Ecosystem Services and Urban/Peri-urban Agriculture in São Paulo Metropolis

TEEBAgriFood

UNEP Consultant: Jay van Ar

Support:

This project is funded by the European Union

PORTICUS

Partners:

TEEB
The Economics of Ecosystems & Biodiversity

UN environment

Carried out by:

instituto Escolhas

Context

- In 2017, there were 821 million starvation victims worldwide (FAO et al., 2018).
- Obesity and overweight rates reached 30% of the global population (AFSHIN et al., 2017).
- Cities consummate 80% of energy production worldwide and produce almost the same share of GEE. (WORLD BANK, 2010).
- Projections points to 9 billion people to be fed by 2050, with 68% of this population living in urban areas (DESA/UN-WUP, 2018); 3 billion with no access to basic sanitation, health and electricity (UN, 2013).

Challenge:

To reduce the environmental impacts of cities, strengthen resilience on climate changes and pandemies, as well as to mitigate the negative impacts on biodiversity loss.

Study Area: Metropolitan Region of São Paulo

21 million inhabitants

7,946 km2

45% Forested areas

26% Urban areas

22% Pasture and Agriculture

TEEB
The Economics of Ecosystems & Biodiversity

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Medium and large commercial agriculture

Small commercial agriculture

Family commercial agriculture

Multifunctional Agriculture

TEEB
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Urban multifunctional agriculture

Vertical farm

Community gardens

Urban and Peri-urban Agriculture and Ecosystem Services

Which is the potential of urban and peri-urban agriculture to provide ecosystem services for São Paulo Metropolis?

TEEBAgrifood six steps

1) Refining the research objective
Engagement with stakeholders

2) Selection of Ecosystem Services
Erosion Regulation, Water Yield, Heat Mitigation, Flood Mitigation and Food Provision

3) Defining data demands and method
Public databases, field survey and literature review

4) Ecosystem Services Evaluation
3 periods of analysis:
1985 – 2019 – 2030

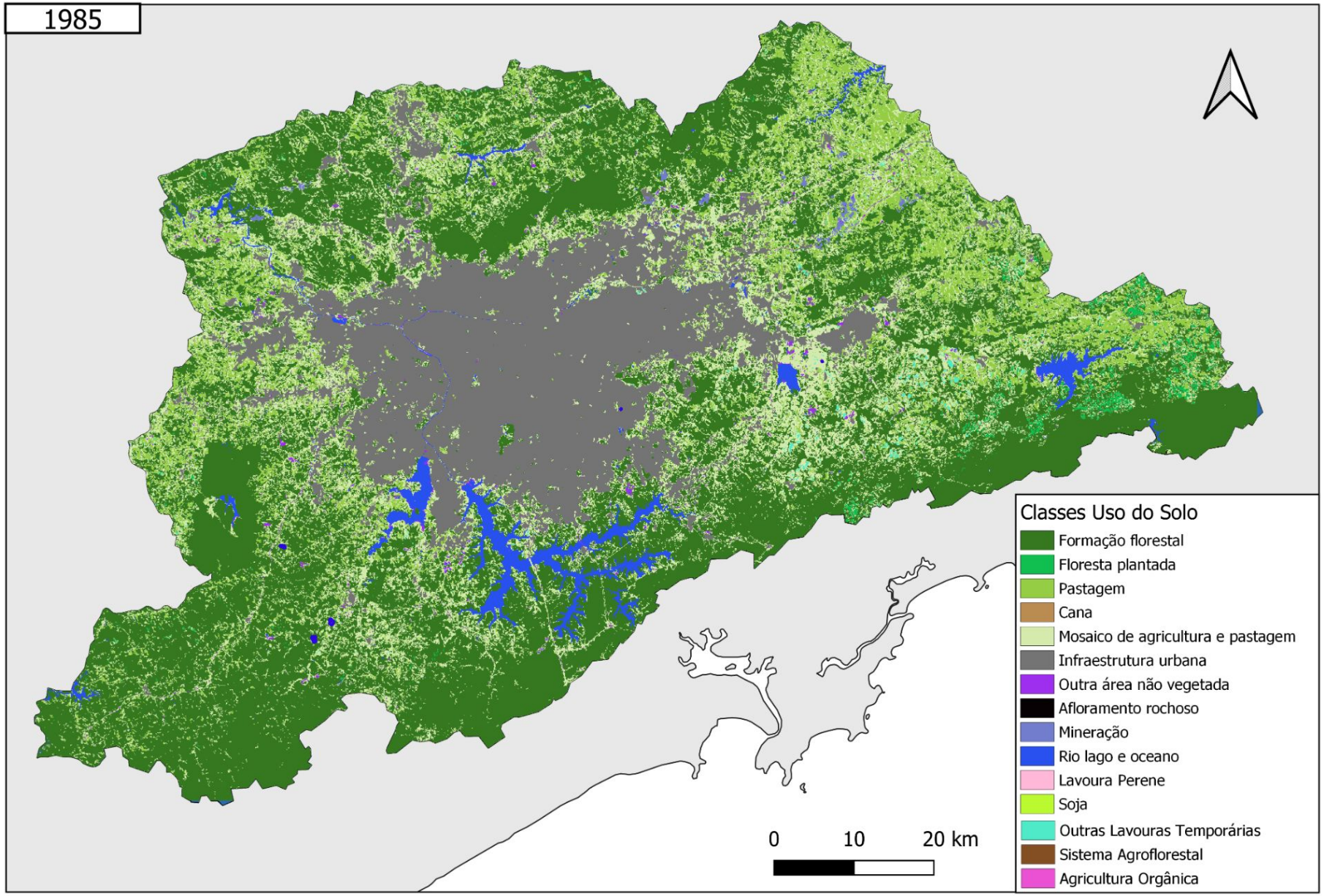
5) Police implementation in future scenarios
Indication of possible trade-offs, limits and possibilities for interventions in urban and peri-urban agriculture

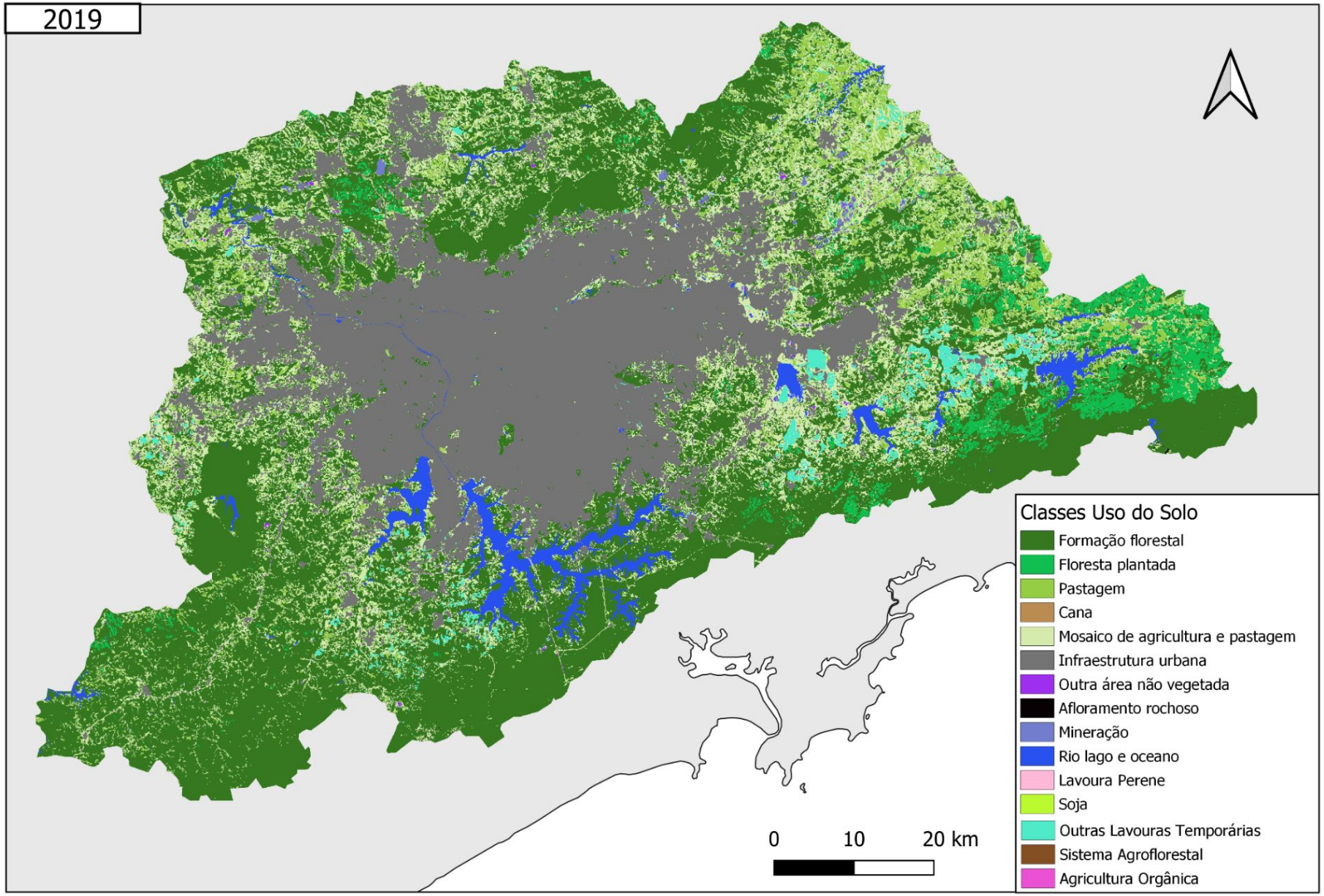
6) Results outreach
Presenting on events and public sessions

Ecosystem Services	Indicator (unid)	Evaluation Method	Limitations
Food Provisioning	Total area of agricultural production, ha	Agricultural area is used as a *proxy*	This approach does not reflect the real area for agricultural production, showing limitations in capturing the heterogeneity of land use close to cities.
Flood Mitigation	Runoff retention, m^3/ha	Urban Flood Risk Mitigation Model - InVEST	Based on precipitation events of greater intensity. It does not reflect a possible previous accumulation of water caused by a sequence of rains.
Heat Mitigation	Heat Mitigation Index	Urban Cooling Model - InVEST	There are not yet enough applications to guarantee that the climatic parameters used are applicable to tropical conditions
Water yield	Water realized supply, m^3/ha/ano	Annual Water Yield - InVEST	It is based on the average annual precipitation, it does not take into account the seasonality of the regime, groundwater recharge or the full water cycle (after the export of humidity to the atmosphere).
Erosion Regulation	Sediment retention, ton/ha/ano	Sediment Retention Model InVEST	Based on annual soil loss, it considers only laminar and between-groove erosion

Scenarios

They are representations of possible futures for one or more components of the system. Particularly, in this study, for vectors of changes in nature and its benefits to people, including political alternatives and management options (IPBES, 2016). TEEBAgrifood generally focuses on intervention scenarios, that is, public policy alternatives.


1985
Classes Uso do Solo
Formação florestal
Floresta plantada
Pastagem
Cana
Mosaico de agricultura e pastagem
Infraestrutura urbana
Outra área não vegetada
Afloramento rochoso
Mineração
Rio lago e oceano
Lavoura Perene
Soja
Outras Lavouras Temporárias
Sistema Agroflorestal
Agricultura Orgânica
0
10
20 km


2019
Classes Uso do Solo
Formação florestal
Floresta plantada
Pastagem
Cana
Mosaico de agricultura e pastagem
Infraestrutura urbana
Outra área não vegetada
Afloramento rochoso
Mineração
Rio lago e oceano
Lavoura Perene
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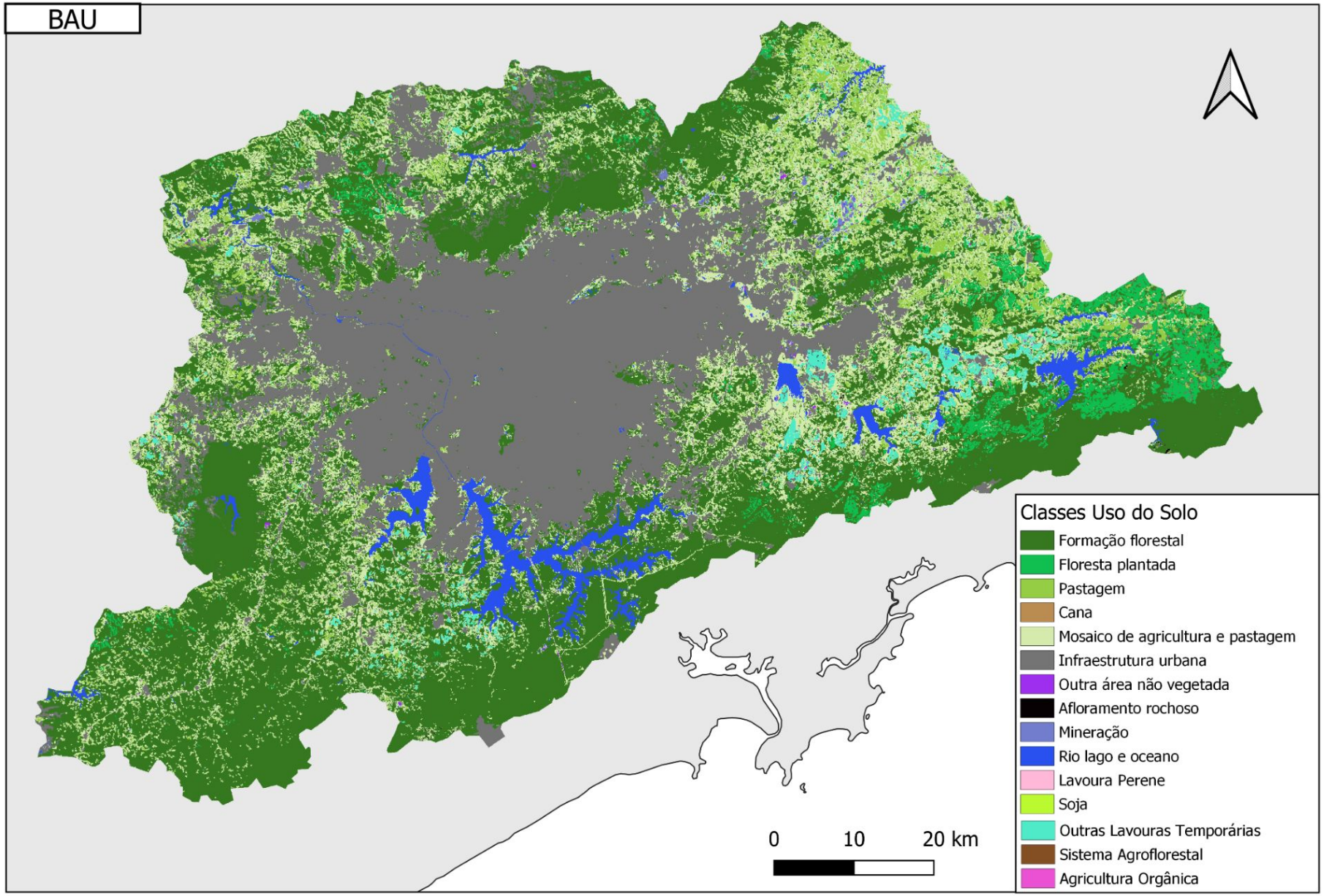
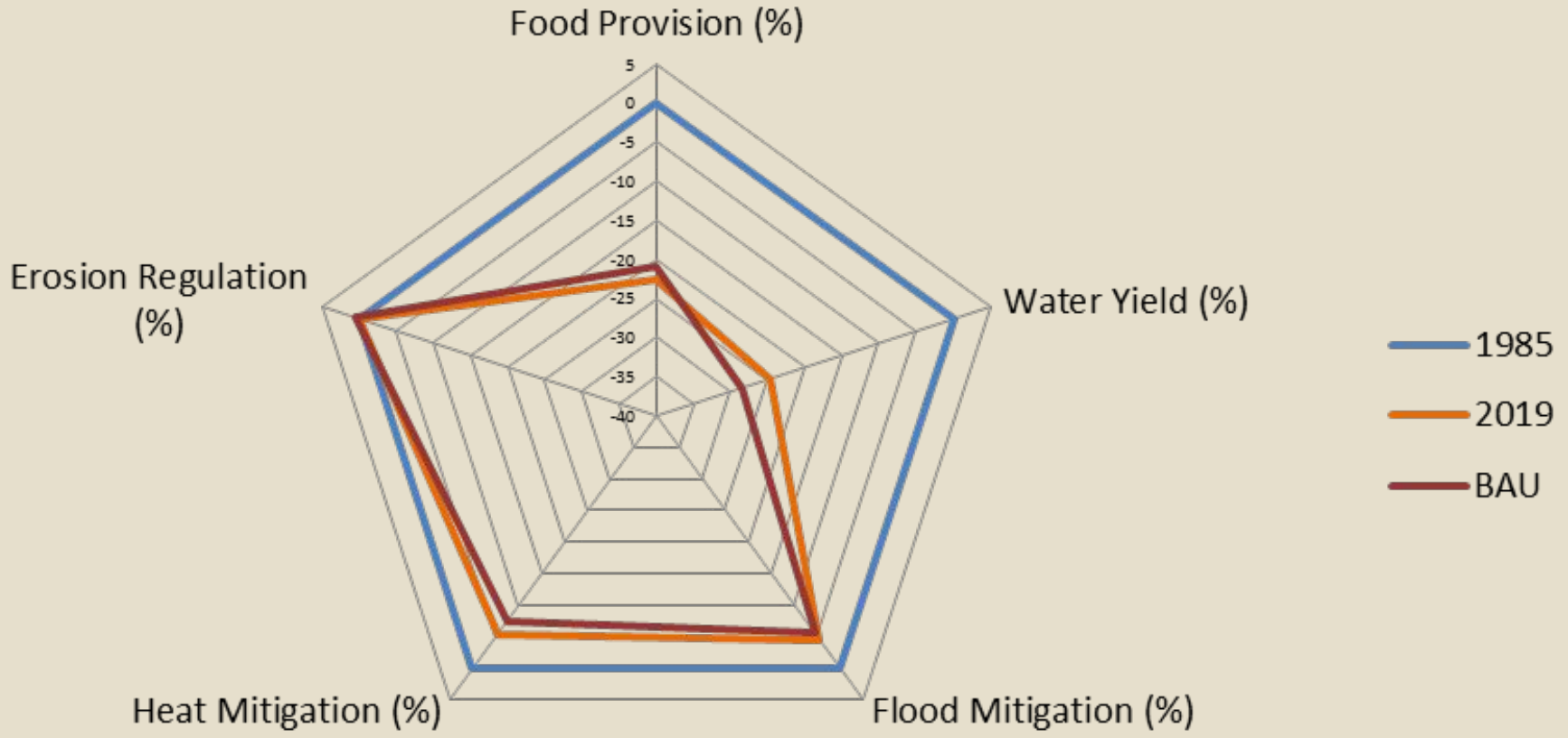
Outras Lavouras Temporárias
Sistema Agroflorestal
Agricultura Orgânica
0
10
20 km


BAU
Classes Uso do Solo
Formação florestal
Floresta plantada
Pastagem
Cana
Mosaico de agricultura e pastagem
Infraestrutura urbana
Outra área não vegetada
Afloramento rochoso
Mineração
Rio lago e oceano
Lavoura Perene
Soja
Outras Lavouras Temporárias
Sistema Agroflorestal
Agricultura Orgânica
0
10
20 km

Changes in the provision of Ecosystem Services



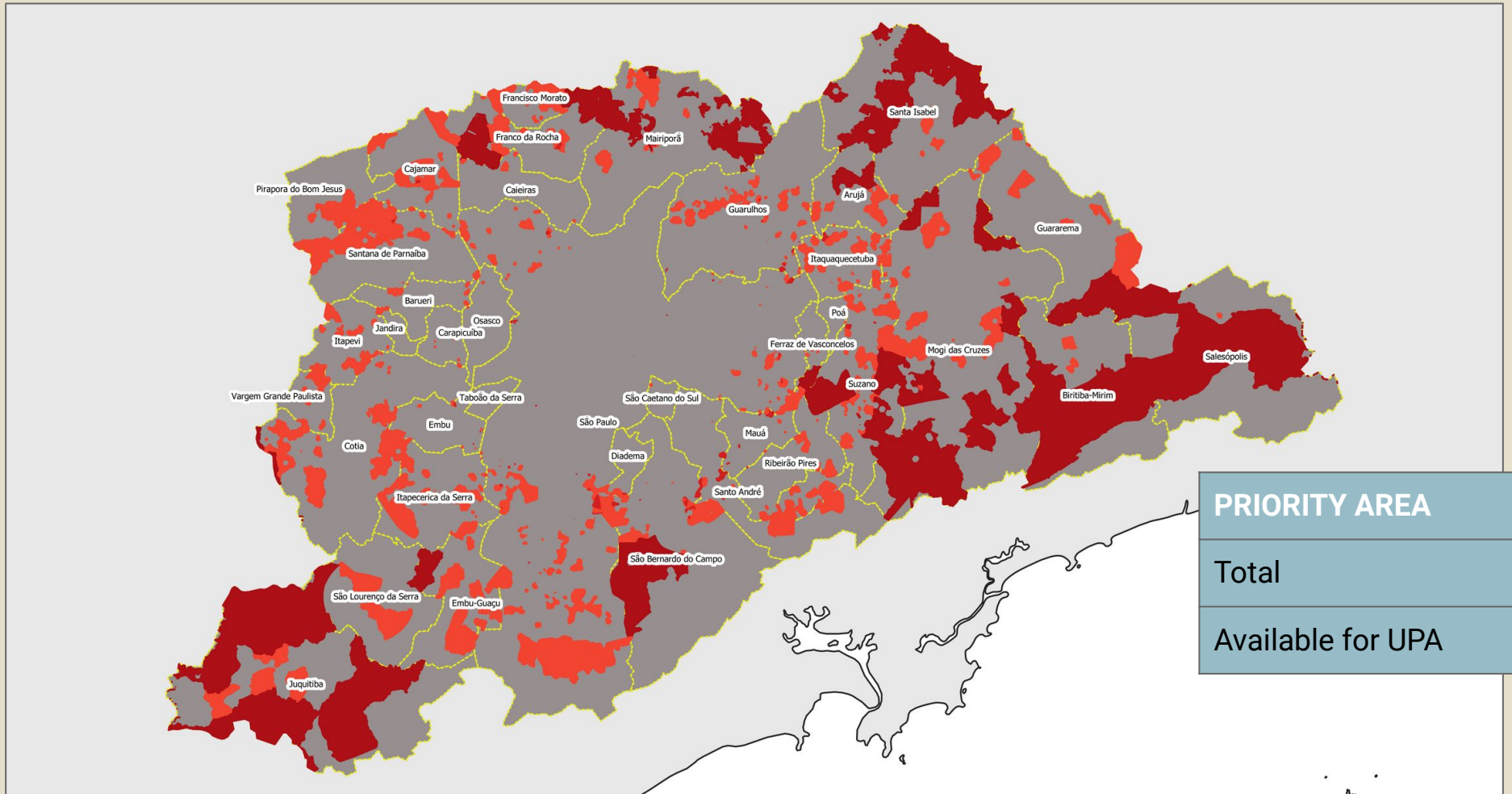
Alternative Scenario

Premise: provisioning with healthy foods for the population is a priority service provided by local agriculture, especially for those in situations of high social vulnerability, being simultaneously a possible source of income generation, in addition to providing environmental services.

1. Identify Priority Areas
2. Availability of area for urban and peri-urban agriculture
3. Calculate the potential for food and environmental services provisioning

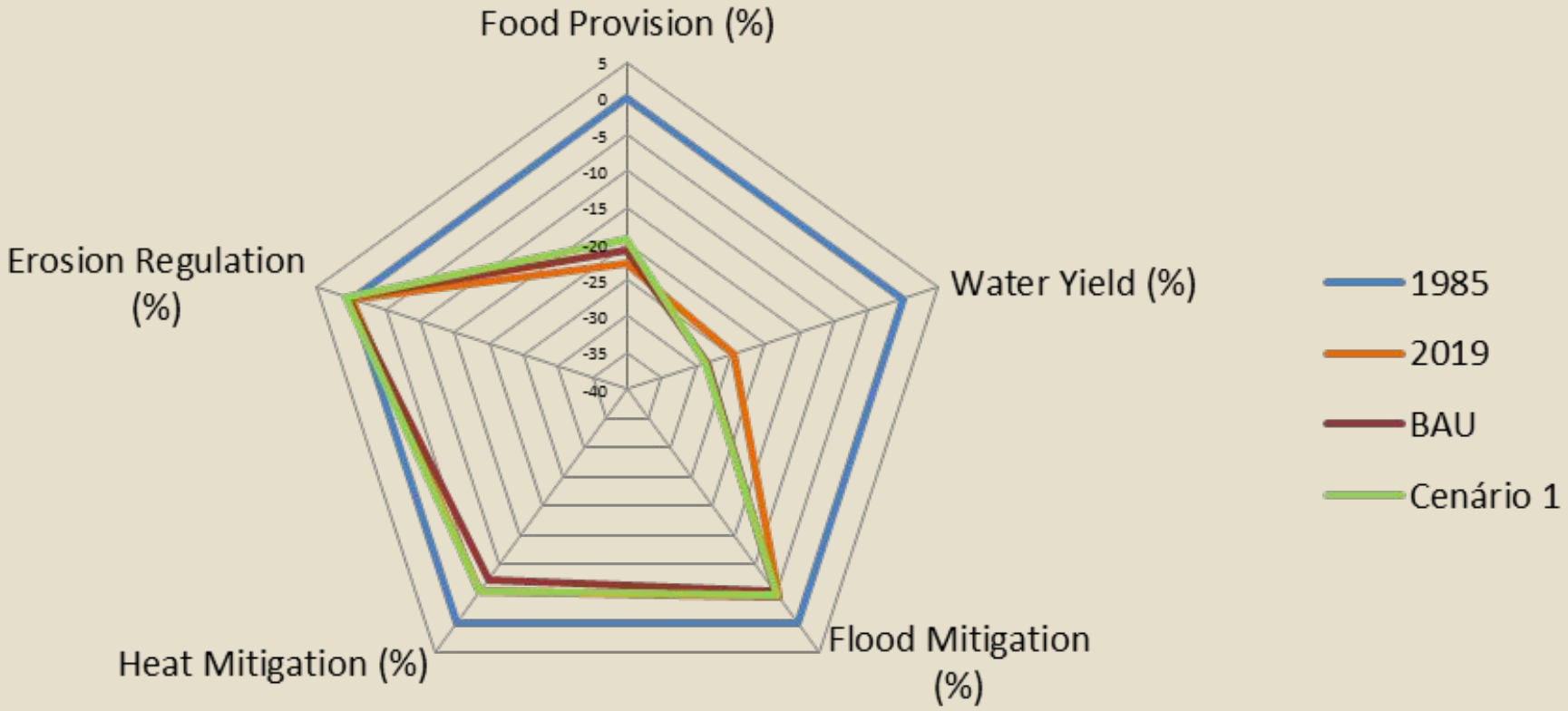
Where Urban and Peri-urban is most needed?

Areas without food supply and with high vulnerability



PRIORITY AREA	ha
Total	167.000
Available for UPA	52.360

Alterações na provisão de Serviços Ecossistêmicos



BAU *vs* Alternative Scenario

Ecosystem Services	BAU	Alternative Scenario
Food Provisioning	Follows trend of loss of agricultural area for urban expansion	Potential to supply 13 million people, mainly those without access and in vulnerability.
Heat Mitigation	Increase of 1.6oC in the average temperature in the hottest periods	The cooling capacity comes close to the 2019 levels. Decrease of almost 0.2oC in municipalities with more areas of SAFs
Flood Mitigation	In a 50mm rain there will be an additional 17 million m3 of water in the drainage	Sustainable agriculture would be responsible for an increase in water infiltration (almost 3 flood control pools)
Erosion Regulation	100,000 dump trucks with soil being dumped in bodies of water in one year	83,000 sediment dump trucks reaching bodies of water annually. (ecological soil management and conservationist practices)
Water Yield	Increase in water consumption by 25,000l / s, only this increase in consumption represents 63% of the total water available in drier seasons	Trade-off: the expansion causes an increase in water demand (600 l / s) for agriculture, which can be reversed with soil management and 34% more efficient irrigation systems.

Conclusions

It is possible to identify sustainable urban and peri-urban agriculture as part of a portfolio of alternatives to reshape the process of urban development, but it needs to be combined with a wider range of solutions in both the urban and peri-urban environments.

- Metropolitan regulatory framework that defines urban and peri-urban agriculture
- Strengthening of Land Use Regulation Policies (Metropolitan Development Plan; Land Regulation and Access to Land, Municipal Master Plans; and Watershed Protection Areas)
- Payment Programs for Environmental Services
- Access to credit, technical assistance, alternative water sources; to productive structures that enable greater efficiency, and incorporation of urban waste that can be used.

“The city has a lot of land ... here [the slum] is a granary of people from different regions, and people know how to crop because they already worked with that: orange, grape, cane, coffee” (Fernando, 2018 in Amstel, 2019).

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L'ORTO CONVIVIALE AL POLITECNICO DI MILANO

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POLITECNICO MILANO 1863
SCUOLA DEL DESIGN
DIPARTIMENTO DI DESIGN

DESIS NETWORK
Design for Social Innovation and Sustainability
POLIMI DESIS Lab

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More than **50** universities research labs spread in **5** continents

since 2008, association since 2012

https://www.desisnetwork.org



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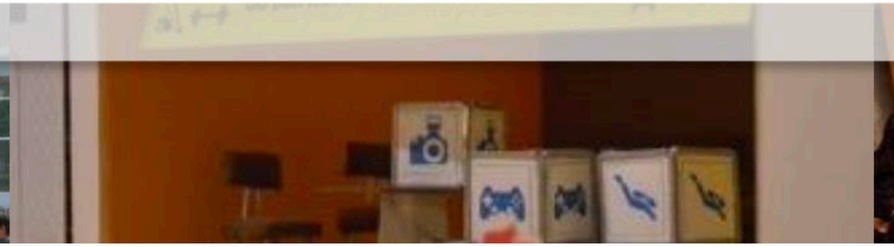
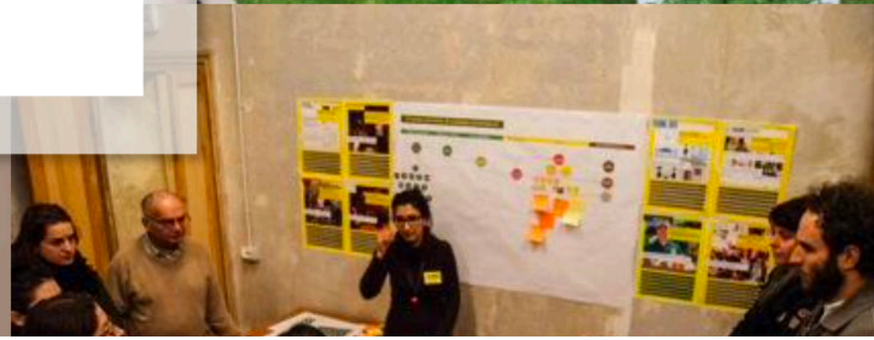
Department of Design

formally recognized as lab since 2012

https://www.desis.polimi.it



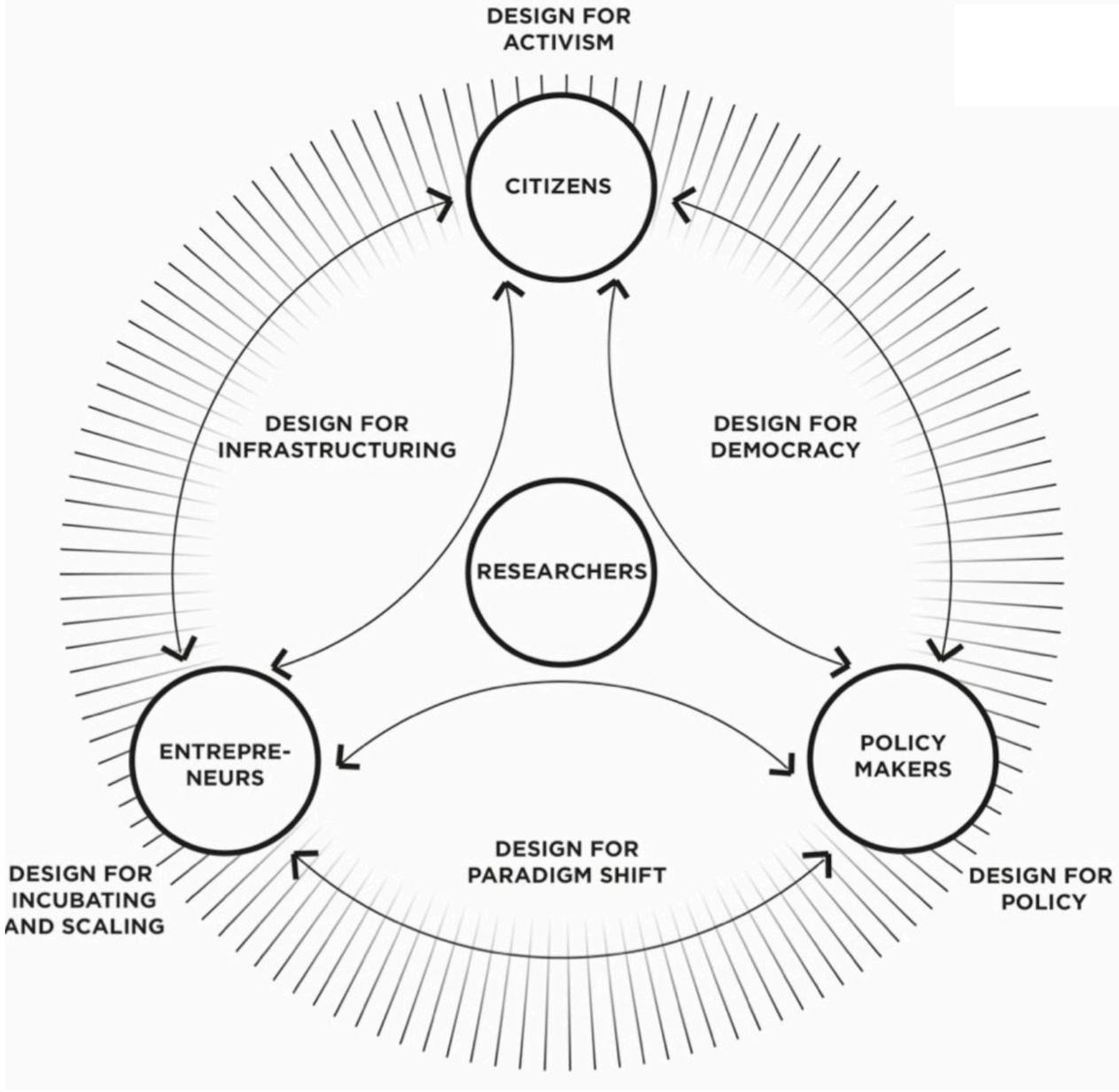



* our approach and scope

> strategic and systemic approach to design

> focus on design for services and territorial development
background in product-service system design
for sustainability and spatial design

> support and trigger social innovation,
combining creativity and visioning
with co-design methods



DESIGN for SOCIAL INNOVATION

Social innovation can be seen as a process of change emerging from the **creative re-combination of existing assets** (social capital, historical heritage traditional craftsmanship, accessible advanced technology) and aiming at achieving socially recognized goals in new ways.

DESIGN for SOCIAL INNOVATION

A coordinated series of supporting actions aiming to make social innovation practices **work more effectively, be impactful, sustainable and meaningful**.

(Manzini, 2015)


UniCredit

Supporting
COMMUNITIES
to activate
bottom-up changes.


SUSTAINABLE LIFESTYLES
SHARED RESOURCES
SPACE REGENERATION
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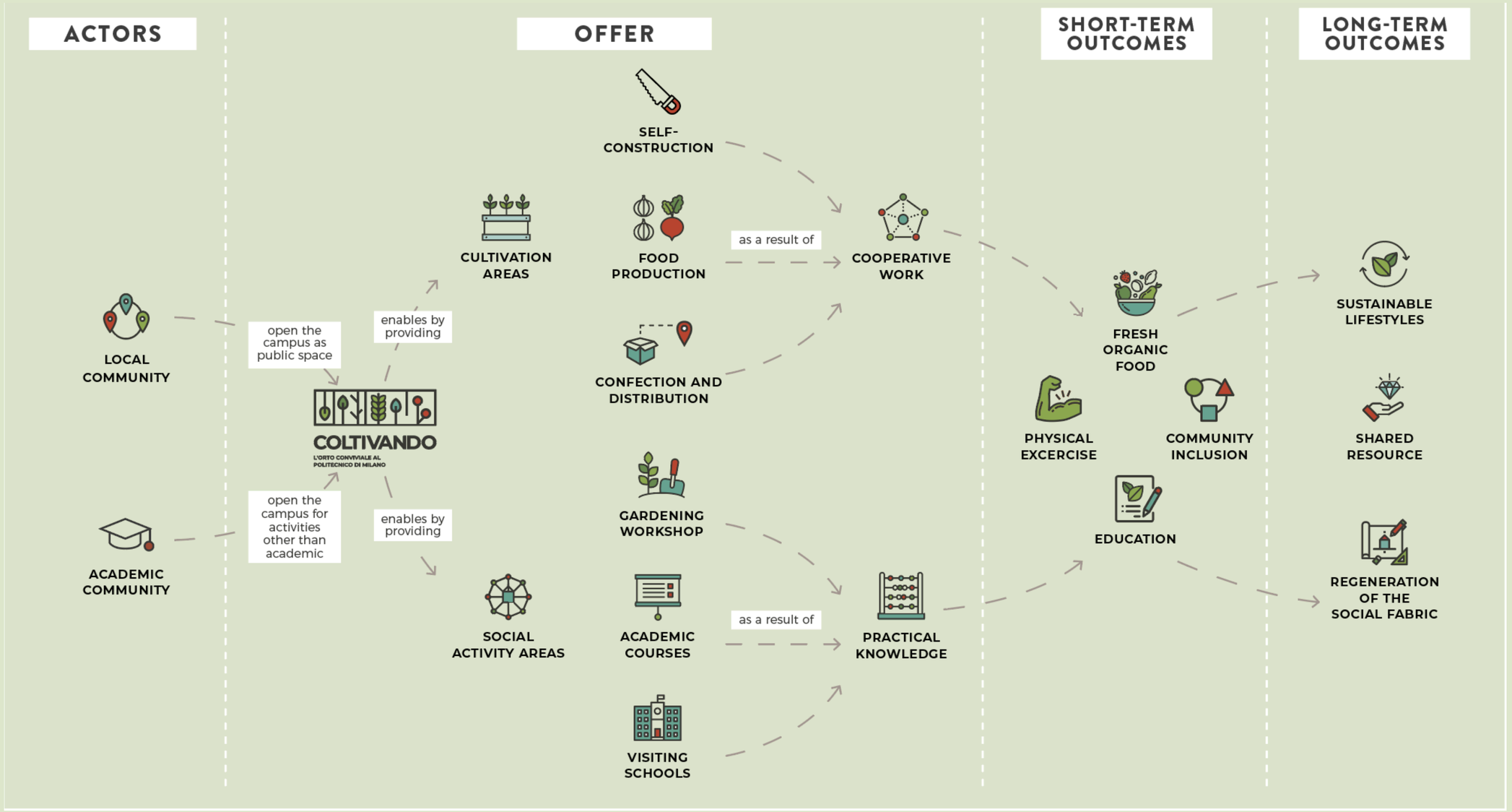
* the system


ACTORS
OFFER
SHORT-TERM OUTCOMES
LONG-TERM OUTCOMES
LOCAL COMMUNITY
ACADEMIC COMMUNITY
open the campus as public space
open the campus for activities other than academic
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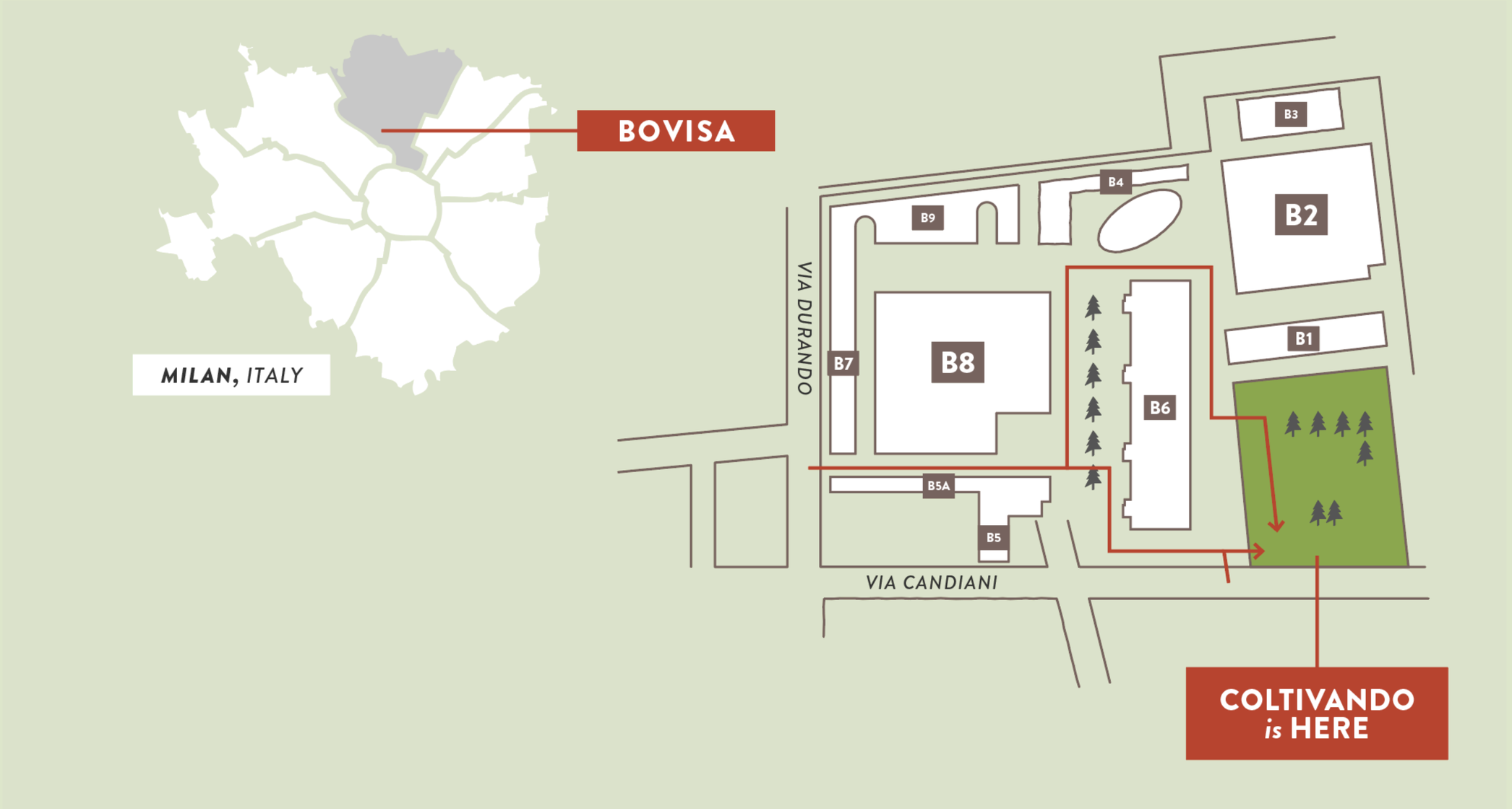
enables by providing
enables by providing
CULTIVATION AREAS
SOCIAL ACTIVITY AREAS
SELF-CONSTRUCTION
FOOD PRODUCTION
CONFECTION AND DISTRIBUTION
GARDENING WORKSHOP
ACADEMIC COURSES
VISITING SCHOOLS
as a result of
as a result of
COOPERATIVE WORK
PRACTICAL KNOWLEDGE
FRESH ORGANIC FOOD
PHYSICAL EXCERCISE
COMMUNITY INCLUSION
EDUCATION
SUSTAINABLE LIFESTYLES
SHARED RESOURCE
REGENERATION OF THE SOCIAL FABRIC

* the context


BOVISA
MILAN, ITALY
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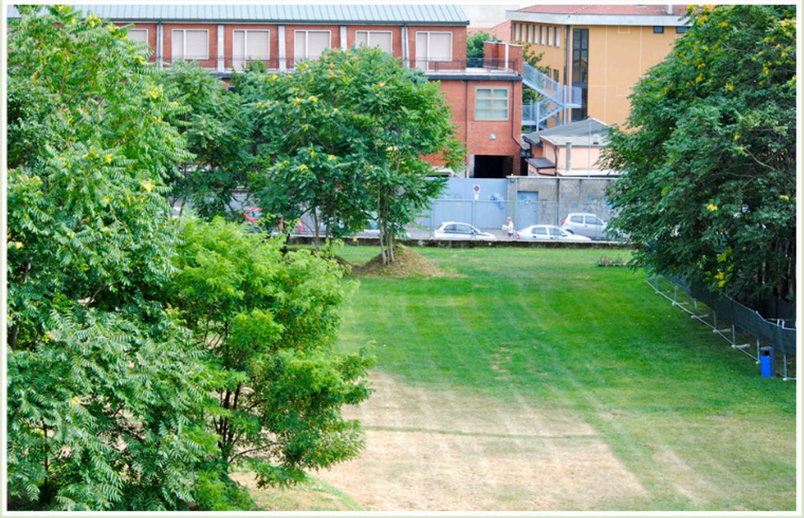
B4
B2
B9
B1
VIA DURANDO
B7
B8
B6
B5A
B5
VIA CANDIANI
COLTIVANDO
is HERE

* the context

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VIA DURANDO
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B5A
B5
VIA CANDIANI
COLTIVANDO
is HERE

* *the development* – *from 2011*

* *the development* – *from 2011*

2011

TEMPORARY URBAN SOLUTIONS

Workshop

NOV 2011

“C’È SPAZIO PER TUTTI”

Event

1-DAY-EVENT / 9 DESIGN ACTIONS

COOKING, EXPLORING, MODELING, SOFT-GYM, GARDENING




* *the development* – *from 2011*

* *the development*

The Campus as a dynamic place, lived by students with a great design spirit useful for the space they live every day.

The desire to recreate a link between the Campus and the surrounding neighborhood, involving the inhabitants by providing them with new living spaces.

* *the development* – GOALS

SOCIAL

COMMUNITY ENGAGMENT

PRODUCTIVE

FOOD PRODUCTION

EXPERIMENTING

COLLECTIVE POTENTIALITIES

* *the development* – *Co-design activities*

2 WORSHOPS

80 CITIZENS

* *the development* – *Co-design activities*

2 WORSHOPS

80 CITIZENS

* *the development* – *prototyping + building*

* *Coltivando* – *today*

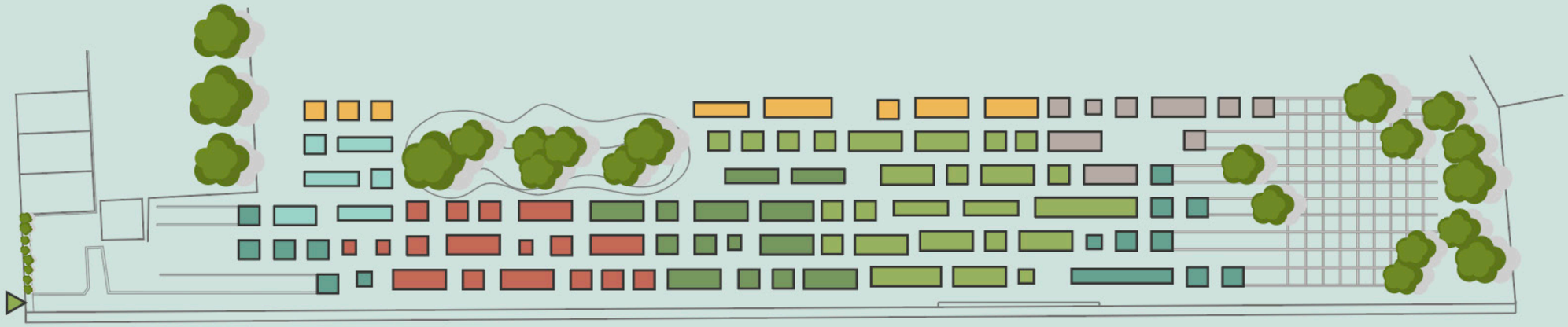
3000 *Hours*

80 *Tons of soil*

100 *Flowerbeds*

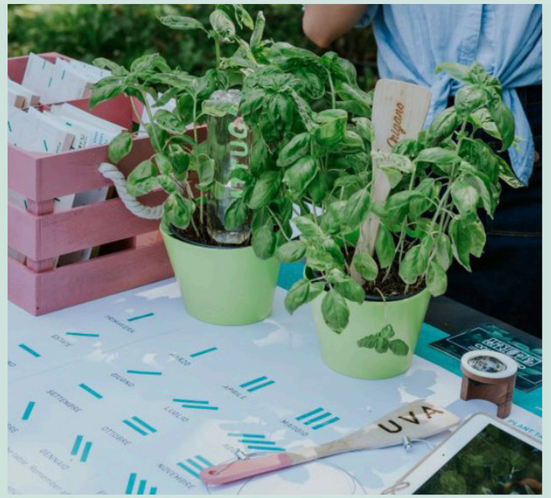
400m *Irrigation hose*

20 *Veg types*



Via Candiani 72

* Coltivando - *today*



WORKSHOPS

* Coltivando – today

COLTIVANDO
BEER

COLLABORATION
CO-CREATION
COMMUNITIES

* actors

RESEARCH GROUP
Polimi DESIS Lab

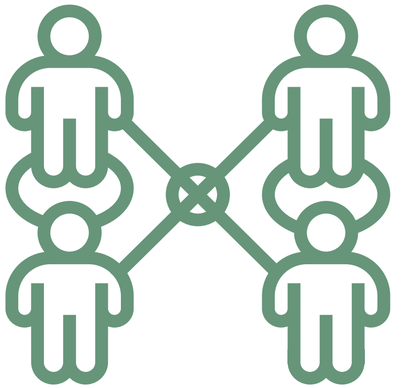
Politecnico di Milano
Department of Design

STUDENTS
Didactic Approach

Politecnico di Milano
School of Design

COMPANY
External Partner

-



LOCAL
Communities

-

* *campUS.* *Incubation and settings for social practices*

* *campUS.* *Incubation and settings for social practices*

CAMPUS

* campUS. *Incubation and settings for social practices*

CAMPUS

* campUS. *Incubation and settings for social practices*

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THANKS

COLTIVANDO POLIMI DESIS Lab

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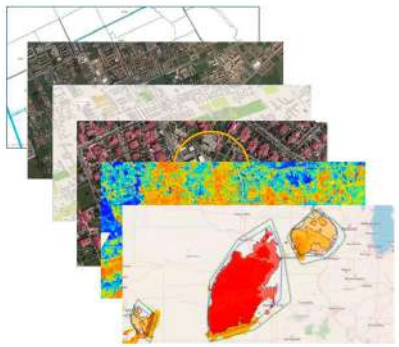
Rome's experience in urban agriculture as a mechanism for social integration and intergenerational dynamics promotion.

IURC
INTERNATIONAL URBAN AND REGIONAL COOPERATION

Funded by the European Union

Webinar #7 - September 13, 2022



What factors are key for the realisation of a successful urban garden project? How to engage the community?

According to FAO data, approx. **800 million people around the world practice urban agriculture**, ranging from micro-gardening to cultivation on the ground of a private or "community" type .

Photo: Visit at the urban garden of Annantalo (Helsinki) under RU:RBAN

As a result of the pandemic, people have begun to devote themselves more and more to greenery: in Italy, 2020 saw the birth of 3 million new "green lovers" who in total reach 19 million, 32% of Italians...

According to a recent analysis by Coldiretti association, many Italians have started cultivating urban gardens **to save money and ease war and pandemic anxieties**.

Shared projects/community urban gardens are of particular interest.

The phenomenon of urban gardens, spaces made available by municipalities and managed by the community/citizen associations, **is on the rise!**

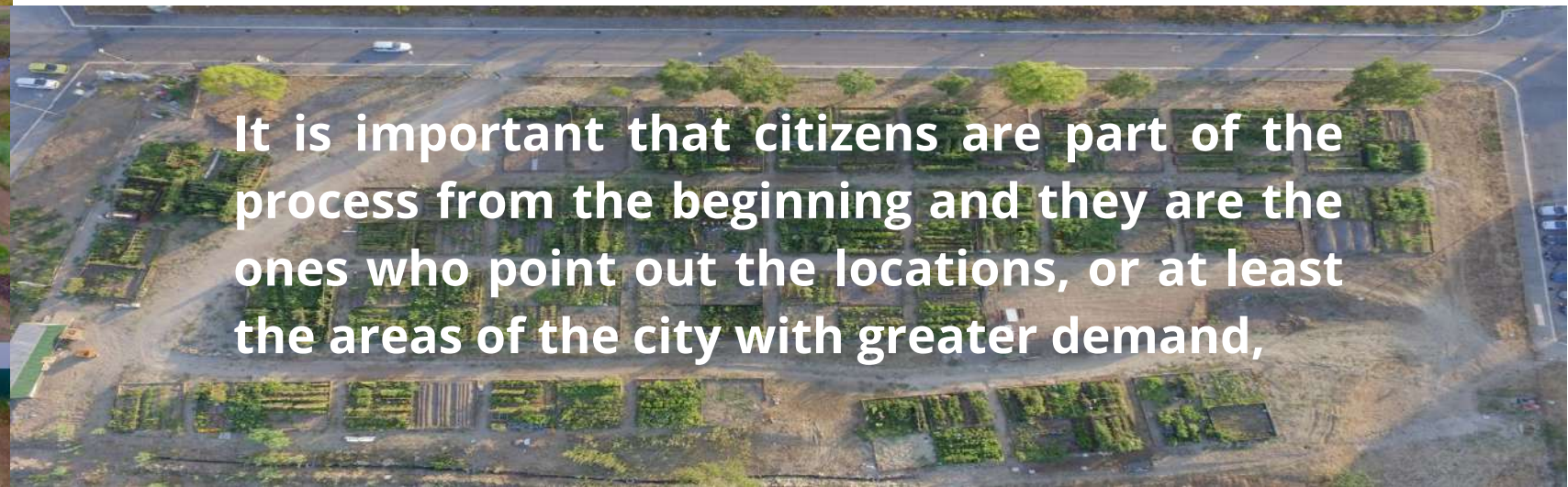
What factors are key for the realisation of a successful urban garden project?

How to engage the community?

But the development seen above resulted from the financial crisis which began in 2008.

From 2010, in Rome urban gardens have become a concrete and strong tool of the local communities to fight against urban sprawl, soil erosion and climate change besides to be a multifunctional tool to produce quality food and Increase social sustainability in the City.

Bottom-up participation developed and institutions begun to collaborate in 2013 through SidigMED a EU funded project under ENI CBC MED involving Rome, Barcelona, Mahdia and the Royal Botanic Garden of Jordan: several urban gardens were created and the lesson learned was…



It is important that citizens are part of the process from the beginning and they are the ones who point out the locations, or at least the areas of the city with greater demand,

What factors are key for the realisation of a successful urban garden project?

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THE GREEN WAVE IN ROME FROM 2009 UNTIL TODAY

THE EUROPEAN GREEN WAVE IN ROME

2009 2011	CAT-Med - Changing mediterranean metropolis Around Time. coordinated by the city of Malaga and with 11 partners including the city of Rome, the project in order to prevent natural risks related to climate change worked on the definition of metropolitan actions and strategies, outlining **methods of implementation and analysis of sustainable districts** in the different cities involved in the consortium and ratifying in 2011 the "Malaga Charter on sustainable urban models".	CAT-MED Change Mediterranean Metropolis Around Time Interreg Euro-MED Co-funded by the European Union
2012 2013	European Programme LLP (Multilateral Grundtvig). Involved Rome (IT), Marseille (FR), Barcelona (ES), Postdam (DE) and Playmoth (UK). Realities involved in the **creation and management of an urban garden** have participated in exchanges in the various countries, thus being able to learn, compare, disseminate and enhance the practice of urban gardens around four fundamental themes: intergenerational and intercultural dialogue, education for sustainable development and vocational training.	EUGO European Urban Garden Otesha
2013 2016	European Programme ENPI. Involved the Royal Botanic Garden of Amman (JO), Rome (IT) Barcelona (ES) and the city of Madhia (TN). The objective was the improvement of **management models for urban green/agricultural areas for the requalification of abandoned and degraded areas, through the social inclusion of disadvantaged people and the promotion of sustainable development and urban resilience**. The experience of Ort9 (by "Vivere In" ass.) and the third urban gardens of "Insieme per l'Aniene" originated from this project.	SIDIG MED Urban and Peri-urban Agriculture Cross-Border Cooperation in the Mediterranean ENPI CBCMED CROSS-BORDER COOPERATION IN THE MEDITERRANEAN
2014 2015	European Programme LLP (Transfer of Innovation). Involved Marseille (FR), Bristol (UK), Berlin (DE), Rome (IT), and Vienna (AU). Based on the French and British models, community gardeners were directly involved in the development of a European model of the **first training course** for gardner+organiser = **gardeniser**.	gardeniser Co-funded by the Erasmus+ Programme of the European Union
2017	URBACT European programme recognises Rome as a good practice city for its participatory model of bottom-up governance of the urban garden phonomenon, underlining its character as a resilient city.	URBACT GOOD PRACTICE CITY URBACT Driving change for better cities European Union

What factors are key for the realisation of a successful urban garden project?

How to engage the community?

THE GREEN WAVE IN ROME FROM 2009 UNTIL TODAY

2017 2020	Project developed under Erasmus+ Eu programme (KA2 VET) involved Pau (FR), Bristol (UK), Kassel (DE), Rome (IT), Crete (GR) for a **systemisation of the Gardeniser Pro training course, through the European ECVET credit system**, brings the Gardeniser route to a professional level, adding to the trainng also the internship in community gardens and the online system for obtaining the Gardeniser license.
2018 2020	URBACT European programme involved the city of Loures (PT), Coen (FR), Krakow (PL), A Coruña (ES) Vilnius (LT), Thessaloniki (GR) in the transfer of the good practice aknowledged to the city of Rome on community urban gardens, focusing on 3 main areas: governance, capacity building and training.
2020 2022	Project co-financed by the Erasmus+ Adult Education Program, Key Action 2 - Exchange of good practices. Involved Vienna (AU), Krakow (PL), Vejle (DK), Lund (SE), Bristol (UK), Assat (FR), Rome (IT) in an **exchange of good practices** through the international mobility if 56 members of community urban gardens which contribute to the online **ToolBox** on the **platform** www.gardeniser.eu
2020 2023	Project co-financed by the Erasmus+ Adult Education Program. It involved Italy, France, Belgium and UK in the development of a training course for Gardeniser Pro trainers with their own licence, as well as developing 2 training intervention models for civil servants, Gardeniser Tec and Gardeniser Edu.
2021 2022	Cofunded under URBACT EU programme, it relaunches the transfer of innovation and practices of the community gardens of Rome to 4 further cities: Algeciras (ES), Split (HR), Alexandropolis (GR), Carlow (IE)
2021 2022	European tender IMCAP involved Vicenza, Milan, Rome, Mesagne, Palermo, in workshops and dissemination activities aimed at young people and adults to raise awareness of the impact of the Common Agricultural Policy (CAP) on the daily life of citizens and the environment.
2021 2023	European programma Erasmus+ (School) involved third sector organisations, schools and universities from the UK, IT, FR, BE, in an innovative programme to support learning through the installation of digital learning access points in urban community gardens
2021 2023	Co-funded by Horizon2020 involves IT, BE, BG, DK, NL, DE with the aim of unlocking the potential of Urban Agriculture by achieving better networking through Urban Agriculture Forum.

What factors are key for the realisation of a successful urban garden project?

How to engage the community?

THE GREEN WAVE IN ROME FROM 2009 UNTIL TODAY

2021 2022	Project cofunded by Horizon 2020 involves Athens (GR), Castelo Branco (PT), Differdange (LU), Kolding (DK), Nilüfer (NT), Oslo (NO), Rejeka (HR), Rome (IT), San Sebastian (ES), Tampere (FL), Turin (IT) in facilitating their transformation towards more sustainable food systems, in line with FOOD2030 priorities, by acting on food policies through living labs.
2021 2022	Programme of the Inter-American Development Bank: IDB Cities Network promoted bilateral meetings on urban agriculture between the city of Rome (IT) and the city of Lima (PE), between A Coruña (ES) and Tuxtla Gutiérrez (MX) and between Loures (PT) and São Paulo (BR).
2020-2021 2022	Project developed under the **International Urban and Regional Cooperation - IURC** EU programme, with a main thematic areas of cooperation on Sustainable Agriculture, Food systems, Urban Gardens, Urban poverty, Social Cohesion. The general objective is to share best practices for the implementation of urban agriculture and green infrastructure as a strategy to combat social exclusion and poverty, support the generation of abandoned and degraded urban areas and limit urban expansion.
2022 2025	Project developed under **European Development Fund. The experience of Rome and Lazio is being used to support the development of an urban agriculture initiative by the city of Barranquilla in Colombia**. Exchanges, online webinars with experts, training courses for urban community gardeners will fuel the bottom-up construction of **4 urban community gardens** by citizens and migrant communities from other Latin American countries.

What factors are key for the realisation of a successful urban garden project?

How to engage the community?

*The cities network in favor of **community urban gardens** that has developed in recent years is stunning!*

The urban gardens are designed to be a community empowerment space, where local residents have access to a range of facilities and resources that can act as an incubator for ideas, an activator for meaningful engagement or a place to socialize. **The Urban garden is the new "Italian PIAZZA"**

The community garden in Rome is a place open for everyone to learn about gardening, grow genuinely local organic food, and enjoy the inspirational environment. The community garden consists primarily of a garden of boxes, a field, a small wild flower meadow and a beehive.

COVID 19 emergency

The requests of the citizens in Rome interested in cultivating urban gardens have increased by about **30%**. This trend began to occur during the lockdown, when, although with restrictions, citizens were allowed to continue to cultivate

The pandemic challenge urged a solution for healthy nutrition and self-sufficiency policies for many cities. This is one of the reasons why **the city of Barranquilla** was strongly involved **during the IUC experience in 2020** to implement urban gardens, following the **RU:RBAN** Transfer Story

.

What factors are key for the realisation of a successful urban garden project?

How to engage the community?

Community urban gardens are fundamentally based on the spirit of volunteering

In Rome, the demand to collaborate in urban gardens is very high, hundreds of people on the waiting list, despite the existence of hundreds of urban gardens, in the largest agricultural municipality in Europe…

Different tasks and activities for people but citizens don't need any specific knowledge in advance, everything they need to know is taught to them by the community:

* *Learn loads about urban gardening*

* *Use tools and have part of the harvest*

* *Be part of the community*

What are the main barriers faced in the creation of urban gardens?

Finance, space, organizational structure, water, external damage, soil, communication, interpersonal issues, and participation issues...

The convenience of having the professional figure of the **Gardeniser**: this figure plays an important role in the governance model.

The Gardeniser should be one person from the community urban garden (or several, depending on the size of the garden).

He/she can operate on a voluntary basis or under a contract. In any case, the figure of the Voluntary Gardeniser must exist. This professional figure must be included in the Regulations for the running of the garden.

What is the role of urban agriculture in social inclusion and food production?

It is no coincidence that projects related to social inclusion are born in many shared urban gardens/community urban gardens.

According to the European Environment Agency, urban green projects represent a great opportunity for integration and training.

Some experiments start from the social vocation.

The interaction of the garden community with society is crucial. This interaction can take place through events open to the neighborhood, dissemination actions...

What were the main lessons from Rome's experience with urban agriculture and innovative food systems projects?

General indications shared between the cities of the RURBAN network

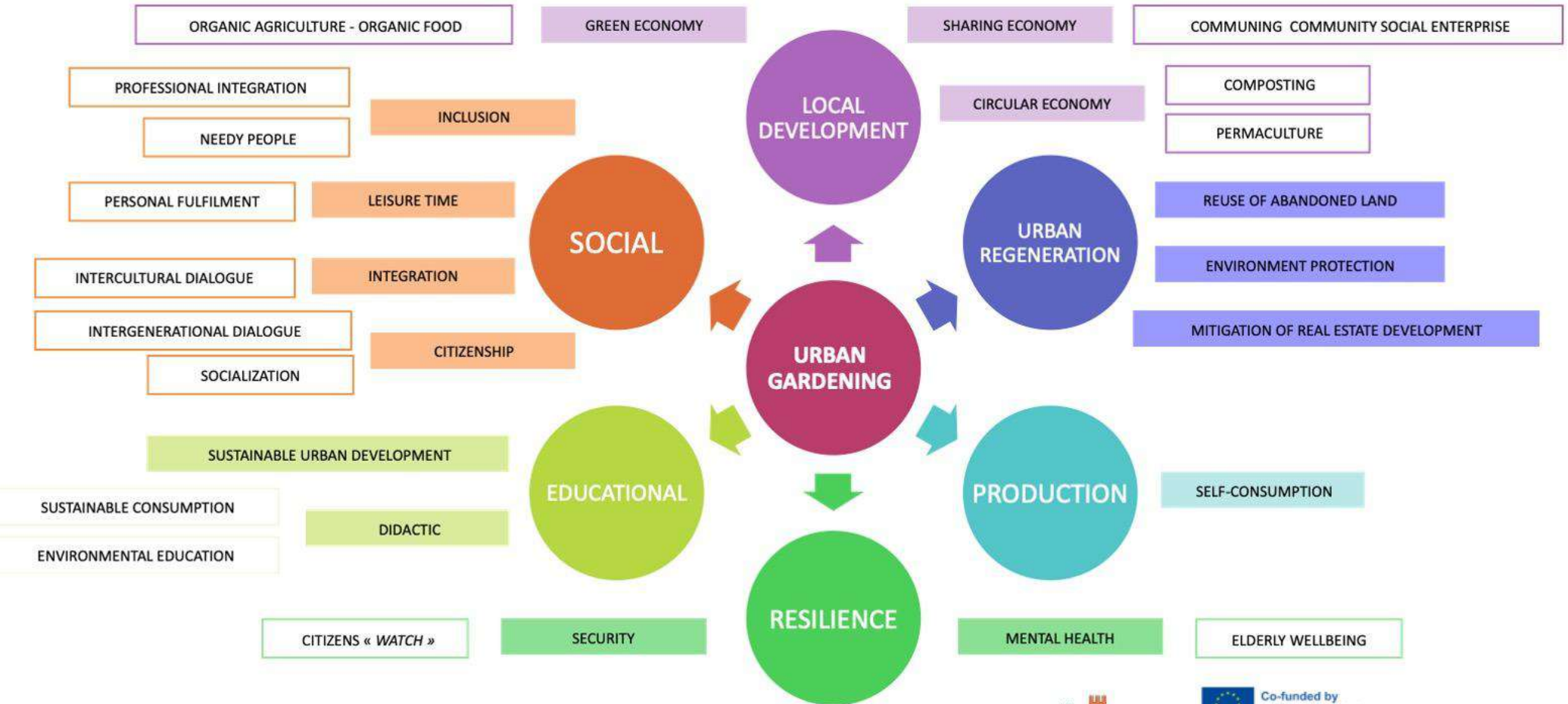
- In the creation of urban gardens, the use of **participatory processes** to decide the location and characteristics of the new urban community gardens are a key element to involve users. It is important that citizens are part of the process from the beginning,

- **Spaces to implement the urban gardens:** In most of the RU:RBAN partner cities, the first urban gardens were implemented on undeveloped municipal land, or in underutilized areas of some more or less extensive public parks.

- **Measures for the start-up:** the City Administration prepares the land and the accesses, installs irrigation taps connected to the municipal water network and divides the land into individual plots. Common areas and a shared tool shed must be activated. Workshops are organized to train users in organic farming as well as group revitalization workshops to enable users to form an organized community,

- **Maintenance**: users are responsible for the maintenance of their plot and the tool shed. Pathways and accesses are maintained by the organisations/associations hired to maintain the city's parks and gardens.

...the multifunctionality of the urban gardening...
....a global phenomenon



FROM 2006/2008

Italia Nostra

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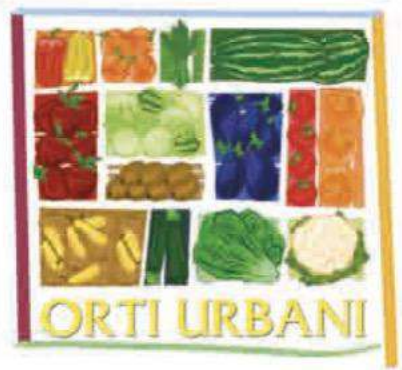
PROGETTO NAZIONALE



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GenerACTOR


Roman artichoke


«Lirio d'Oro» project
in collaboration with a nursery in Rome


Roman fennel


Romanesco broccoli
(also known as Roman cauliflower)


«CICLORTICINA» by Villaggio 95

Casal Brunori Park “Ort9”
Ass. “Vivere In…”

Roman courgette

“Orchi orto”

Coop. Garibaldi

Puntarelle (a type chicory)

European citizens living in cities

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Quality of life

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Eco-system services provided by trees and green urban areas

Main benefits:

- Provide oxygen
- Capture carbon dioxide
- Regulate micro-climate
- Offer shade
- Purify water
- Stop erosion
- Provide habitat
- Produce food
- Supply resources

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Healthy trees needed in cities

A new vision of how cities should evolve….

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"Parco Italia"

22 million trees in 14 Italian Metropolitan Areas

Based on the data of the ISTAT report on urban green spaces 2021, in the last 5 years in Italy there has been an increase in urban gardens of 18.5%, exceeding 2.1 million square meters occupied.

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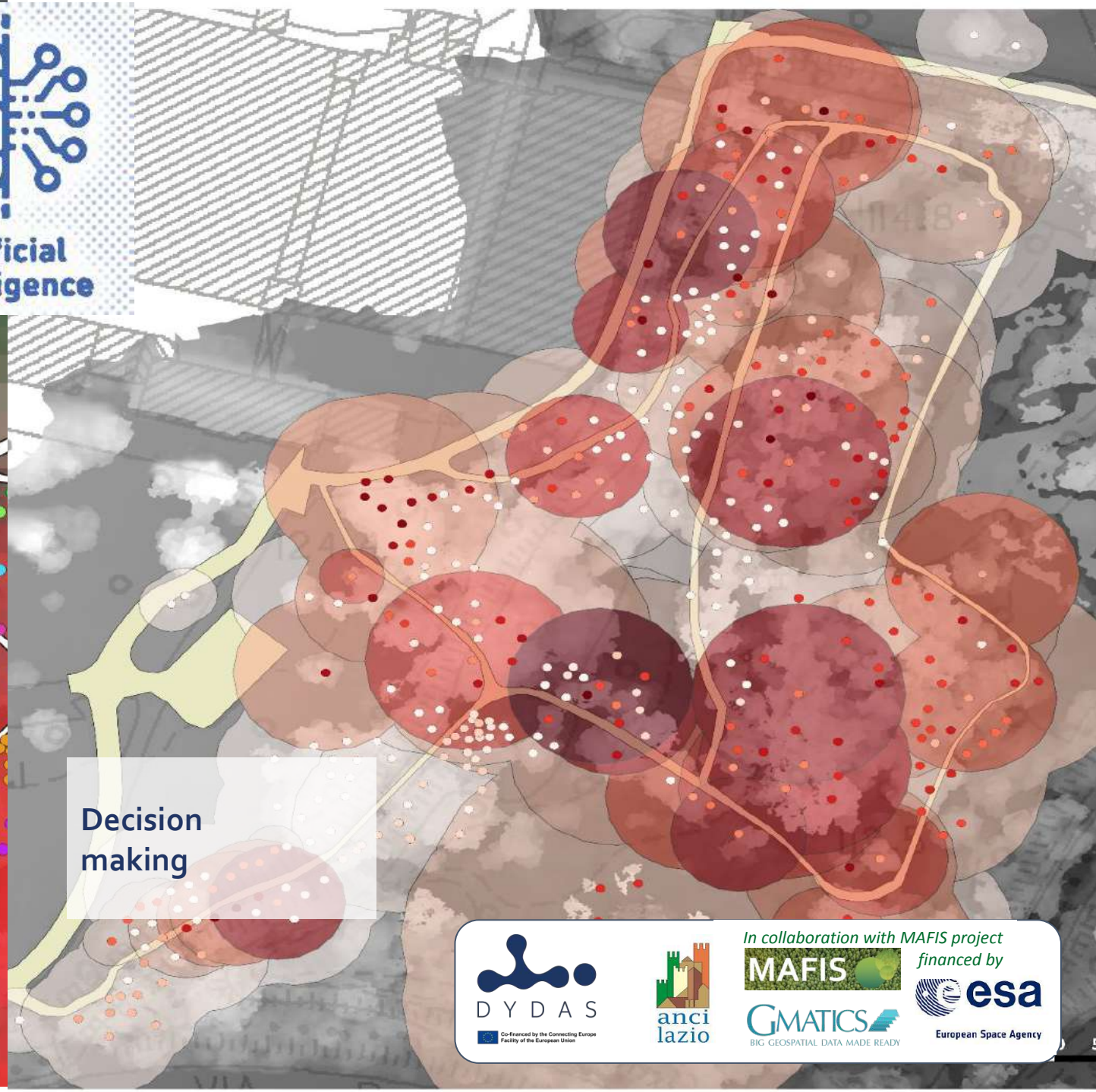
Mapping & Monitoring for decision making

Artificial Intelligence

Urban Trees mapping

Tree Health monitoring



Decision making

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Services being developed

- Detailed mapping of public and private urban green spaces,
- Detecting past evolution (last 40 years) of size/quality of different urban area types
- Integrated geospatial analysis of green spaces past evolution and planning with city long term plan
- Modelling of urban green impacts to enable "what if" analysis and the evaluation/comparison of different green plan alternatives
- Detailed mapping of air pollution and wind patterns to assess new urban green projects
- Detailed mapping of heat effects and wind patterns in cities during summer heat waves to assess new urban green projects
- Monitoring tree water stress and health status, as well as soil moisture to provide priority areas for selective maintenance and inspections
- Analysing tree evolution and tree health over the years to provide risk alerts for further in-situ inspections
- Green Indicators (Air quality, Soil moisture, Urban temperature, Water bodies, Health, Accessibility, Biodiversity protection, Economic benefits).

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Urban green players

NURSERIES

ARBORISTS

AGRONOMIS

ARCHITECTS
URBAN PLANNERS

MULTI-UTILITIES

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Service upscale with HPC

DYDAS

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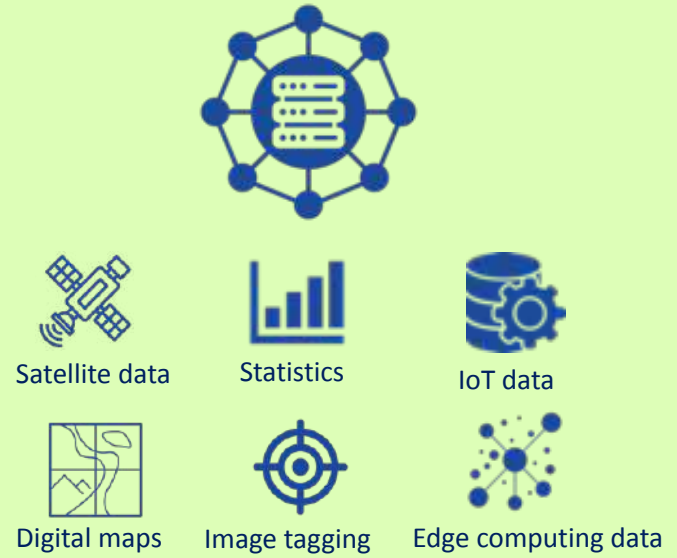
- **Hundreds and thousands of processing nodes to scale-up service at continental scale**
- **Capability of handling and harmonizing very different datasets with different formats**
- **Cooperative user data access management (Public, Industry, Academy)**
- **Data-lake easy search and access to information**



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Welcome to our platform. Here is where your data analysis begins. Create a project, use a model and discover the future.

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contact our support team

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Password:

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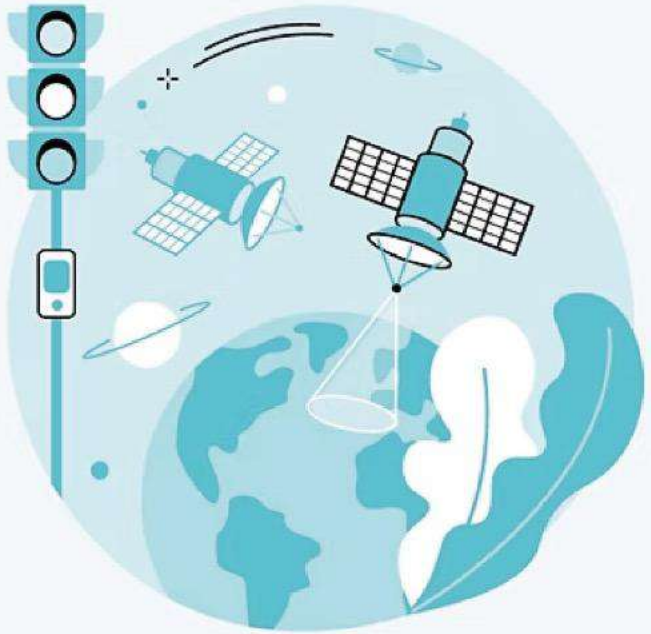
#DYDAS&SPOTTEDHackathon

The Virtual Hackathon of CEF Projects

Join the Webinar!

Thursday 29 September
@ 15:00 (CEST)



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Spotted

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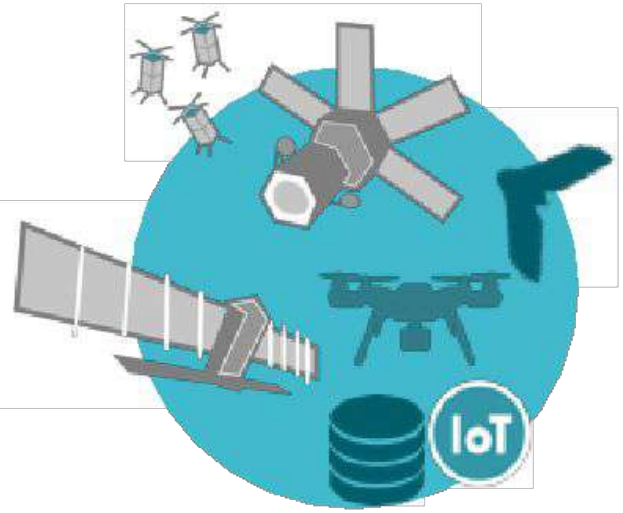
Shed Light-on red traffic lights and urban green status"

Partners know-how and capabilities

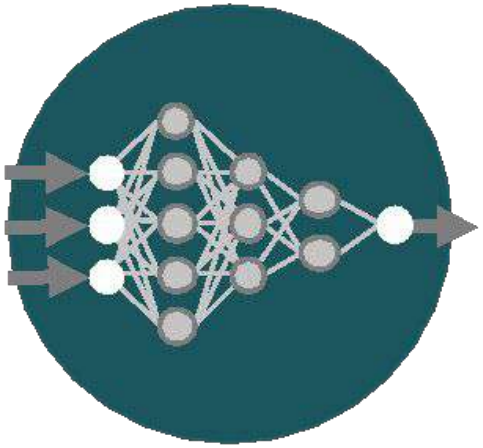
Systematic Monitoring and Predictive Geo-Information Services

by exploiting Technology Innovation in various sectors

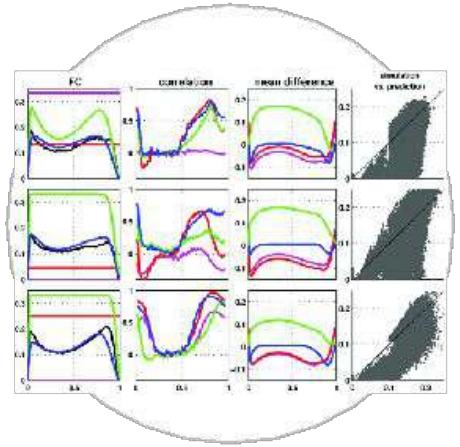
END-USER DATA



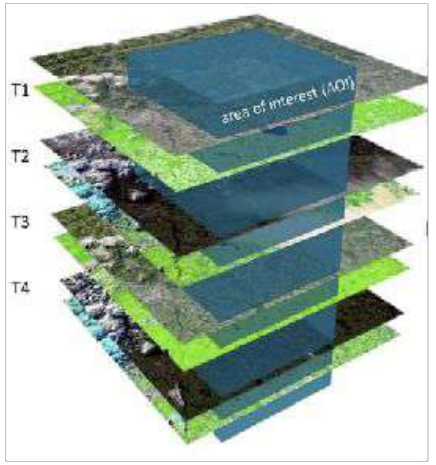
SATELLITE MONITORING, AERIAL/DRONE SURVEYS DATABASES + IoT



ARTIFICIAL INTELLIGENCE AND STATISTICS



HYBRID PREDICTIVE MODELS (DETERMINISTIC & DATA-DRIVEN)



DATA CUBE

I/F TO ERP & OPERATIONAL PROCEDURES

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in classification no. 1.4.2. (sports and leisure facilities) Copernicus provides data on urban gardens within or around the settlements

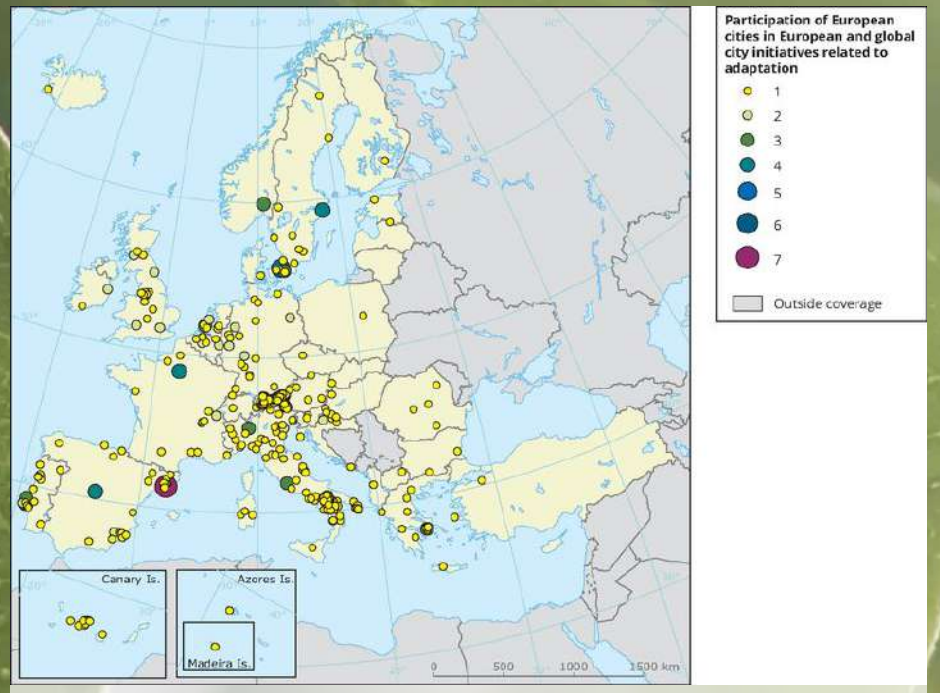
Orti pubblici (dachas) a Riga (Lettonia). Foto: Gy. Büttner

Fonte: https://land.copernicus.eu/user-corner/technical-library/corine-land-cover-nomenclature-guidelines/html/index-clc-142.html

Urban vegetation is much more than the landscape it offers to the eye. It performs metabolic and recreational functions. It is a place to rest and can be a space for many interesting activities.
Thanks to the **Copernicus programme**, we now have free and open satellite data **to support innovation in ecological management and sustainable development in urban areas.**

"Parco Italia"

"Europe city park"



650 European cities participating in initiatives related to adaptation

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Earth Observation and Geospatial Information to improve urban resilience and citizens' quality of life in our cities

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Thanks for thinking about how to live in a more cooperative world!

Claudio Bordi

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Municipal Agency of the City of Rome

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ANCI Lazio

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