Bringing cities to life, Bringing life into cities.

Connecting nature, connecting people

in the smart sustainable cities

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Marino Cavallo | Head of Research, innovation and EU projects service | Metropolitan City of Bologna

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 730222
Cities and Smart Sustainable Cities

An ICT enabling Environment for cities,
UN Habitat, 2015
Cities and Smart Sustainable Cities

Smart Sustainable Cycle, UN Habitat, 2015

1. Set the vision for your SSC venture
2. Identify your SSC targets
3. Achieve political cohesion
4. Build your SSC
5. Measure your city’s progress
6. Ensure accountability and responsibility

Smart Sustainability City Cycle
Cities and Smart Sustainable Cities

IN FIGURES

Over 50% of world’s population lives in cities.

Within 10 years there will be close to 500 cities of more than 1 million people.

Increased number of "megacities" with populations exceeding 20 million - from 2 megacities in 1950 to 41 by 2030.

By 2050, 70% of the world’s population - and 86% in OECD countries - will live in urban areas.

By 2050, 80% of older people in developed countries will live in urban areas.

Cities consume between 60 to 80% of energy production worldwide.

oecd.org/gov/cities.htm
Cities and Smart Sustainable Cities

THE CHALLENGES

The continuing growth of urban populations calls for a policy response that optimises land resources.

Urban policies need to be tailored to the demographic changes in the population.

Cities are major contributors to carbon dioxide.

The economic crisis has reduced governments’ abilities to invest in new infrastructure.

Smart road policies are needed to make best use of scarce space.

Cities need effective resilience policies to be able to respond to disasters.

Large cities often have higher levels of inequality.

oecd.org/gov/cities.htm
Cities and Smart Sustainable Cities

OPPORTUNITIES

Design urban policies that complement global climate policies and reduce overall cost of emission reduction.

Build future cities with planning and infrastructure learning from past mistakes.

Opportunity for developing countries to closing the gap with developed economies.

Links can be fostered between urban and rural areas to boost a region’s economic potential.

Shifting demographic scale can be an opportunity for growth and social inclusion policies.

oecd.org/gov/cities.htm
Fields of a Smart City:

**INNOVATION, ENTREPRENEURSHIP AND THE GENERATION OF ECONOMIC ACTIVITY**

- Smart Specialisation
- Promotion and Support of Entrepreneurship
- Promotion of R&D and Innovation
- Clustering. Collaboration
- With the Local Business Fabric
- Attracting Investments
- Positioning of the Territory

**KNOWLEDGE AND TALENT**

- Quality Basic Education
- Quality University
- Lifelong Learning
- Attracting Talent
- Retention and Return of Talent

**DIGITAL SOCIETY AND ECONOMY**

- Digital Citizenship
- Administration 4.0
- Development of the Digital Economy
- Digital Infrastructure

A city can be defined as smart when it displays positive performance in these three fields, and when it has been built based on a “smart” combination of elements (communications, infrastructure, economic development) and on purposeful and independent citizen activities (participation, education) that make sound management of the available resources through open governance. [Smart city studies, Bilbao, UCLG 2017]
## Cities and Smart Sustainable Cities

### 4 MAIN SOURCES OF VALUE:

<table>
<thead>
<tr>
<th>Source of Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IT IS SUSTAINABLE</strong></td>
<td>Using digital technology to reduce costs and optimise resources, in a way that its current administration does not compromise the use of these by future generations.</td>
</tr>
<tr>
<td><strong>IT IS INCLUSIVE AND TRANSPARENT</strong></td>
<td>It has direct channels of communication with the public, operates with open information and allows the budgets invested in to be monitored.</td>
</tr>
<tr>
<td><strong>IT GENERATES WEALTH</strong></td>
<td>Offering suitable infrastructure to generate high quality employment, innovation, competitiveness and business growth.</td>
</tr>
<tr>
<td><strong>IT IS MADE FOR THE CITIZENS</strong></td>
<td>Using technology that improves the quality of people’s lives, giving quick access to more efficient public services.</td>
</tr>
</tbody>
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UCLG, 2017
Cities and Smart Sustainable Cities

Distinctive aspects of a smart city that is sustainable  (United Nations Conference on Housing, 2016)

Attributes

• Sustainability: Related to city infrastructure and governance, energy and climate change, pollution, waste, and social, economics and health.
• Quality of life (QoL): Improving QoL in terms of emotional and financial wellbeing.
• Urban aspects: Includes technology and infrastructure, sustainability, governance and economics.
• Intelligence or smartness: Commonly quoted aspects of smartness include smart economy, smart people, smart governance, smart mobility, smart living and smart environment.

Themes

• Society: The city is for its inhabitants.
• Economy: The city must be able to thrive – jobs, economic growth and finance, etc.
• Environment: The city must be sustainable in its functioning for the present as well as future generations.
• Governance: The city must be robust in its ability for administrating policies.

Infrastructure

• Physical infrastructure includes buildings, train tracks, roads, electric lines, gas pipelines, water, factories, etc.
• The ICT infrastructure acts as the “glue” which integrates all the other elements of the smartness of the city acting as a foundational platform. ICT infrastructure functions as the nerve centre, orchestrating all the different interactions between the various core elements.
RESILIENCE OF THE CITIES

**What is resilience?** Urban resilience is “the capacity of individuals, communities, institutions, businesses and systems within a city to survive, adapt and thrive, no matter what kinds of chronic stresses and acute shocks they experience.”

EY research identified six drivers for establishing a sense of belonging, community and genuine connection with a city:

1. **Parity** — do I have equal opportunity to the quality of life I want as others in the city?
2. **Agility** — can I easily move around the city and be part of the full city experience?
3. **Affinity** — do I relate to the people and personality of the city?
4. **Pride** — do I feel good about my city as part of its country and the international community?
5. **Stimulation** — does the city inspire me and enrich my world?
6. **Leadership** — do I trust the decisions being made; are they for the future benefit of the city?
Participation in the smart sustainable city

The emerging areas of sharing economy

Circular economy

Design thinking

Market design and marketplace
Participation in the smart sustainable city

Participation processes and e-services

From capacity building to capability building
the focus on e-services

Designing networking activities on Internet implies considering the social and interpersonal connections between people interacting and the symbolic and cultural value assumed by the transactions made through the web.

To create, to maintain, to develop the interpersonal nature of this relationship it is necessary to grant:

- Mutual reliability
- Trust
- Shared values
Cities play a key role as **engines of the economy and as centers of services** for the surrounding areas: connectivity, creativity and innovation.

The administrative boundaries of cities no longer reflect the physical, social, economic, cultural or environmental meaning of urban development:

- new forms of flexible governance are needed
- new concept of **FUNCTIONAL URBAN AREAS**
Functional urban areas represent a new unit where social and economic relations are taken into account and the strengthening of rural-urban linkages raises and, at the same time, the strictly urban dimension.

European administrative, morphological and functional urban area ratios for 18 city regions
The Metropolitan City of Bologna

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A NATURAL AND LOGISTICS NODE

• More than 1M inhabitants, the population has been steadily growing;

• A strategic hub for freight and human flows in Italy;

• Famous for its food industry and culinary arts;

• A global reference for the cooperative movement and civic engagement;

• A virtuous cities in terms of environmental performances, with about 2,700 urban gardens.

Green Public spaces within the urban area of Bologna
By adopting a regulation on public collaboration between citizens and the City for the care and regeneration of urban commons, Bologna Municipality started a process that opened the door to a more participatory way of government: for citizens and with citizens. Associations, individual citizens or informal groups can enter into Collaboration Pacts with the City to improve public spaces; an Office of Civic Imagination works full time on innovative policies to engage citizens; the Comunità web portal is available to share ideas and projects, and 6 Permanent District Labs allow citizens to interact with the City and co-design projects.

- Winner of the Engaged Cities Award (Bloomberg Foundation)
- Finalist of the Transformative Action Award 2018
Icity Rate is the annual report on the Italian cities developments towards citizens needs, more inclusive and livable environment.

5 indicators on **ENVIRONMENT, FUNCTIONAL SERVICES, ECONOMY, SOCIETY AND GOVERNANCE**: 107 specific indicators and 107 cities analyzed, 15 indexes on sustainability
**ICITY RATE 2018 – the ranking of the Italian Smart Cities**

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<table>
<thead>
<tr>
<th>AMBITI</th>
<th>MEDIA TOP 3</th>
<th>CITTÀ</th>
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<tbody>
<tr>
<td></td>
<td>Milano</td>
<td>Firenze</td>
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<td>RANKING TOTALE 2018</td>
<td>2,0</td>
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<tr>
<td>TRASFORMAZIONE DIGITALE</td>
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<tr>
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<tr>
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<tr>
<td>INCLUSIONE SOCIALE</td>
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<tr>
<td>VERDE URBANO</td>
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<td>15</td>
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<tr>
<td>SICUREZZA E LEGALITÀ</td>
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<tr>
<td>RIFIUTI</td>
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<tr>
<td>SUOLO E TERRITORIO</td>
<td>48,3</td>
<td>76</td>
</tr>
<tr>
<td>ACQUA E ARIA</td>
<td>76,7</td>
<td>96</td>
</tr>
</tbody>
</table>

Bologna first for:
- PARTICIPATION
- EMPLOYMENT
- ECONOMIC STRENGHT
Urban and peri-urban agriculture plays a key role in:

• ensuring **safe food** in urban areas;

• improving air quality, reducing urban warming and **enhancing urban biodiversity**;

• contributing to **natural resource management**;

• being a **sustainable way** to produce, consume and do business;

• getting back to the **proximity between city and Nature**, between city and agriculture, between city and food.

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more than environmental benefits

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METROPOLITAN AGRICULTURE and nature-based solutions

a lever for reinforcing social fabric, urban-rural links, cultural heritage and social inclusion

Social Cohesion & Relations

As “Green Square”, NBS could be green spaces with recreational activities enhancing the quality of life in the neighborhoods and revitalizing the area.

Sustainable and responsible economic models

NBS can be collaborative spaces where private actors, public bodies and civil society successfully coexist, building community and agrifood initiatives.

Connections and sustainable mobility

Green spaces with green infrastructures able to connect and regenerate places, more specifically in the neighborhood

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Our NBS Best Practices
VEGETABLE GARDENS IN PILASTRO’S NEIGHBOURHOOD: nature-based solution and social inclusion

The “Orti di via Salgari” Association takes care of the 398 vegetable gardens, located in the street “via Salgari”.

The initiative is strictly related to social and environmental objectives:

- create a **close relationship between citizens and nature**, citizens and agriculture;
- **facilitate and strengthen social inclusion** of different cultures and generations; create a place with favourable condition for recreational activities for elderly;
- **maintain the integrity of land and a proper balance** between urbanization and rural areas; promote the valorisation of rural territory.
URBAN FARM IN PILASTRO’S NEIGHBOURHOOD: green and agricultural areas devoted to education and social activities

Urban Farm – managed by the social, cultural and voluntary association “Circolo La Fattoria”.

The Urban Farm aims at preserving green and agricultural areas in urban context and managing vegetable gardens with economic facilities for members and citizens. It aims also at being a space for educational and environmental activities through recreational activities:

- Didactic laboratories for schools (childhood / primary / secondary).
- Horticultural activities targeted for schools (childhood / primary / secondary) carried out both on-site as in schools.
- Horticultural activities open to citizens with economic facilities.

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VILLA GHIGI, a 28 hectare park with green and farmed areas: green space management and valorization of natural and landscape features

The Villa Ghigi Park is a patrimony that the Foundation, which has been entrusted with the management of the green area since September 2004:

• opportunities for students, they deal with publications on the topics related to the natural, historical, cultural and landscape aspects;

• welfare activities as tracking experiences and horticultural therapy;

• the garden’s spaces are besides used for marketplace, strengthening the relationship with local farms.

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ARVAIA, an organic and biodynamic agriculture cooperative of citizens: sustainable management of soil and community

Arvaia promote sustainable agriculture through the community and to re-appropriate agriculture culture in the urban context.

• Involvement of citizens and institutions in the conservation of the rural culture and landscape;

• Innovative distribution organization and management structure, self-financed (3-years bonds remunerated at 2% rate);

• Experiments on organic farming with the University of Bologna;

• Enhance voluntary activities in agriculture, promote social inclusion and regenerate spaces respecting the quality of landscape membership.
LE SERRE DEI GIARDINI MARGHERITA: NBS, innovative economic model and community participation

It is a multi-functional space, made of a 600 sqm community garden, which has organized 150 free cultural events and hosted more than 55,000 visitors.

• Collaborative public space for developing new services for the community.

• It hosts a natural eating bistro, a solidarity purchasing group, a co-working space, a kindergarten and summer events.

• Innovative economic model: a mix of entrepreneurial spirit and social innovation.
GREEN CORRIDORS: integration of urban agriculture, biodiversity and bike trails

A project to be implemented and aiming at connecting different urban areas separated by an abandoned railway yard.

The green corridor is characterized by the presence of rural/green areas and minor roads to be recovered and targeted for cycle paths and urban agriculture.

The area is located in the north-eastern outskirts of Bologna.

Urban challenges: sustainable mobility, ecosystem preservation and nature-based solutions

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What are we learning?

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Nature-based solutions for the future of Smart and Sustainable Cities and urban welfare

Integration of nature-based solutions into cities and citizens’ life as a new concept of urban welfare:

✓ **Multiplier functions of nature-based solutions** to be integrated in urban strategic planning, by guaranteeing the accessibility of green spaces and new business models (green jobs);

✓ **Working with nature means reframing spaces**: nature-based solutions promote the integration of social, cultural and environmental aspects;

✓ **Cooperation** with different actors sets a local ecosystem as a key for smart and sustainable cities development;

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Nature-based solutions for the future of Smart and Sustainable Cities and urban welfare

✓ Co-creation with local communities (co-design, co-management, ...) → quintuple helix model;

✓ From top-down planning to community-led development: public-private-third sector partnerships.

✓ Horizontal subsidiarity principle: new models of governance and collaboration among citizens and PA for managing green infrastructures.
What’s in the future?

The Metropolitan City of Bologna is:

✓ promoting policies in order to support and improve urban and peri-urban agriculture activities, towards the set up of a Agriculture Mediterranean Cluster;

✓ committed to support the development of Green and Circular Economy initiatives;

✓ addressing to explore nature-based solutions linked to nature, businesses and social functions;

✓ willing to develop an Ecological Network.
Thank you for the attention!

http://www.connectingnature.eu

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