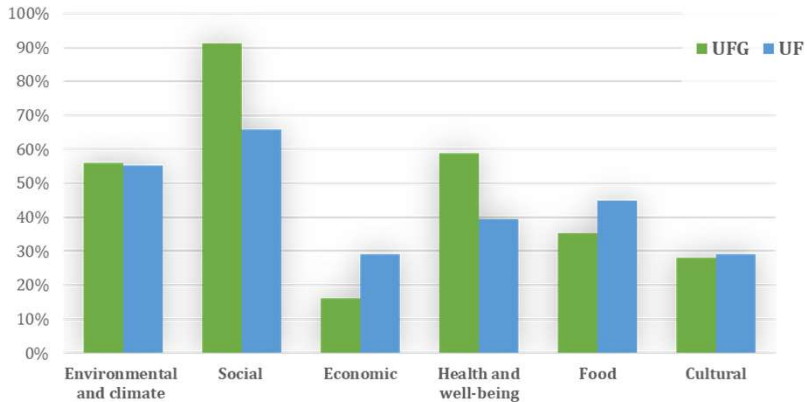
<https://www.ortigenerali.it/>



Nabofarm is an urban farm located in Copenhagen (Denmark), in an old auto repair workshop building. The sustainable production methods - based on hydroponics and managed systems, no use of pesticides, zero waste from packaging, low water consumption - make it a good example of **resource-efficient** cultivation systems and **reuse of abandoned buildings**.

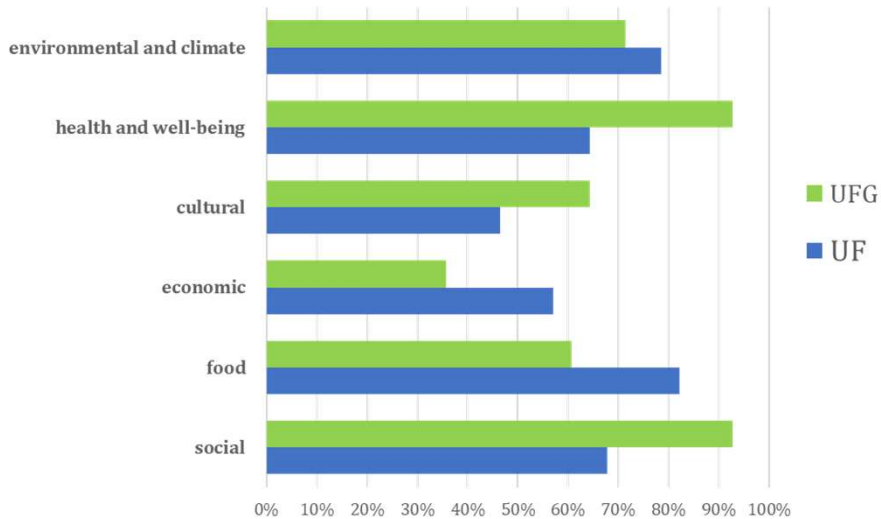
<https://nabofarm.com/>

Perceived benefits

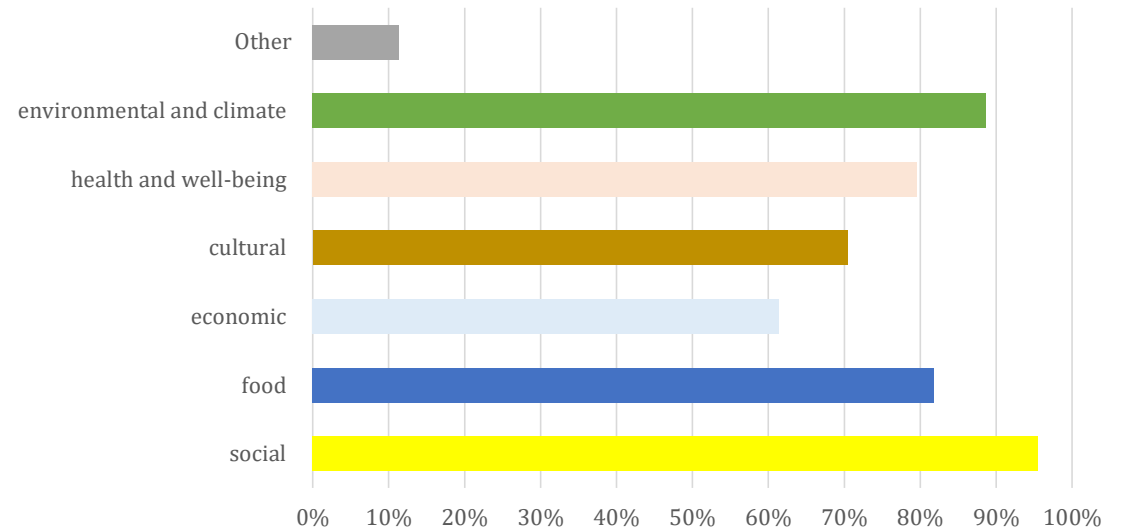


Perceived benefits according to UA typology questionnaire by WU (multiple answers allowed)

- **Main categories: Social and environmental-climate**
- **UF: social + environmental + food**
- **UFG: social + health and well-being**



The main categories of benefits resulting from UFG and UF (multiple answers allowed) - UA benefit survey (Polito) Section 1 - Non expert respondents



Urban needs that may be addressed through UA initiatives according to expert respondents (multiple answers allowed) UA benefit survey (Polito) - Section 2

Key benefits and performance indicators

Benefits category	Key benefits/ unwanted effects	Indicators
Socio-cultural	Improvement of social cohesion and developing feelings of belonging and a sense-of-place	Participation rate
	Development of education, knowledge, innovation and awareness on food, agriculture and environment	Urban farming educational and/or participatory activities Number of school-gardening initiatives
	Improvement of leisure, recreation activities and tourist attractions	Recreational value of blue-green spaces
	Neighbourhood gentrification or green gentrification	Gentrification
Environment and climate	Reduction of the urban heat island effect	Urban Heat Island (UHI) incidence
	Increased quality and quantity of urban green spaces and green infrastructures	Ratio of open spaces to built form Land use change and green space configuration
	Preservation of urban biodiversity	Increased biodiversity
	Introduction of alien and invasive species	Number of invasive alien species
Food	Improvement of food security	Foodshed
	Improvement of food quality	Local and organic food
Health and well-being	Improvement of physical and mental health	Physical and mental impact
Economic	Improved local economies	Local economic development New businesses created
	Creation of job opportunities	Number of new jobs created

The coaxial matrix

UA Type	Socio-cultural							Environment and climate							
	SCD1	SCD2	SCD3	SCD4	SCD5	SCD7	SCD8	SCD9	EN01	EN02	EN03	EN04	EN05	EN06	EN07
Urban farm			0		1				1						0
Community Park	1	1	1	1	1	1			0	1	1	0		1	1
DIY garden/farm	1	1	1	1	1	1			1	0	1	1		1	1
Zero Acreage farm	1				1	1				1		1	1	1	
Social farm		0	0	1	1	0		0			1			1	
Community garden	1	1	1	1	1	1			1			1		1	1

SDG	SCD1	SCD2	SCD3	SCD4	SCD5	SCD7	SCD8	SCD9	EN01	EN02	EN03	EN04	EN05	EN06	EN07
SDG1								X							
SDG2					X	X			X					X	X
SDG3													X		
SDG4															
SDG5													X		
SDG6					X							X	X	X	
SDG7												X			
SDG8															X
SDG9															X
SDG10															
	X	X	X	X				X		X		X		X	X
SDG11									X			X			
SDG12									X	X	X	X	X	X	
SDG13												X	X		
SDG14												X	X		
SDG15							X								X
SDG16		X	X												
SDG17		X			X										

UAF	SCD1	SCD2	SCD3	SCD4	SCD5	SCD7	SCD8	SCD9	EN01	EN02	EN03	EN04	EN05	EN06	EN07
UAF1							X	X	X						
UAF2				X											
UAF3														X	
UAF4															
UAF5															
UAF6									X	X	X	X		X	
UAF7							X		X						X
UAF8	X				X								X		
UAF9												X			
UAF10					X										
UAF11						X									
UAF12			X												
UAF13	X			X			X								
UAF14										X					

UA Types

UA benefits

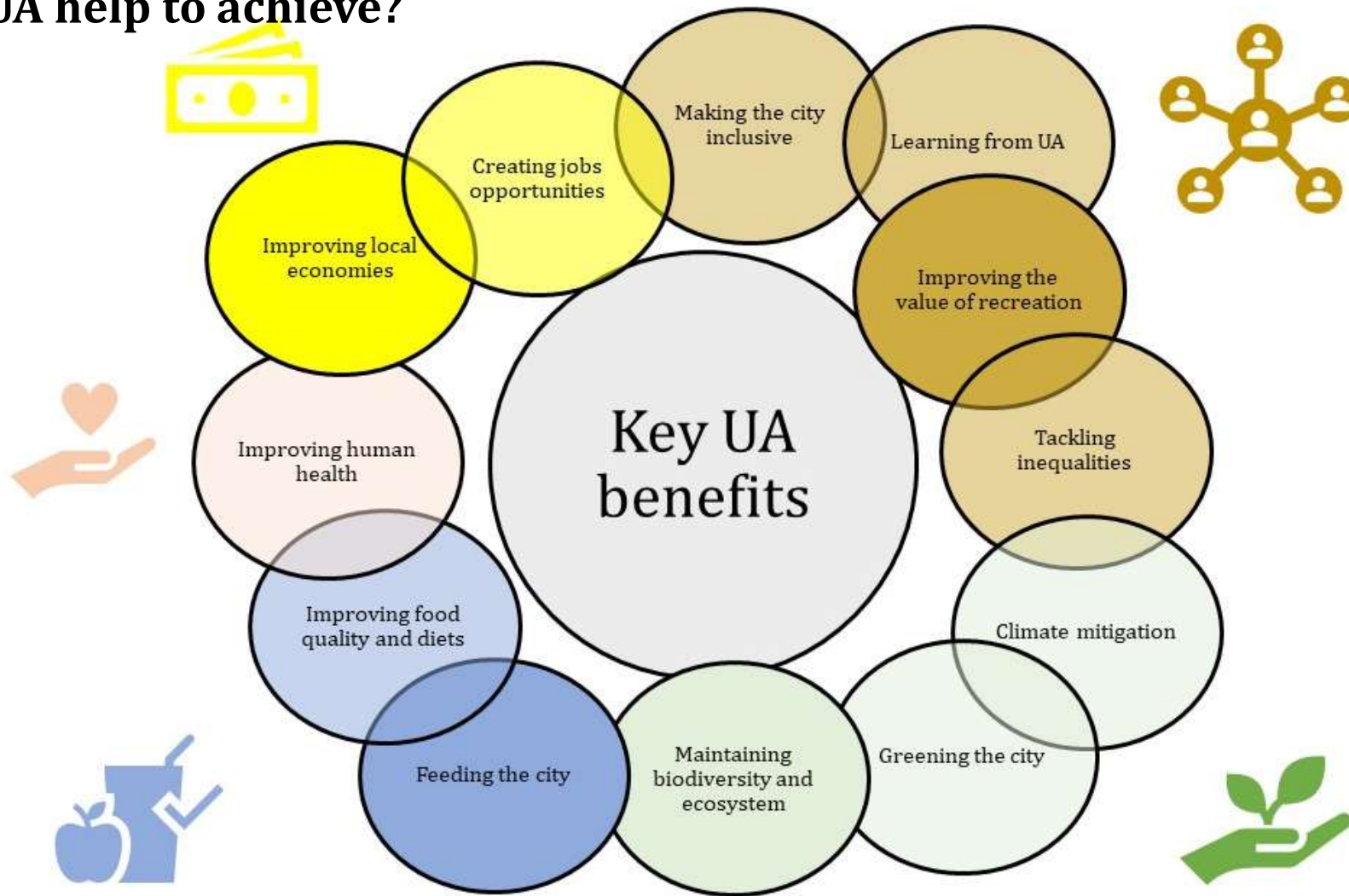
UA benefits

Policy targets

UA benefits

SGDs/UAF

Lessons learned: how and which urban policy targets can the benefits of UA help to achieve?



General remarks

- **social/environmental** benefits prevail
- Evidence gaps: **cultural benefits**
- **benefit assessment:**
 - lack of indicators/quantitative approaches on health and well-being
 - **qualitative approach** and perceived benefits (often unmeasured) prevail
- **benefits** overlapping
- some benefits are more **detailed** than others but without being necessarily more important
- Studies on the **unwanted effects** of UA are less prevalent than others and require more attention

BENEFITS OF URBAN AGRICULTURE



The Benefit Leaflets
Date: 29/04/2022 - Version: 1.0

The benefit leaflets highlight the key benefits of Urban Agriculture (UA) to guide policy makers in the planning and management of urban and peri-urban agriculture. They include a description of the key benefits of urban agriculture, as well as the main points of attention in order to check for possible unintentional effects.

Based on the consultation of EFUA partners, the literature review and considering the main urban policy targets, five categories of UA benefits related to different dimensions of sustainability were identified:

- socio-cultural,
- environmental and climate,
- food,
- health and well-being and
- economic.

Each benefit category is illustrated by examples and visual representations of some good UA practices to address cities' demands and achieve urban policy targets.

This document presents an abstract of Task 3.2 "Understanding the benefits of UA" (Lead: Politecnico di Torino). The full results were illustrated in the Deliverable 3.2 "Type-benefit matrix, including set of indicators, and benefit leaflets". Authors: Cassatella C. and Gottero E., April 2022. The text of benefit leaflets are based on the list of benefits (Section 3.1.2). For any further details about benefits and unwanted effects, as well as references, please refer to Section 3.1.2 and Annex 4 of D3.2.

Unless otherwise indicated, the text of the selected good practices included in this document is based on information from the EFUA website and the photos are showcased on the EFUA website and they can credit to the projects responsible. The picture of the Agricoopecetto was kindly provided by Elena Comollo. The photo of the DAM was kindly provided by Giacomo Pettenati, while that of the Blizkata Ferme was kindly provided by the Blizkata ferma and Dona Pickard.



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<https://www.efua.eu/>

FACTsheet – Urban Metabolism and Urban Agriculture

Urban policy themes related to UM and UA

Sustainable Land

Energy Transition

Climate Adaption

Circular Economy

Air quality

The concept of Urban Metabolism (UM)
Understanding cities as living organisms by focussing on technical and socio-economic processes

Why focus on urban metabolism?

- To analyse in- and output flows of human consumption and food and energy production.
- To understand the asymmetry of socio-economic and environmental relations in cities.

Connections to Urban Agriculture (UA)

- Connected through concepts of circular economy, recycling and use of resources
- Considering the nexus and trade-offs, in terms of industrial ecology and urban political ecology perspectives, reducing the metabolic gap between human and nature
- Improving socioenvironmental living conditions of urban and peri-urban areas

Example of Urban Metabolism approach in the filed of UA
MicroFlavours is an innovative Urban farm in Brussels (Belgium) specialising in the production of microgreens and vegetable shoots with higher nutritional value. It is located in the cellars of a former brewery and adopts hydroponic water methods in a **controlled environment**. The aim of this initiative is to create a **sustainable and self-sufficient food chain** through fresh, high-quality and local food products.

Some possible benefits of implementing the UM concept through UA

Reduction of emissions and improvement of air quality	Recycling and closing nutrient cycles, improving efficient use of resources	Decreasing agricultural pressure on the environment
Prevention and/or reduction of land consumption	Reduction of agri-food products toxicity	Improvement of food quality

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Deliverables and other documents such as:

- **Benefits Leaflets**
- **Factsheet** on urban oriented concepts (Urban Metabolism, Urban Food systems, Urban-rural linkages) related to UA

available at:

<https://www.efua.eu/>



Thank you!
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