



This project has received funding from the European Union's Horizon 2020 research and innovation programme under **grant agreement No 862663**.

sostenipra



Sustainability of urban agriculture: considerations

How to design a sustainable urban agriculture project.

15/11/2021

UrbanFarm 2022

Dr Xavier Gabarrell Durany

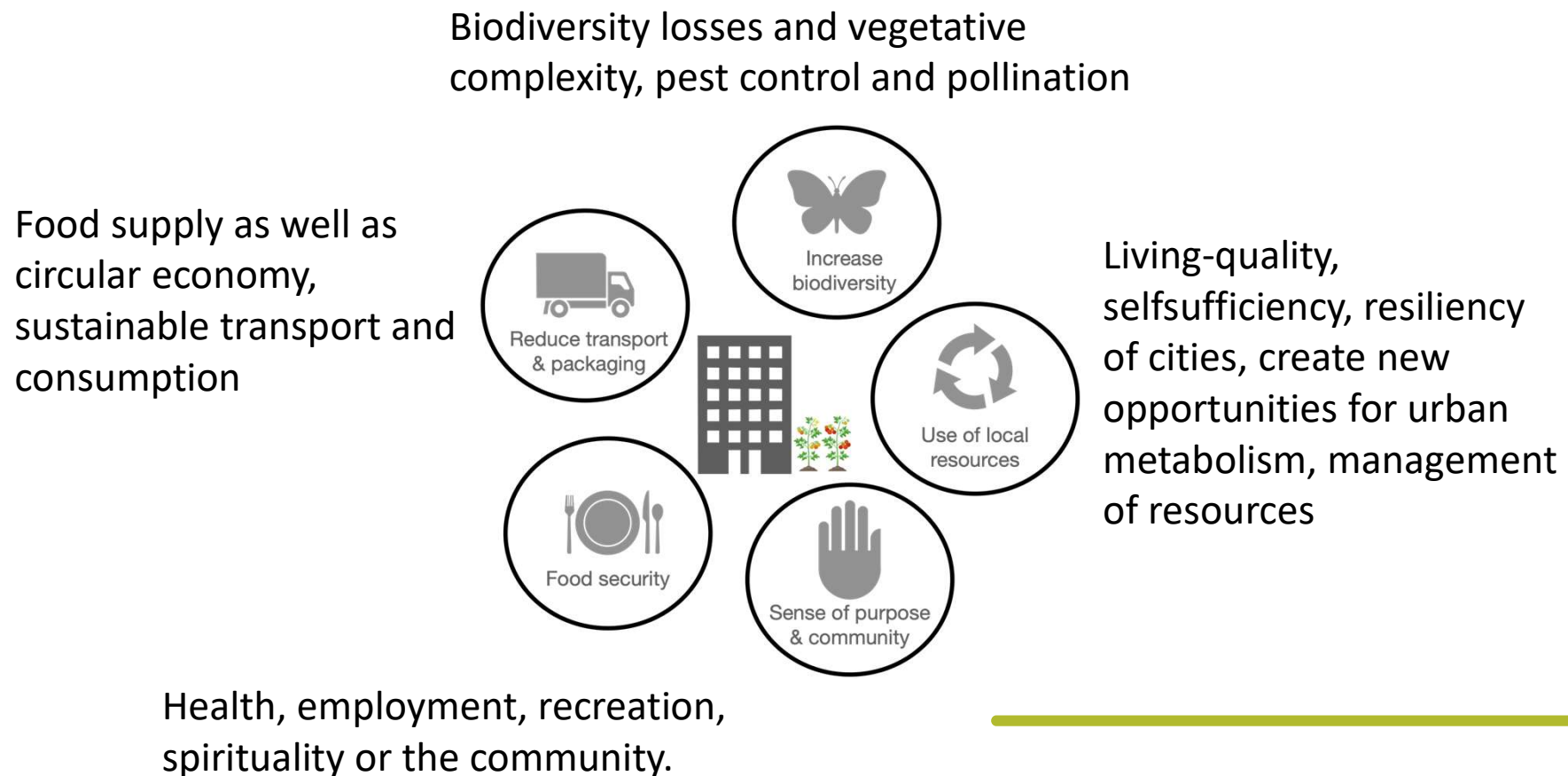
Adapted from Susana Toboso Chavero PhD, and Groof Guidelines

Sostenipra, <http://www.sostenipra.cat>

ICTA-UAB



Food production in cities could help improve:





The need to enhance sustainability in cities

RESOURCES	INFRASTRUCTURES	MOBILITY	EMISSIONS & WASTE
Water demand	Households	Vehicles	Air pollutants
Heat/cooling demand	Buildings	Transportation	GHG emissions
Food demand	Urban form		Waste management
Renewable energy	Climate governance		
Energy systems	Urban ecology		



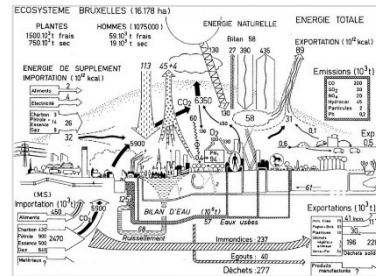
The need to enhance sustainability in cities

Relevant aspects

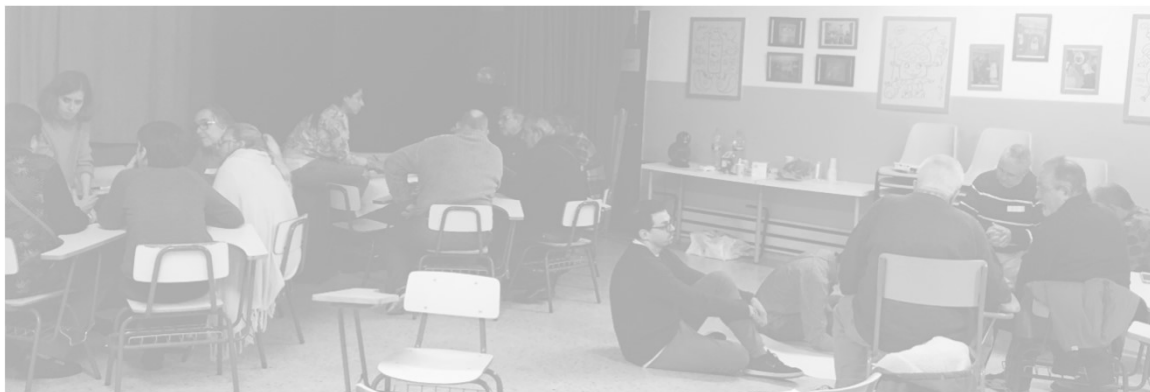
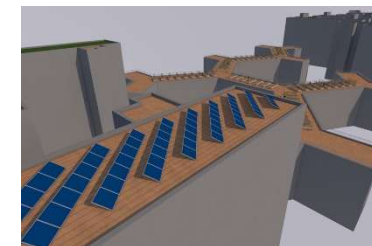
Urban Metabolism

Food-energy-
water nexus

People



Underutilized
spaces





Type of systems

FOOD AND BIODIVERSITY SYSTEMS	ENERGY SYSTEMS		RAINWATER HARVESTING SYSTEMS AND NUTRIENTS	URBAN AND ARCHITECTURAL
	<u>Active</u>	<u>Passive</u>		
Green roofs				Legal aspects
Open-air farming	Photovoltaic panels	Green roofs	Catchment	Shape
Rooftop greenhouses	Solar thermal panels	Ventilated roof	Storage	Structural issues
Indoor	Wind energy	White- painted roof	Reused	Access
	Aerothermal		Sun (radiation)	Radiation
				Materials



The Roof Mosaic approach

The joint use of multifunctional rooftops that creates collective benefits **to provide local food, energy, and water** as an alternative to centralized networks

Where they are most **needed**

From **environmental, social and economic** perspectives

Engaging **stakeholders**



Main Questions

Question 1: What are the **environmental and socio-economic impacts**, and **the benefits** of the implementation of your project?

Question 2: To what extent does this new **urban-nexus** system contribute to **a future self-sufficient city/urban area/...?**

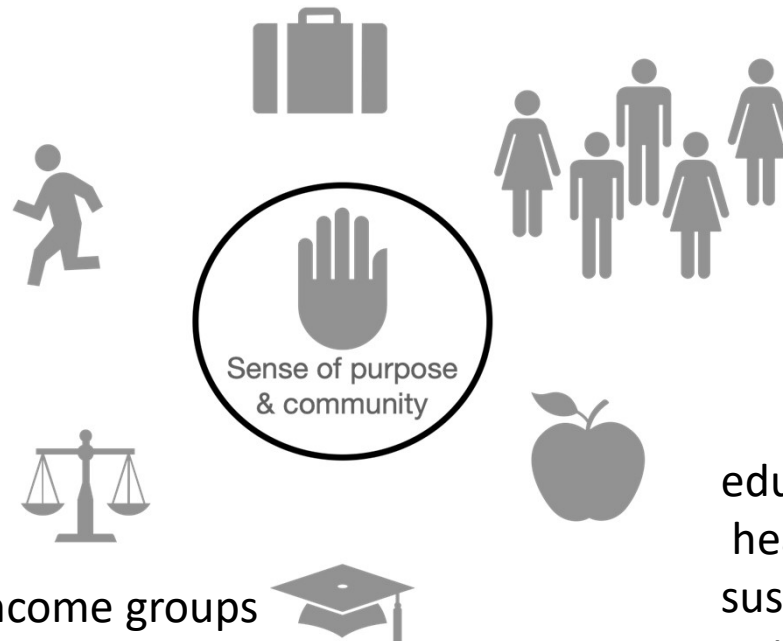
Question 4: What is **the social perception and acceptance** of this urban-nexus system/project?



Unutilised urban areas can be regenerated with UA initiatives and through that help to build community networks, recreational spaces, and social meeting points.

opens socio-economic opportunities for businesses,
entrepreneurs and the labour market

general well-being,
strengthening of
physiological and
mental health
self-efficacy and
self-esteem.



empowered people,
helped with collective
efficacy
conflict resolution

food supply for low-income groups
counteracts social injustices.
increase an area's liveability

educate about:
healthy ecosystems,
sustainable farming
nutritious diet

Health and safety impact

Health and safety impact indicators:

- diet
- well-being
- physi-ological health
- psychological health

The **perceived access** to fruit and vegetables **motivates people to grow** vegetables at home and due to this an **increased vegetable consumption** and **healthier diets**.

The survey contains questions about the amount of **physical activity** and anticipated **changes of movement habits** if a RTG is nearby.

Consumption and Activity Patterns

- Food choice (organic, regional, seasonal, small scale or family business...)
 - Diet as stress coping mechanism
 - Fruit and vegetable purchase location (Supermarket, Organic Shop, Market, Online...)
 - Cooking behaviour (never/rarely, occasionally, sometimes, often, mostly/always)
 - Portions of daily vegetable consumption.
 - Food purchase location (foot, bike, public transport, car or other)
 - Average daily movement activities
-

Health and safety impact

3. How many portions of fruit and vegetables are you eating a day?

average/ one Portion equals one hand full

Mark only one oval.

- ☐ little to none
☐ 1 Portion
☐ 2 Portions
☐ 3-4 Portions
☐ 5+ Portions

4. How often are you cooking/ preparing your food yourself?

Principal Meal

Mark only one oval.

- ☐ Never/Rarely
☐ Occasionally
☐ Sometimes (≈50%)
☐ Often
☐ Mostly/Always

5. When I go shopping I usually go by

Mark only one oval.

- ☐ foot
☐ bike (or similar: longboard, scooter etc.)
☐ public transport
☐ car
☐ Other: _____

6. How much movement you have in total throughout the day?

in average; please do not include work

Mark only one oval.

- ☐ 0-10 min
☐ 10-20 min
☐ 20-40 min
☐ 40-60 min
☐ 60-90 min
☐ 90+ min

7. How important is it to you that your food is organic?

Mark only one oval.

- | | | | | | | |
|---------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------------|
| | 1 | 2 | 3 | 4 | 5 | |
| not important | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | very important |

8. ...regional?

Mark only one oval.

- | | | | | | | |
|---------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------------|
| | 1 | 2 | 3 | 4 | 5 | |
| not important | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | very important |

9. ...seasonal?

Mark only one oval.

- | | | | | | | |
|---------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------------|
| | 1 | 2 | 3 | 4 | 5 | |
| not important | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | very important |

Health and safety impact

RTG and Health

- Specify if or how much of their diet is covered by RTG products
- Perception of RTG food as safe

RTG and Change of Behaviour

- Reach to the RTG (if running)
- Potential change of vegetable purchase location
- More active mobility preference (foot or bike)
- Likelihood to grow own food in a RTG
- Declare how much they agree with the belief of a relaxing effect of an RTG

These sections are suitable for all selected stakeholders during all RTG implementation stages. Especially suitable for neighbours and food consumers it could also be taken into consideration for a general assessment.

The first two sections also can be used in a pre/post analysis to examine changes over time.

Stress, Relaxation and Mood:

- Degree of **mood and emotion** throughout the last 30 days or after the exposure.
- **General perception** of pleasure in the RTG.

46. Contentment

Mark only one oval.

	1	2	3	4	5	
not at all	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	very much

47. Tension

Mark only one oval.

	1	2	3	4	5	
not at all	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	very much

48. Worried

Mark only one oval.

	1	2	3	4	5	
not at all	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	very much

49. Bothered

Mark only one oval.

	1	2	3	4	5	
not at all	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	very much

50. Active/Energetic

Mark only one oval.

	1	2	3	4	5	
not at all	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	very much

51. Stimulated

Mark only one oval.

	1	2	3	4	5	
not at all	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	very much

52. Alert/Awake

Mark only one oval.

	1	2	3	4	5	
not at all	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	very much

53. Passive

Mark only one oval.

	1	2	3	4	5	
not at all	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	very much

To sharpen the examination this section could also be conducted in a pre-post exposure approach.

Social acceptance, access and awareness of the project plays a significant role for its success.
Concerns raised during the interview:

69. What impact do you think has the RTG for...the air quality?

Mark only one oval.

	1	2	3	4	5	
negative	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	positive

70. ... soil/ground quality?

Mark only one oval.

	1	2	3	4	5	
negative	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	positive

71. ... water quality?

Mark only one oval.

	1	2	3	4	5	
negative	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	positive

72. ... noise level?

Mark only one oval.

	1	2	3	4	5	
negative	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	positive

73. ... biodiversity?

Mark only one oval.

	1	2	3	4	5	
negative	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	positive

74. ... aesthetic appearance of the area where it is in?

Mark only one oval.

	1	2	3	4	5	
negative	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	positive

75. ... employment?

Mark only one oval.

	1	2	3	4	5	
negative	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	positive

76. ... education?

Mark only one oval.

	1	2	3	4	5	
negative	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	positive

- land-use type
- soil-less solutions
- accessibility
- lack of information
- project scope and experience
- community involvement.

These questions are split into 4 sections:

- general survey,
- public RTGs,
- not public RTGs
- experience of subjects which already participated in RTG activities.

Sense of Community

Perception of activities in the neighbourhood

Involvement in associations,

Participation in the neighbourhood

Feeling of integration in the community

participation in the community activities

Sense of Community

Sense of Community

86. Do you ... perceive the leisure activities in your neighbourhood as boring?

Mark only one oval.

- ☐ yes
☐ no

87. ... participate in associations that interest you?

Mark only one oval.

- ☐ yes
☐ no

88. ... participate like everyone else in the neighborhood does?

Mark only one oval.

- ☐ yes
☐ no

89. ... feel integrated in the neighborhood community?

Mark only one oval.

- ☐ yes
☐ no

Mark only one oval.

- ☐ never
☐ less than 1x month
☐ 1-2x a month
☐ 2-4x a month
☐ several time a week

Rooftop Greenhouse and Community

91. Is the Rooftop Greenhouse (RTG) open for public?

Mark only one oval.

- ☐ Yes *Skip to question 97*
☐ No *Skip to question 94*

92. Do you think the the RTG can help to bond with people?

Mark only one oval.

- | | | | | | | |
|--------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-------------|
| | 1 | 2 | 3 | 4 | 5 | |
| do not agree | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | fully agree |

93. Do you interact with people involved in the RTG?

Mark only one oval.

- ☐ Yes
☐ No

Sense of Community

RTG and Community

- RTGs as social bond
- Interaction with people involved in the Project

RTG Closed for Public

- RTG for public use
- Likelihood to participate in activities related to the RTG
- Interest in activities:
gardening, education, workshops,
research, talks, cultural events,
sport, and movement, coworking,
social meetings, networking...

RTG Open for Public

- Feeling of involvement in the activities
 - Perception of the activities
 - Participation in activities
-

Working Conditions

Workers regularly exposed to the project tend to have a more **profound insight** of the social circumstances than customers or visitors.

RTGs offer:

- Competitive/ fair employment,
- Foster movements for more inclusiveness and diversity
- Healthy and safe work environment

Through these questions it shall be seen if a RTG can be a **positive contribution** to society and community.

Questions regard:

- Employment situation of the worker
- Diversity and equality

The workers shall rate how much they agree that the project is dedicated to **including** people from different **nationalities**, **genders** and with **disabilities**.



15/11/2021

UrbanFarm 2022

Dr Xavier Gabarrell Durany
Sostenipra, <http://www.sostenipra.cat>
ICTA-UAB