

EFUA – FACTS! Conference 29-30 March 2022

Round table: New perspectives on types and benefits of Urban Agriculture



# Understanding the benefits of UA

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## PoliTO tasks and deliverables

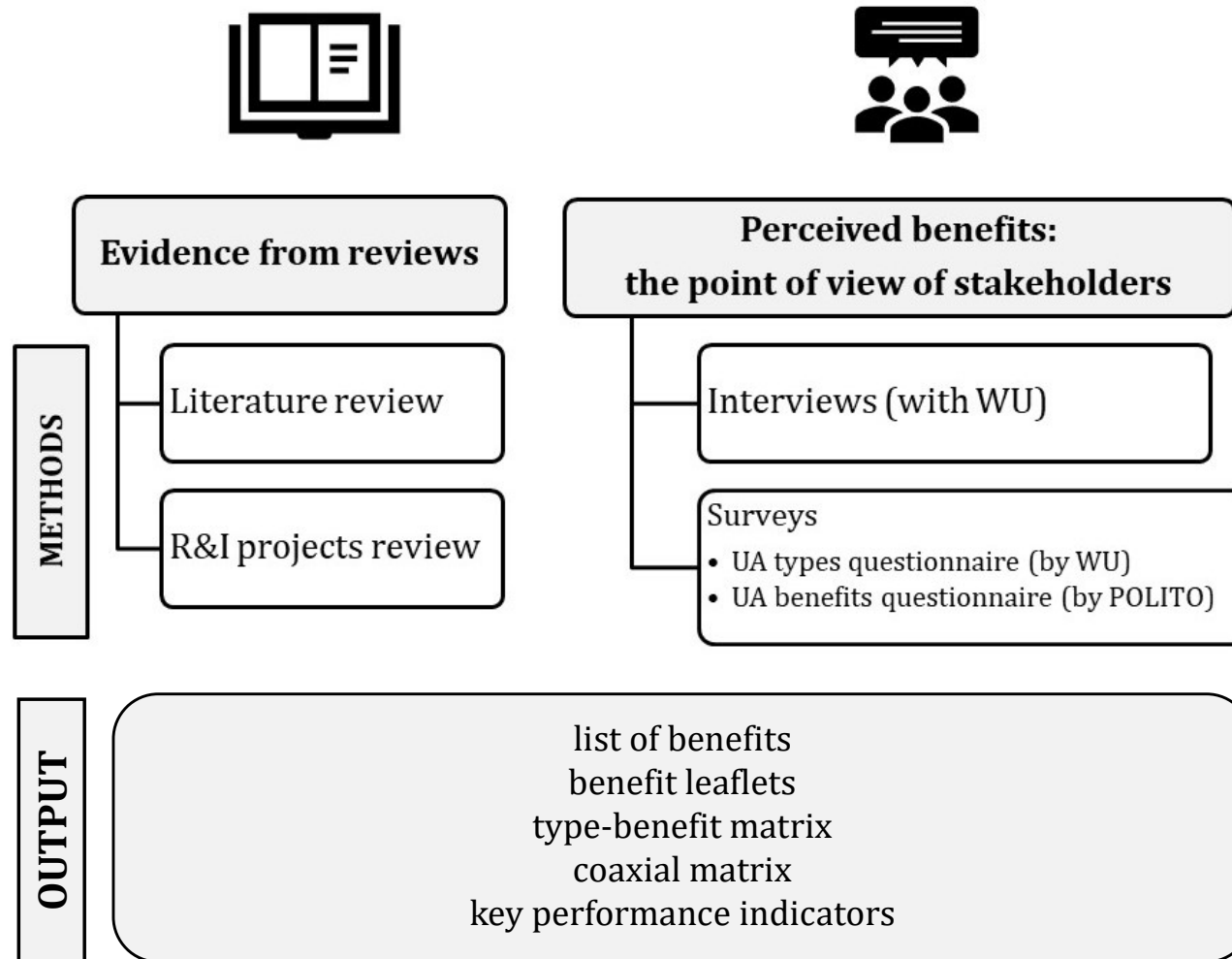
- **Task 3.2 –Understanding the benefits of UA - M6-M24 (April 2021 – November 2022):**
  - Task 3.2.1: benefits of UA
  - Task 3.2.2: UA links to other urban oriented concepts, UA benefits adds to those concepts and policy fields
- **D3.2 - type-benefit matrix**, including set of indicators, and benefit leaflets (M18 = April 2022)

### Research questions:

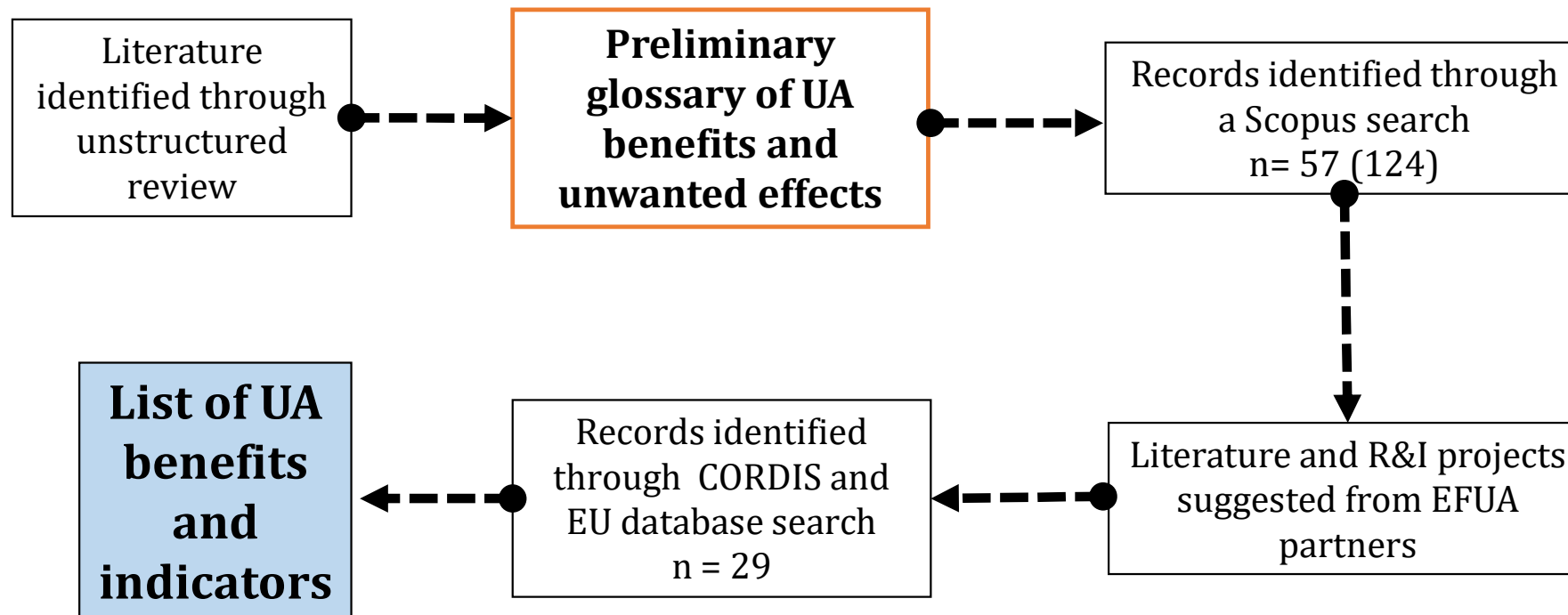
- What are the **benefits** of UA and its possible disservices (or unwanted effects)?
- How are these benefits **monitored and assessed**?

Task 3.2.1 aims to identify, collate and systematize the benefits and possible unwanted effects of UA related to environmental, social, economic, health, well-being and food domain

## Methods and output



## Review process



# The list of benefits



## BENEFIT CATEGORIES:

1. Socio-cultural
2. Environmental and climate
3. Food
4. Health and well-being
5. Economic

52 = 37 benefits + 15 unwanted effects



Inter-related benefits



policy targets

### 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; Kriksner, 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

# 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



# The coaxial matrix



UA Types

UA benefits

UA benefits

UA benefits

Policy targets

SGDs/UAF

UA Type	Socio-cultural						Environment and climate										
	SC01	SC02	SC03	SC04	SC05	SC06	EN01	EN02	EN03	EN04	EN05	EN06	EN07				
Urban farm			0		1		1	1	1	0	0	1	0				
Community Park	1	1	1	1	1	1	1	1	1	0		1	1				
NY garden/farm	1	1	1	1	1	1	1	1	0	1	1		1				
Zero Acreage farm	1				1	1	1	1		1	1						
Social farm		0	0	1	1	0	0	0	1	1		1					
Community garden	1	1	1	1	1	1	1	0	1	1		1	1				
Types	Redevelopment of degraded neighbourhoods	Improvement of social cohesion and developing feelings of belonging and a sense of community	Improvement of social inclusion and gender equality	Improvement safety of neighbourhoods and public spaces	Development of education, knowledge, innovation and awareness on food	Reduction of food poverty	Maintenance of open spaces, landscape diversity and traditional architecture	Improvement of leisure, recreation activities and tourist attractions	Maintenance of local knowledge, traditions, memory and cultural heritage	Reduction of food carbon footprint	Reduction of emissions and energy consumption	Reduction of the urban heat island effect	Assessing and closing nutrient cycles, improving efficient use of resources	Decreasing agricultural pressure on the environment	Decreased flood risks	Increased quality and quantity of urban green spaces and green infrastructure	
SDG 1						X										SDG 1	End poverty in all its form everywhere
SDG 2					X	X		X	X		X	X				SDG 2	End hunger, achieve food security and improved nutrition and promote sustainable agriculture
SDG 3													X			SDG 3	Ensure healthy lives and promote well-being for all at all ages
SDG 4					X											SDG 4	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
SDG 5			X													SDG 5	Achieve gender equality and empower all women and girls
SDG 6											X	X	X			SDG 6	Ensure availability and sustainable management of water and sanitation for all
SDG 7											X					SDG 7	Ensure access to affordable, reliable, sustainable and modern energy for all
SDG 8															X	SDG 8	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
SDG 9															X	SDG 9	Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation
SDG 10		X	X													SDG 10	Reduce inequality within and among countries
	X	X		X			X		X		X		X	X		SDG 11	Make cities and human settlements inclusive, safe resilient and sustainable
								X	X	X	X					SDG 12	Ensure sustainable consumption and production patterns
								X	X	X	X	X	X			SDG 13	Take urgent action to combat climate change and its impacts
SDG 14										X	X					SDG 14	Conserve and sustainably use the oceans, seas and marine resources for sustainable development
SDG 15						X									X	SDG 15	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification and halt and reverse land degradation and halt biodiversity loss
SDG 16		X	X													SDG 16	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
SDG 17		X			X											SDG 17	Strengthen the means for implementation and revitalise the global partnership for sustainable development
UAF 1						X	X	X								UAF 1	Culture/Cultural Heritage
UAF 2				X												UAF 2	Security in Public Spaces
UAF 3														X		UAF 3	Sustainable Land
UAF 4																UAF 4	Public Procurement
UAF 5											X					UAF 5	Energy Transition
UAF 6								X	X	X	X		X			UAF 6	Climate Adaption
UAF 7							X								X	UAF 7	Urban Mobility
UAF 8					X											UAF 8	Digital Transition
UAF 9	X										X					UAF 9	Circular Economy
UAF 10					X											UAF 10	Jobs and Skills in the Local Economy
UAF 11						X										UAF 11	Urban Poverty
UAF 12			X													UAF 12	Inclusion of Migrants and Refugees
UAF 13	X			X				X								UAF 13	Housing
UAF 14									X							UAF 14	Air Quality

Urban Agenda Field

Sustainable Development Goals

Policy targets

UA benefits

UA Types



# The benefit leaflets



## Environmental and climate benefits



UA, in particular DIY gardens/farms, organic or environmental-friendly farming, community parks and gardens, can foster the management, preservation, improvement or growth of **urban green spaces and green infrastructures**. 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, in particular Zero Acreage farms, green roofs, vertical hydroponic farming, Controlled Environment Agriculture (CEA) systems and Urban Forestry, can contribute to the reduction of the carbon emissions. 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 and community gardens, as well as local farms and vertical farming, 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 maintain **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 maintenance 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.



### Points of 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



Foto: F. Lohrberg



Foto: U. Costamagna



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

[Project Website](#)

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 cultivate exclusively through organic methods and manage by association, gardeners and volunteers. Orti Generali is a good example of **nature-based solution** and **regeneration** of degraded areas. It contributes to soil conservation and fertility, increase and manage green spaces, as well as provide pollinator-friendly spaces, reducing pesticide use and increasing **urban biodiversity**.

[Project Website](#)

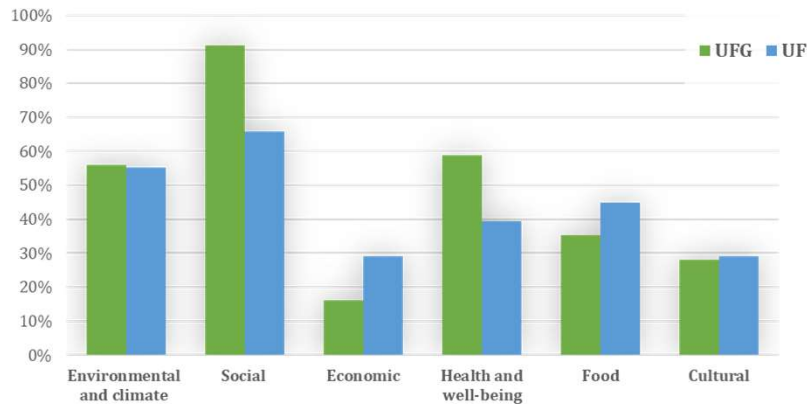
Nabofarm is an urban farm located in Copenhagen (Denmark), in an old building auto repair workshop. The sustainable production methods - based on hydroponics and led systems, no use of pesticides, zero waste from packaging, low water consumption - make it a good example of **resource-efficient** cultivation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

[Project Website](#)

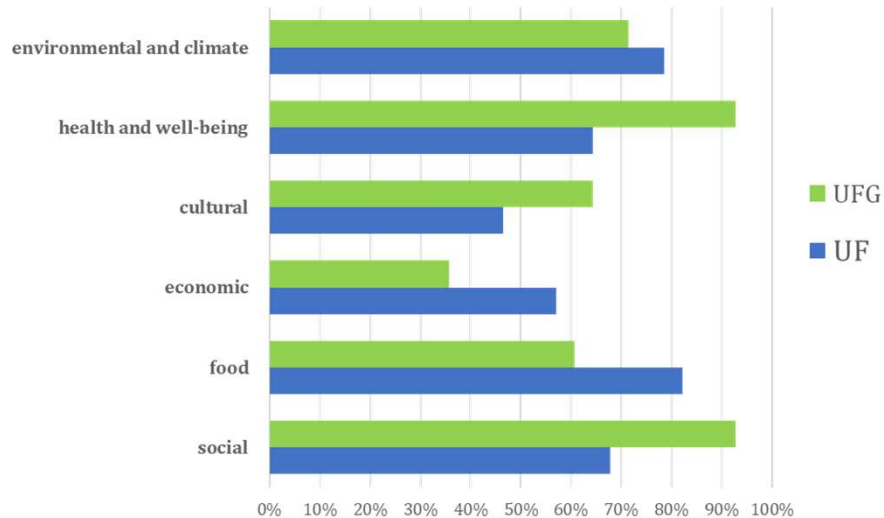




## Perceived benefits

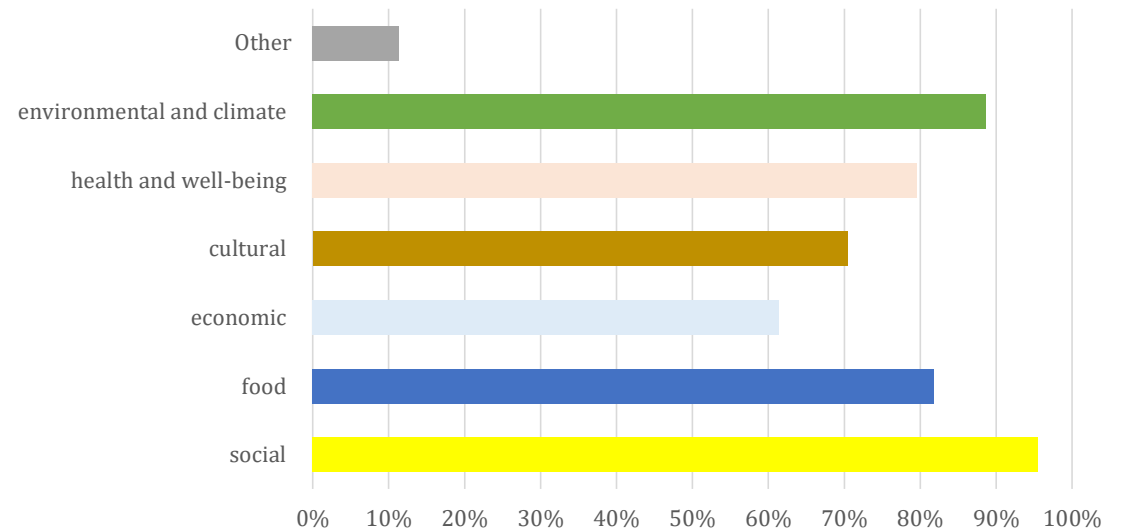


Perceived benefits according to UA typology questionnaire by WU (multiple answers allowed)



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

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



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

# Key performance indicators



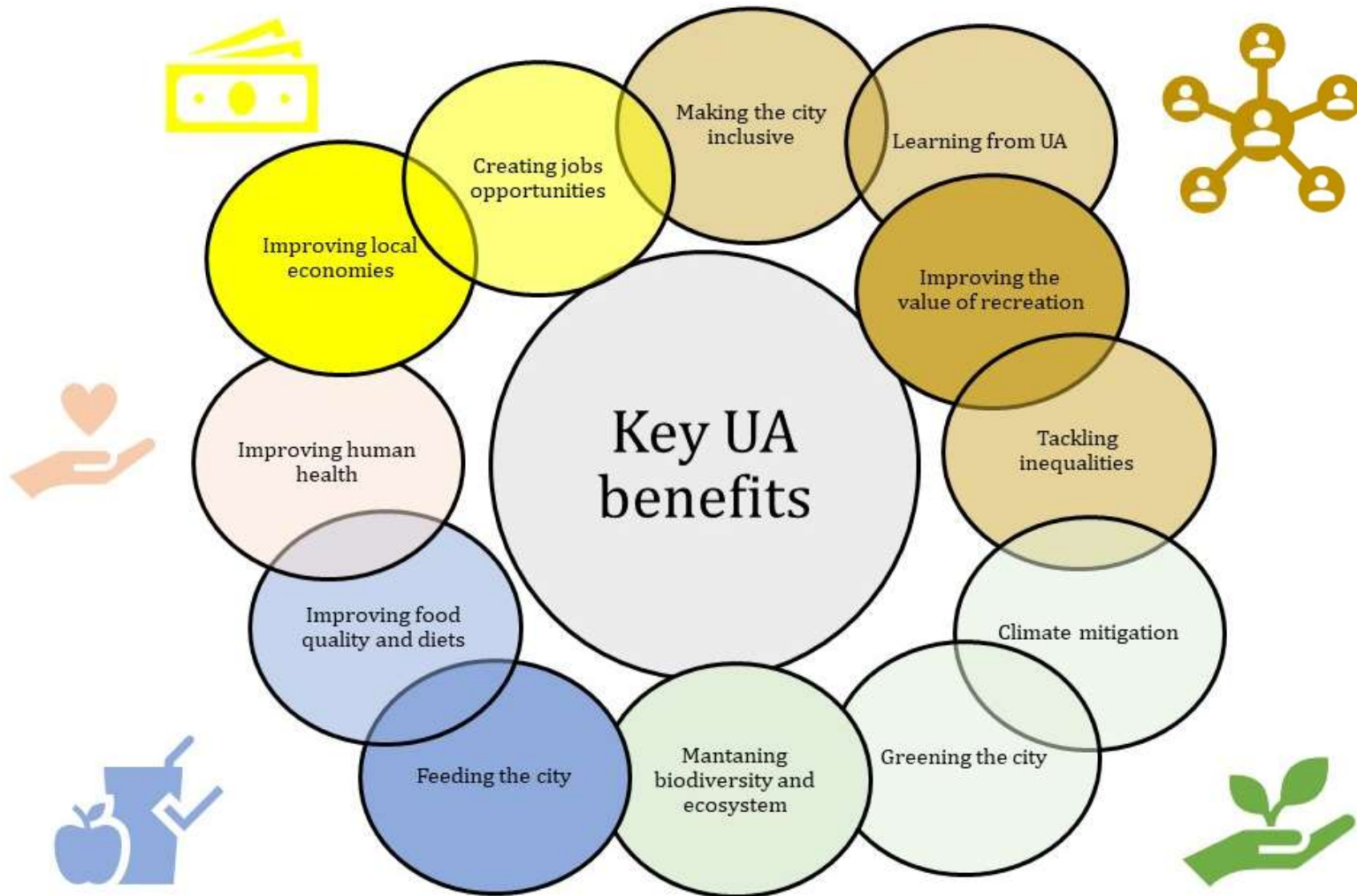
Benefits category	Benefits/unwanted effects id	Indicators	References	Complexity level
Socio-cultural	SC02	Participation rate	Eiter et al., 2020 (EdiCitNet); Teitel-Payne et al., 2016 (Toronto)	low
	SC05	Urban farming educational and/or participatory activities	Dumitru & Wendling, 2021; URBAN GreenUP, 2020	medium
		Number of school-gardening initiatives	Dumitru & Wendling, 2021; Gomez-Villarino and Ruiz-Garcia, 2021;	medium
	SC08	Recreational value of blue-green spaces	Connop et al., 2020 (Connecting Nature); Dumitru & Wendling, 2021	medium
	SC11	Gentrification	Nature4Cities, 2018	high
Environment and climate	EN03	Urban Heat Island (UHI) incidence	Dumitru & Wendling, 2021; Song et al., 2018 (Repair); URBAN GreenUP, 2019; Wendling et al., 2020 (UNALAB)	high
	EN07	Ratio of open spaces to built form	Dumitru & Wendling, 2021	low
		Land use change and green space configuration	Connop et al., 2020 (Connecting Nature); Dumitru & Wendling, 2021	medium
	EN11	Increased biodiversity	Teitel-Payne et al., 2016	low
Food	EN15	Number of invasive alien species	Dumitru & Wendling, 2021 (Progireg); Nature4Cities, 2018;	low
	FR01	Foodshed	Vicente-Vicente et al., 2021 (Foodshift2030); Zasada et al., 2019 (FoodMetres)	high
	FR03	Local and organic food	Eiter et al., 2020 (EdiCitNet)	medium
Health and well-being	HW02	Physical and mental impact	Dumitru & Wendling, 2021; Giacchè et al., 2021	medium
Economic	EC04	Local economic development	Eiter et al., 2020 (EdiCitNet); Teitel-Payne et al., 2016	medium
		New businesses created	Dumitru & Wendling, 2021; URBAN GreenUP, 2019	medium
	EC05	Number of new jobs created	Borges et al., 2019; Clerino et al., 2020; Dumitru & Wendling, 2021; Eiter et al., 2020 (EdiCitNet); Recasens, et al. 2016; URBAN GreenUP, 2019	medium

## 16 indicators

Selected from a list of **231** indicators

- **72** socio-cultural
- **95** environmental and climate
- **19** food
- **15** health and wellbeing
- **30** economic

# Contributions of UA benefits for Urban policies



## General remarks

- **social/environmental** benefits prevail
- Evidence gaps: **cultural benefits**
- **benefit assessment:**
  - lack of indicators/quantitative approaches on food and health-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