

HEALTHY CITY DESIGN INTERNATIONAL

RESEARCH • POLICY • PRACTICE

14-15 OCTOBER 2019

ROYAL COLLEGE OF PHYSICIANS, LONDON

FINAL PROGRAMME

DESIGNING FOR UTOPIA OR DYSTOPIA?
PEOPLE AND PLANETARY HEALTH AT A CROSSROADS

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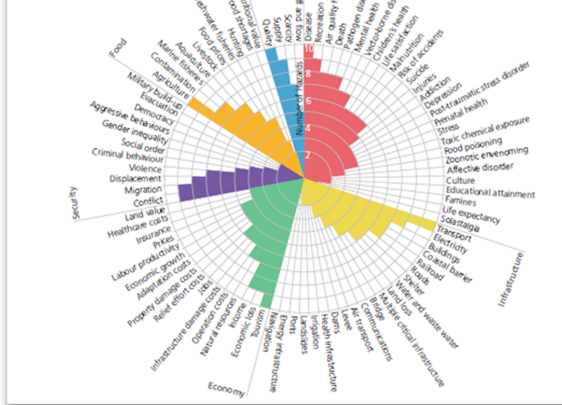
Session 14
Resilient and productive neighbourhoods

CONSTRUCTION OF HEALTH RESILIENCE OF LOCAL COMMUNITIES: THE CONTRIBUTION OF IoT TECHNOLOGIES

Prof. Rosalba D'Onofrio; rosalba.donofrio@unicam.it
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University of Camerino, Italy

EASAC Working Group



Lancet and University College London Institute for Global Health Commission

Managing the health effects of climate change

Anthony Costello, Mustafa Abbas, Adriana Allen, Sarah Ball, Sarah Bell, Richard Bellamy, Sharon Friel, Nora Groce, Anne Johnson, Maria Kett, Maria Lee, Caren Levy, Mark Maslin, David McCoy, Bill McGuire, Hugh Montgomery, David Napier, Christina Pagel, Jinesh Patel, Jose Antonio Puppim de Oliveira, Nanneke Reddijf, Hannah Rees, Daniel Rogger, Joanne Scott, Judith Stephenson, John Twigg, Jonathan Wolff, Craig Patterson*



Shaping cities for health: complexity and the planning of urban environments in the 21st century

Yvonne Rydin, Ana Bleahu, Michael Davies, Julio D Dávila, Sharon Friel, Giovanni De Grandis, Nora Groce, Pedro C Hallal, Ian H Philipps, Philippa Howden-Chapman, Ka-Man Lai, C J Lim, Juliana Martins, David Osrin, Ian Ridley, Ian Scott, Myfanwy Taylor, Paul W James Wilson

THE LANCET

The health benefits of tackling climate change

An Executive Summary for The Lancet Series

Key messages

- Cities are complex systems, so urban health outcomes are dependent on many interactions
- The so-called urban advantage—whereby urban populations are, on average, at an advantage compared with rural populations in terms of health outcomes—has to be actively promoted and maintained
- Inequalities in health outcomes should be recognised at the urban scale
- A linear or cyclical planning approach is insufficient in conditions of complexity
- Urban planning for health needs should focus on experimentation through projects
- Dialogue between stakeholders is needed, enabling them to assess and critically analyse their working practices and learn how to change their patterns of decision making

BACKGROUND

Climate change is affecting the health and well-being of people living in European cities with effects such as: poor air and water quality, the urban heat island, food safety, the spread of infectious diseases, and injuries and deaths due to extreme weather events (WHO Europe, 2017).

These effects are felt hardest by the weakest segments of the population (children and elderly people) and aggravate chronic health conditions such as

Challenges in Cities

Growing health concerns in cities include

- Poverty and social exclusion
- Violence and Safety
- Pollution of air, water and land
- Substandard housing and unhealthy planning
- Poor employment conditions
- Stress and Sedentary lifestyles
- Poor quality food
- The unmet needs of vulnerable groups
- Lack of public involvement in decisions
- Growing inequalities

WHO European Healthy Cities network

Cities taking up the Health 2020 challenge

Phase VI action

How does Urban Planning affect health?

Physical factors (some examples)	Links	Associated health issues
<ul style="list-style-type: none"> • Road severance • Lack of facilities in neighbourhood (shops, places to go) • Lack of local informal recreational opportunities (allotments, play parks) • Unattractive, poorly designed pedestrian routes (road traffic dominated routes) • Poor insulation, waste of solar isolation • Lack of opportunity for food growing 	<ul style="list-style-type: none"> • Lack of opportunity for informal interaction in the community • Isolation • Air-polluted local walking environments • Fuel poverty • Lack of regular exercise • Food deserts, poor diet 	<ul style="list-style-type: none"> • Mental wellbeing • Respiratory disease • Heart disease and Obesity issues

Phase VI (2014–2018) of the WHO European Healthy Cities Network: goals and requirements

“The density of cities can increase vulnerability to the local manifestations of extreme weather and climate change in several ways: reducing green space and mature trees that have a cooling effect on ambient air, for example; creating barriers for natural air and water flow; and producing large quantities of biological waste that can contaminate floodwaters.

THE LOCATION, QUALITY, AND UPKEEP OF LOCAL INFRASTRUCTURE – water supply, sanitation and drainage, roads and related structures such as culverts and bridges – **CAN ALL PLAY AN IMPORTANT ROLE IN MODIFYING HEALTH AND OTHER IMPACTS OF**

CLIMATE CHANGE. Ultimately, the level of vulnerability of these modulating systems will be important in the

Coordinating Lead Authors: Martha Barata (Rio de Janeiro), Eva Ligeti (Toronto)
Lead Author: Gregory R. Smit (Rio de Janeiro), Michael R. Hogg (Toronto), Darby Jack (New York City), Jennifer Penney (Toronto), Mizanur Rahman (Dhaka), Rae Zimmerman (New York City)

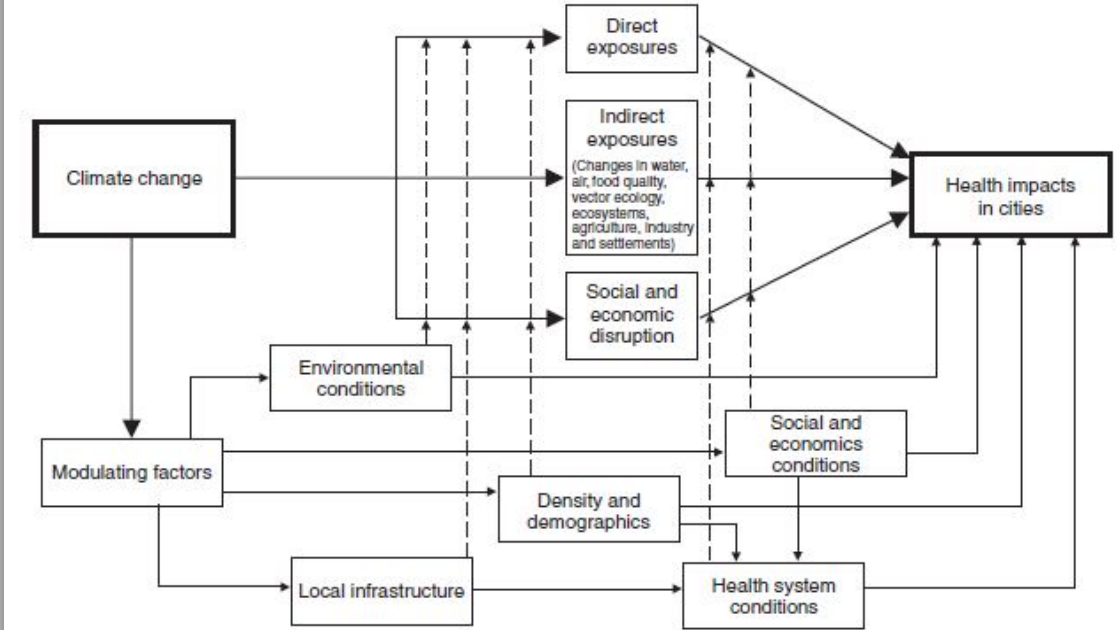


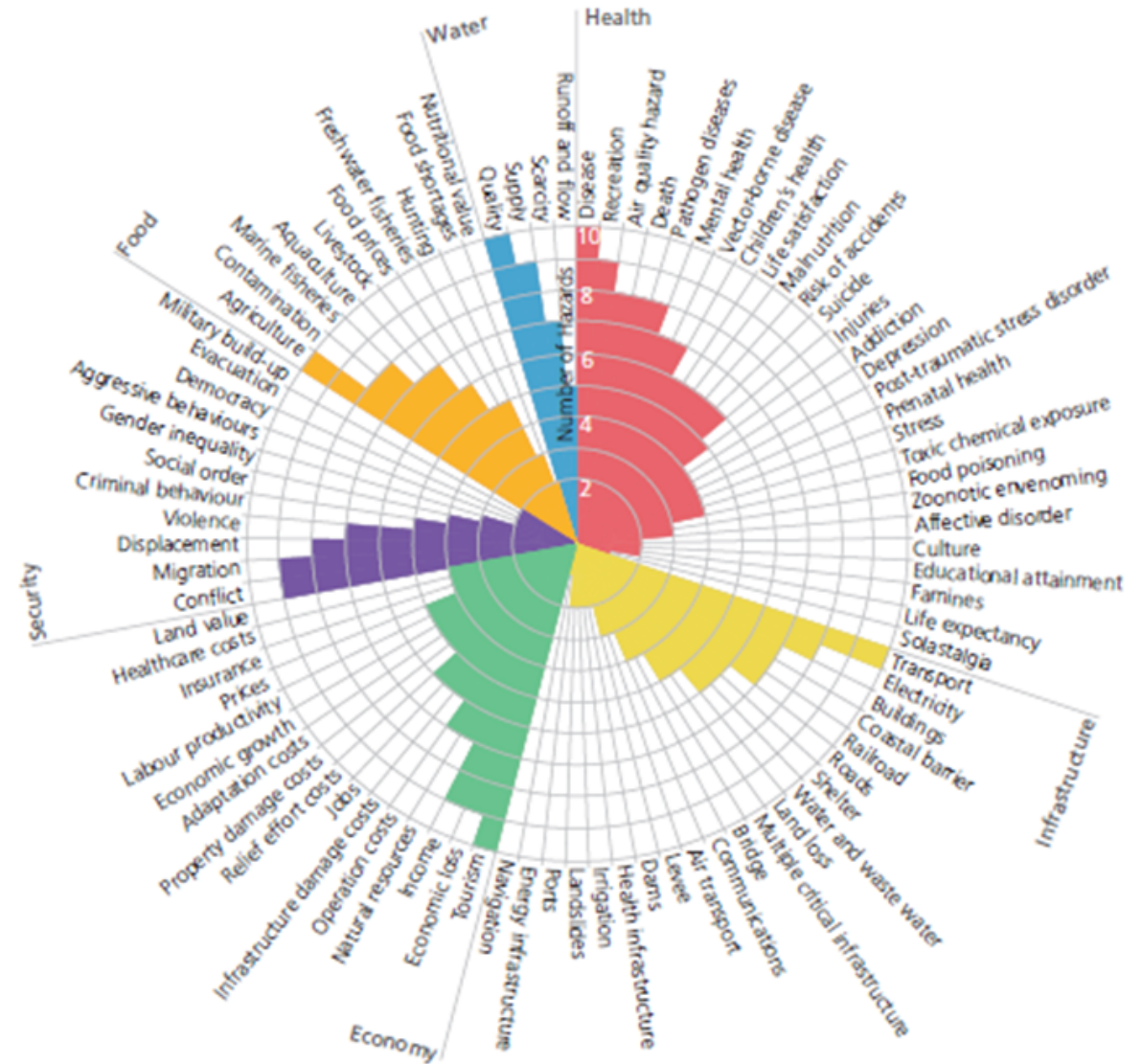
Figure 7.1: Three main mechanisms of how climatic processes may affect health in cities and its modulating factors.

Source: Adapted from Confalonieri et al., (2007).

Table 7.1: Climate change-related drivers and outcomes for urban health.

Drivers	Health endpoint	Impact on cities	Degree of uncertainty	Key references
Temperature extremes	Mortality via heat exhaustion. Elderly most vulnerable	Pronounced (via urban heat islands)	Low (extensive evidence exists)	Kovats and Hajat, 2008; Bell et al., 2008
Wind, storms, and floods	Mortality via physical trauma, drowning	Pronounced (population density in vulnerable areas)	Low (extensive evidence exists)	Guha-Sapir et al., 2004; Ahern et al., 2005
Drought	Malnutrition	Ambiguous	Medium (adaptive capacity is poorly understood)	Confalonieri et al., 2007
Water quality	Diarrheal disease	Pronounced (flush contaminants, may overwhelm city water systems)	High (limited research)	Hunter, 2003; Kistemann et al., 2002
Air quality	Respiratory illness	Pronounced (population density, pollution sources)	High (limited research, likely to vary greatly across cities)	Kinney, 2008; Holloway et al., 2008; Steiner et al., 2006
Aeroallergens	Allergies, asthma	Ambiguous	High (limited research, likely to vary greatly across cities)	USEPA, 2008
Vector-borne diseases	Malaria, dengue, others	Diminished – few vectors thrive in urban environments	High (scholarship on urban effects)	Lindsay and Birley, 1996

- The recent publication of the **European Academies Science Advisory Council**, called "**The imperative of climate action to protect human health in Europe**" (EASAC, 2019) (Fig.1) and is coming to the forefront of public opinion with articles in newspapers around the world, not least the recent TIME Report "2050 The Fight for Earth".
- The **EASAC Working Group** has worked on **mitigation and adaptation measures** in European cities to address climate change and the health benefits of their inhabitants.
- From all these experiences, it emerges for EASAC that

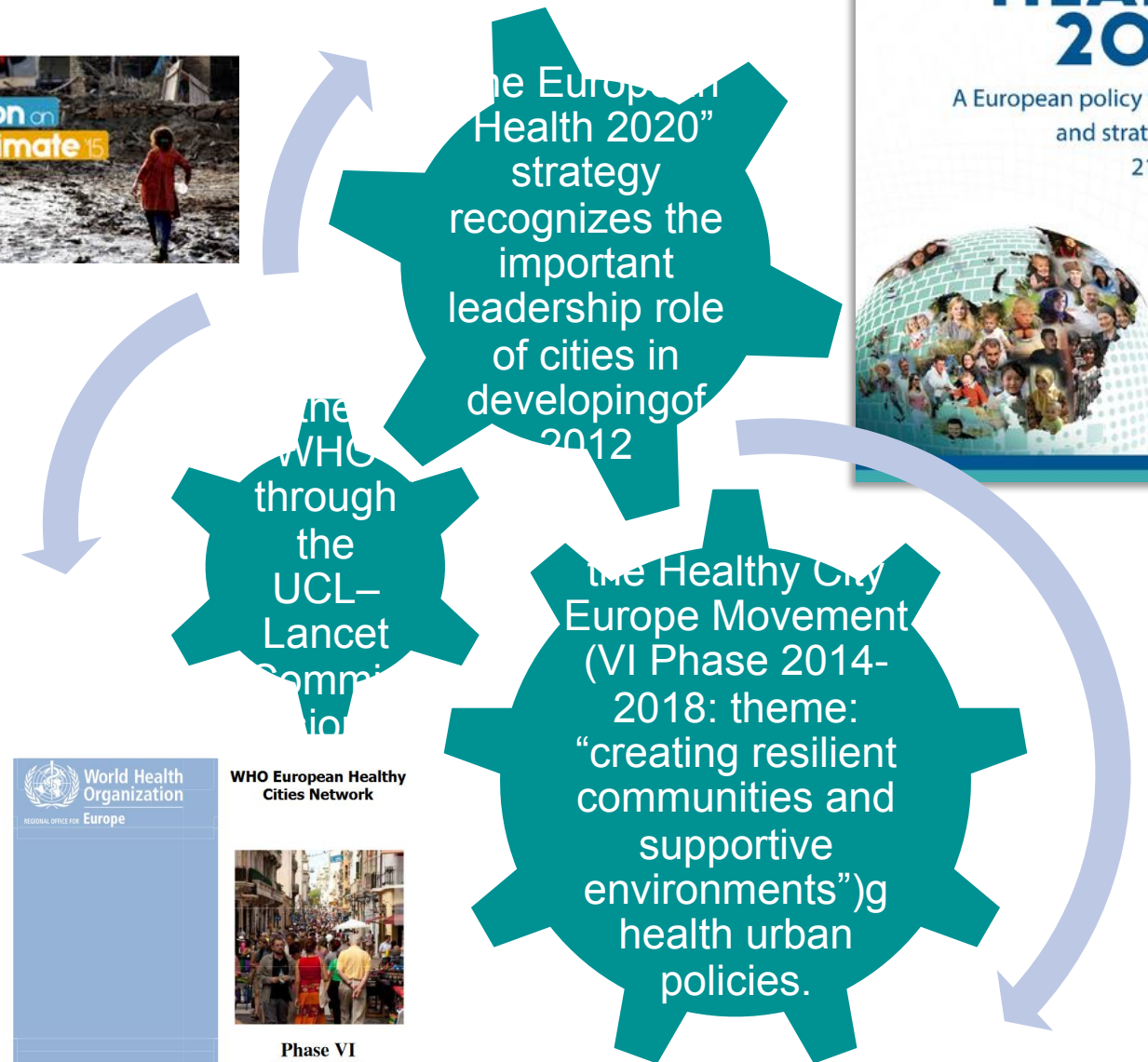


WORKING POINT OF VIEW

Between all disciplines involved about these themes, tough **URBAN PLANNING AND DESIGN** are called to respond to the needs of health in cities, in delivering health improvements through reshaping the urban fabric of cities, in the creation of new healthy urban environments, in the sustainable organization of mobility, land use, and green areas.

“Healthy as the Pulse of the New Urban Agenda” (WHO 2016) introduced the **idea of urban health resilience** as the need to promote resilient urban policies to reduce the risk of climate change with respect to human health.

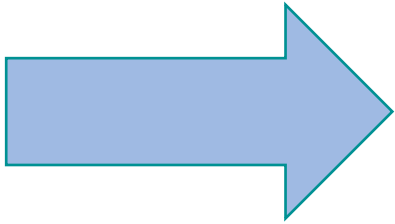
The Fifth and Sixth Ministerial Conferences on Environment and Health from 2010 and 2017 declared their commitment to protect health and well-



WHO European Healthy Cities Network

Phase VI (2014-2018)

of the WHO European Healthy Cities Network: goals and requirements



- The need for relevant investigation tools and integrated analysis is therefore indispensable.
- The knowledge we need must combine quantitative and qualitative data to measure/assess the effects of climate change and measures to increase the resilience of cities, actively involving communities.



- Renewed relationship between urban planning and health
- Renewal of analysis and project knowledge tools about the city
- From the project to the process to the prefigurative scenarios, predictive and adaptive design solutions changing the meaning and the time horizon of the urban planning project and above all the actors: the communities as co-projects of the living space.
- Renewal of the term and meaning of INTEGRATION

ONGOING EXPERIENCES

Some cities are trying to use new technologies to investigate and improve the quality of urban health



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PARTICIPATORY URBAN LIVING FOR SUSTAINABLE ENVIRONMENTS

The PULSE project will pioneer the development and testing of dynamic spatio-temporal health impact assessments using geolocated population-based data.

[ABOUT PULSE](#)

[NEWS](#)

- **PULSE (Participatory urban living for sustainable environments; <http://www.project-pulse.eu/>)** is, for example, a research and innovation action funded under the EC Framework Programme H2020 which aims to initiate a collaborative dialogue between five global cities:

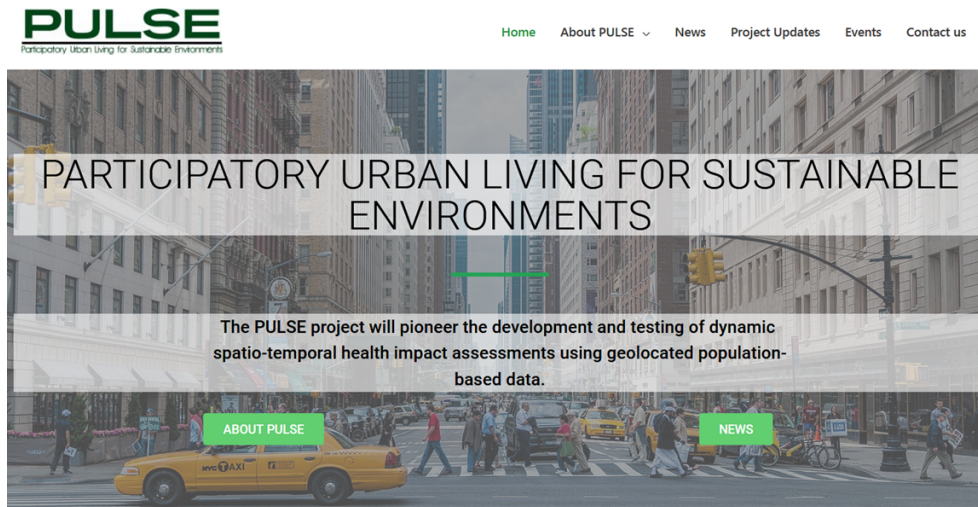
- Paris, Barcelona, Birmingham, New York and Singapore to transform public health **from a reactive to a predictive system**, through the development of innovative

inactivity and metabolic disease of type2diabetes.

The objective of the research is to build extensible models and technologies to predict, mitigate and manage these health problems through the use of GIS technology and real-time data mapping tools within the physical space of the city; this will allow, for example, to analyze data on air pollution in certain places with respect to the occurrence of respiratory diseases.

The data collection system and the information management dashboard allow the integration of different sources: from apps, to Fitbits, to sensors.

The design of low-cost, reproducible and interoperable sensor platforms used in these experiences presents a number of technical challenges: from the right selection of locations whereto apply them, to mitigate the impacts of external elements, to legal and privacy issues. All these variables can make the deployment of sensors in urban spaces very complex and in this case the comparison and contribution of the local community is extremely important.



DATA-DRIVEN CLIMATE ACTION

At the intersection of building performance and human behavior.

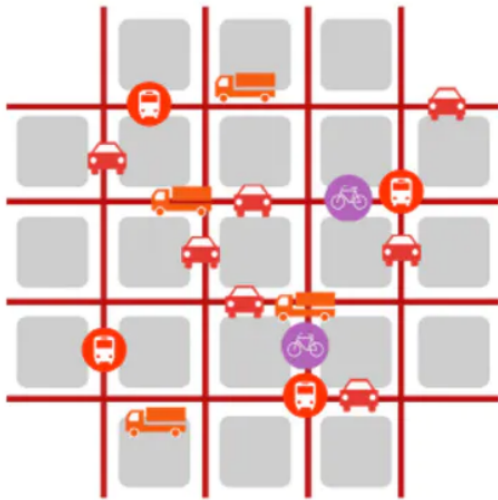
We use diverse data and computational methods to better understand urban energy dynamics and develop data-driven policies to support climate action and long-term sustainability goals.

- Another ongoing experiment within the Center for Urban Science and Progress (CUSP) of the NYU, called "Quantified Community" (QC), uses a system of collecting, measuring and analyzing data on environmental conditions and human behavior of the inhabitants of some neighborhoods of New York, to better understand and how the built environment affects the individual and social well-being (Kontokosta, 2016a).

An urban detection platform, the QC Urban QoL Sensor, has been developed: an inexpensive and reliable "array" of sensors to measure and

SUPERBLOCKS MODEL

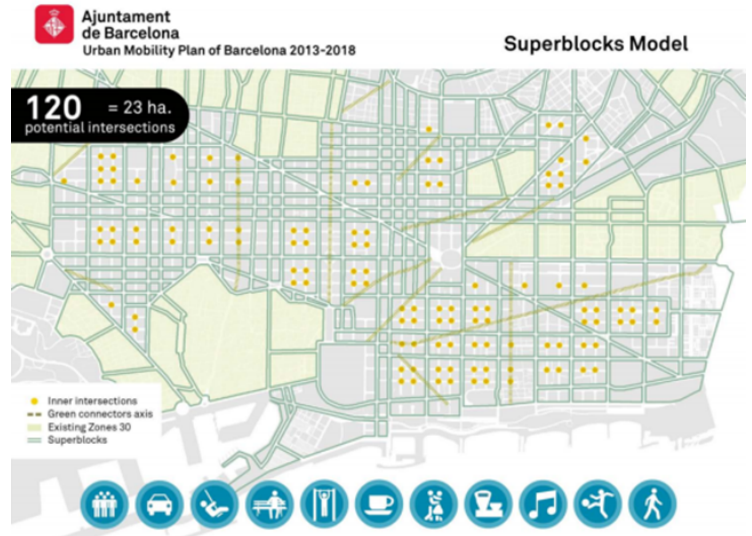
Current Model



Superblocks Model



- | | | | | | |
|--|--|--|------------------------------|--|--|
| | PUBLIC TRANSPORT NETWORK | | PRIVATE VEHICLE PASSING | | DUM PROXIMITY AREA |
| | BICYCLES MAIN NETWORK (BIKE LANE) | | RESIDENTS VEHICLES | | ACCESS CONTROL |
| | BICYCLES SIGNPOSTS (REVERSE DIRECTION) | | URBAN SERVICES AND EMERGENCY | | BASIC TRAFFIC NETWORK |
| | FREE PASSAGE OF BICYCLES | | DUM CARRIERS | | SINGLE PLATFORM (PEDESTRIANS PRIORITY) |



Modello Superblocks: Barcelona's car-free "superblocks" could save hundreds of lives.

PROPOSAL

The University Research **CCHURE (Climate change and urban health resilience)** funded in 2018 by the University of Camerino represents an attempt to contribute to developing the field of research described above. The proposal, currently in its initial phase, is applied to the Monticelli Ascoli Piceno district.

Climate Change and Urban Health Resilience aims to define a transdisciplinary methodology :

- to evaluate the effects that climate change produces on urban health;
- to direct policies for adaptation/mitigation through the contribution of many scientific disciplines;

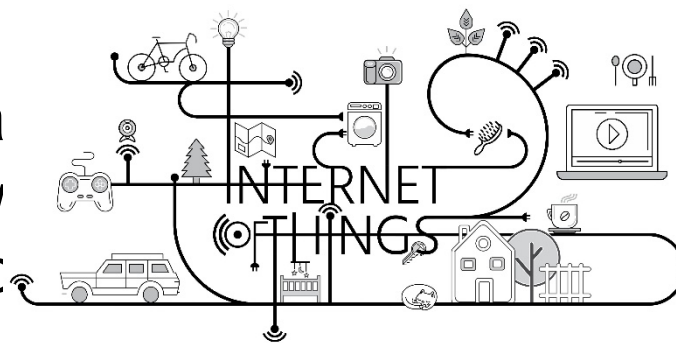
(URBAN PLANNING, ARCHITECTURE, MEDICAL SCIENCE, COMPUTER SCIENCE,

SOCIAL SCIENCE, LEGAL SCIENCE),

- interaction v
- the involer
- of Things) te



policies and loca
al communities v
s and mobile crc



w IoT (Internet

CCUHRE PROPOSES TO:

1) Build a **methodology to investigate** the relationships between the impacts of climate change and the health/well-being of inhabitants on the urban scale of the neighborhood, which contributes to selecting actions and combinations of actions for mitigation and adaptation with citizens' active role.

2) Build a **methodology for public administration to select scenarios for adaptation to/mitigation of the effects of climate change**, through the use of real-time analytics and data feedback mechanisms and non-instrumental interaction with local communities.

a) Climate and Health Profile (CHP)

to construct the neighbourhood CHP, reference will be made to qualitative/quantitative indicators that assess the effects of climate change on the health and well-being of the population.

These indicators will be selected based on existing public health data, as products of international research, and with the contribution

a) Climate Health Lab (CHL):

construction of a platform of sensors and automation technologies (Urban Internet of Things, IoT), which will provide real-time information/ measurement of the physical/environmental conditions of the neighborhood and its inhabitants.

This platform will be implemented with citizen contribution through the use of mobile crowdsensing techniques, which will allow smart-

b) Climate and Health Actions (CHA)

the selection of actions and combinations of actions for adaptation and mitigation, already present in international best practices, with reference to the "fundamental themes" of urban design — land use, mobility, housing, open spaces, and meeting spaces, the natural environment — and some themes of technological design — temporariness and flexibility, etc.

- analyse and assess the difference between subjective and objective measurements of quality-of-life indicators to understand how the perception of different environmental conditions varies across the neighbourhood;

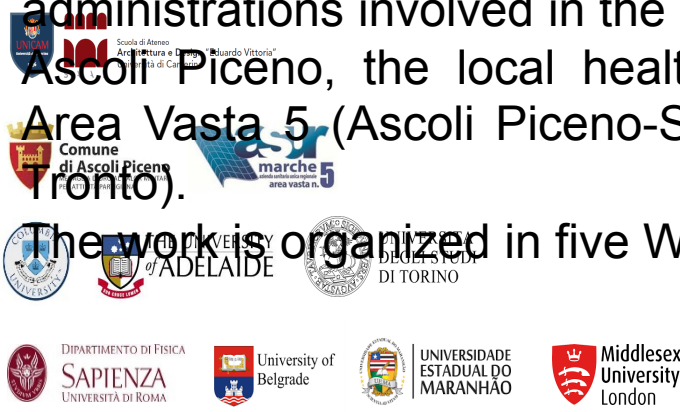
- verify and compare, with the help of researchers, technicians, and citizens, the "health" performance of the scenarios identified and their

CCUHRE RESEARCH UNITS

The research involves different disciplines of the University of Camerino and Italian and International research groups which hold consolidated experience in the field of urban regeneration, climate change, and urban health (Columbia University in New York, University of Adelaide in Australia, University of Turin, La Sapienza University, University of Belgrade, University of Maranhão- UEMA-Brazil, Middlesex University).

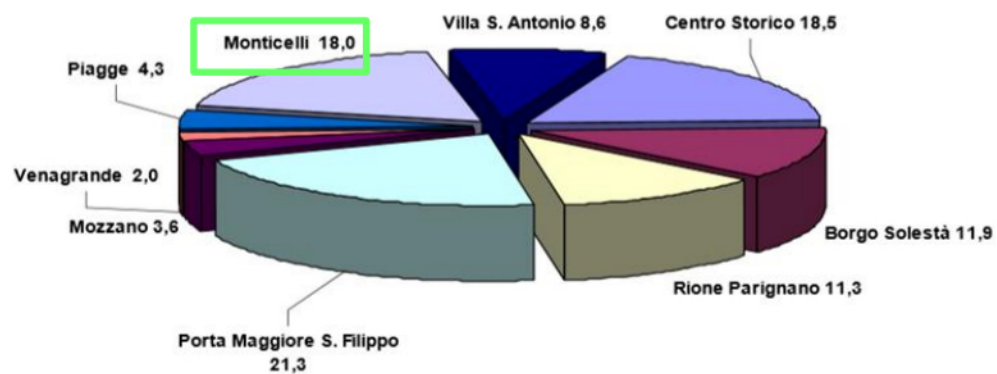
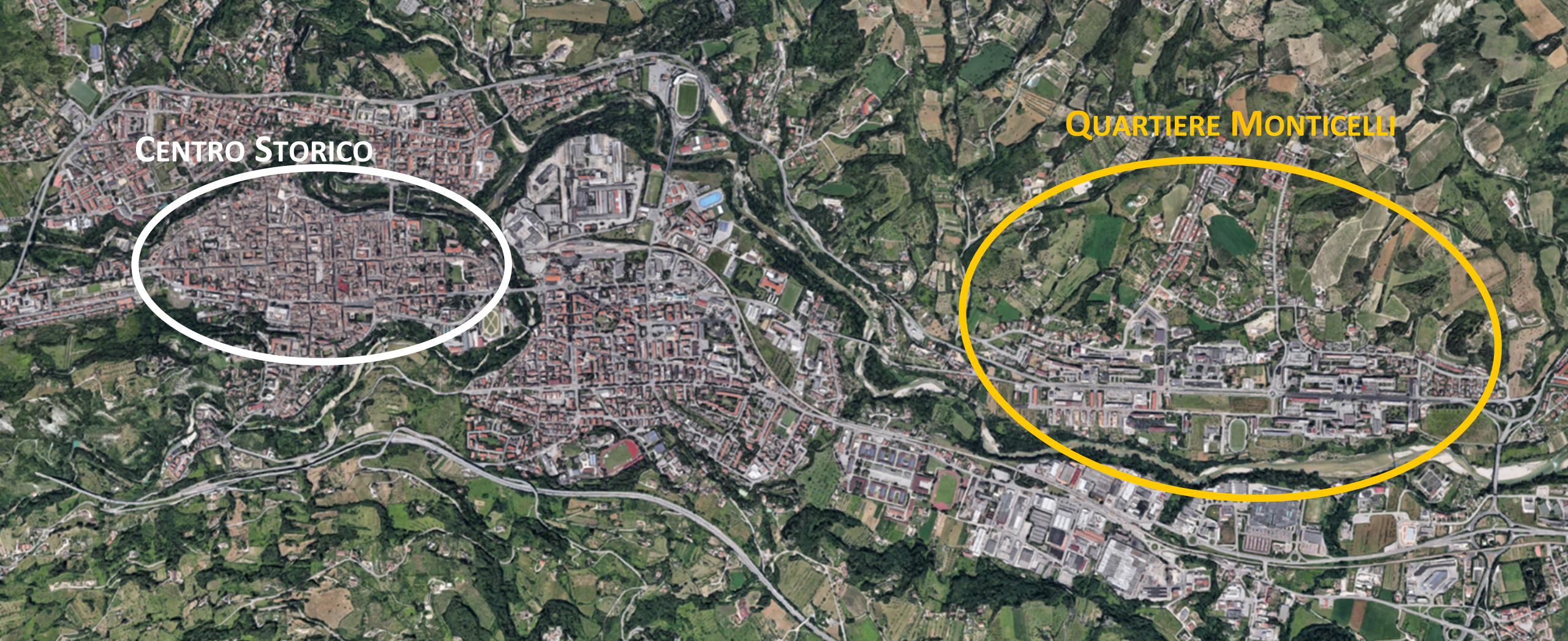
Also, the research has the support of public administrations involved in the project: the City of Ascoli Piceno, the local health agency ASUR-Area Vasta 5 (Ascoli Piceno-San Benedetto del Tronto).

The work is organized in five Work Packages.



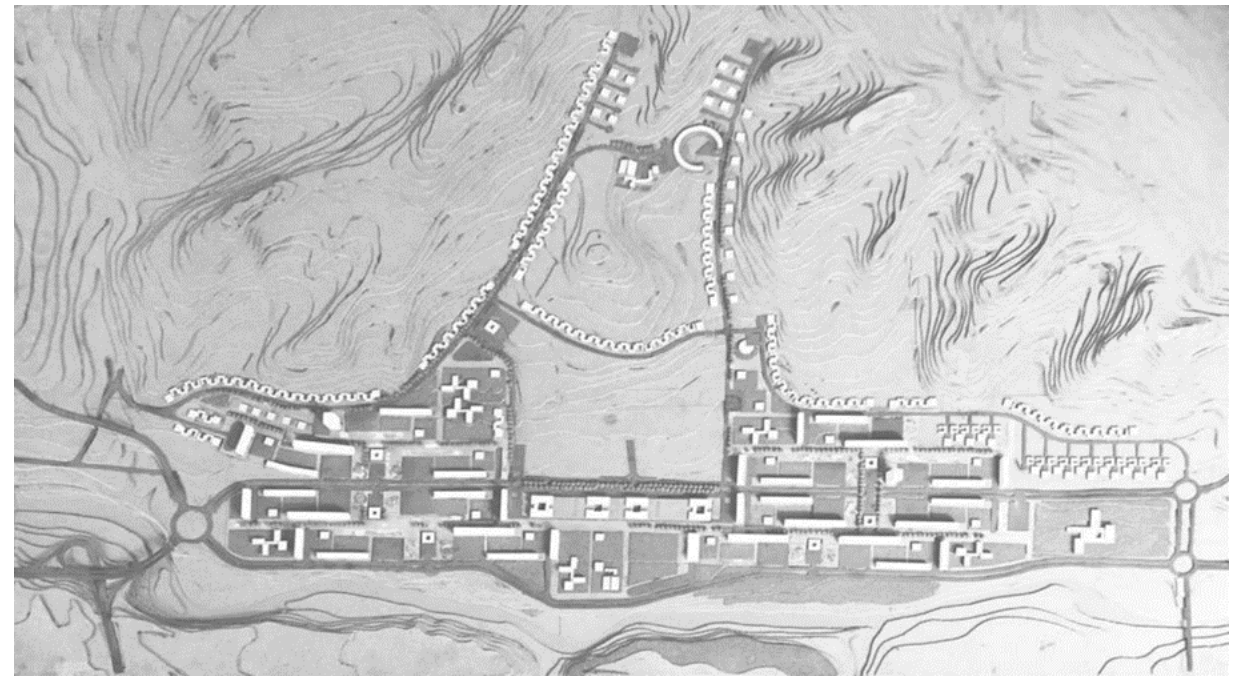
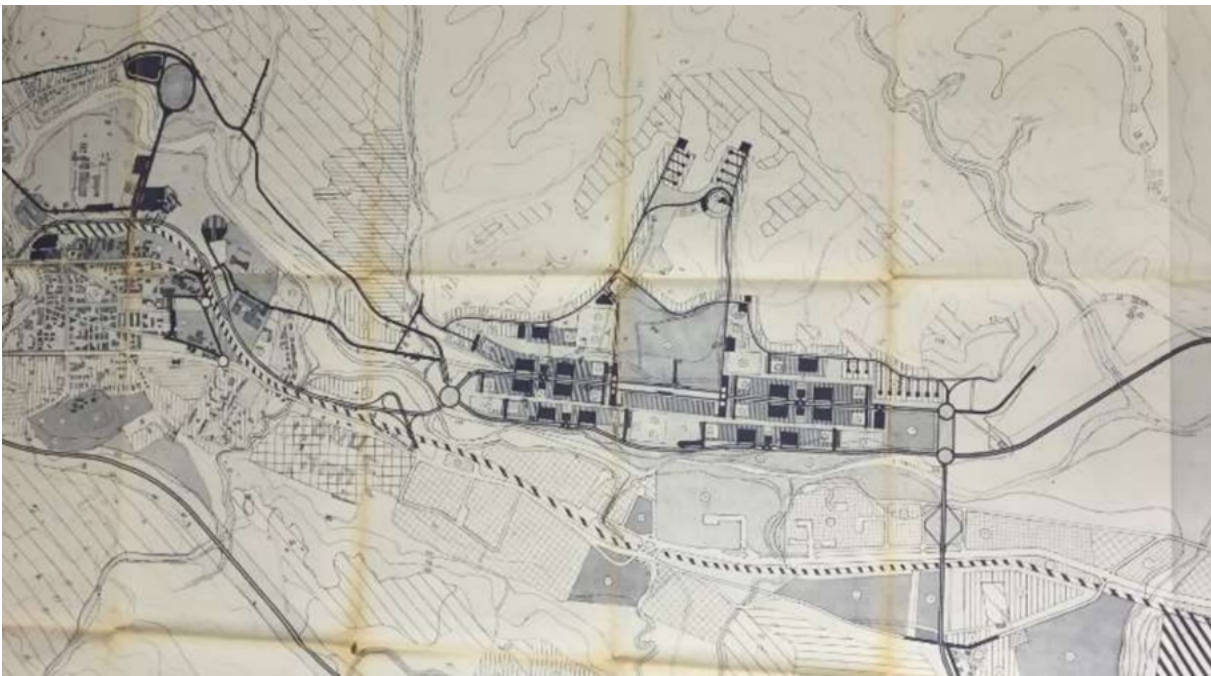
WP #	Title of the WP	UNIT(S) involved	Main Goal <i>(in short)</i>	Activities in each WP
1	COORDINATION AND MANAGEMENT	U01 with the contribution of U02; U03; U04; U05	Coordination and monitoring of the research and project activities, financial aspects and risk management	1. Technical coordination 2. Financial coordination 3. Monitoring and administrative controls 4.Call and Coordination of meetings and workshop
2	DEVELOPMENT OF A METHODOLOGY TO ASSESS THE NEEDS OF HEALTH IN NEIGHBOURHOODS AND THE SELECTION OF ACTIONS TO MITIGATE AND ADAPT TO CLIMATE CHANGE	U02 and U04 with the contribution of U01; U02; U05	To identify impacts of climate change on human health and well-being and the related adaptation and mitigation strategies considering urban planning and design for small and medium European towns.	1.Identification of content for the Climate and health profile (CHP) 2.Selection of best practices in health-based actions (CHA) for mitigation and adaptation 3.Selections of means of effective interaction with the local population
3	CONSTRUCTION OF HEALTH RESILIENCE OF LOCAL COMMUNITIES WITH THE CONTRIBUTION OF IoT TECHNOLOGIES	U03 with the contribution of U01; U02; U04; U05	Building a virtual assessment platform for the neighborhood for assessment with citizen contribution: the impacts of climate change on health that determine the Health climate profile, the adaptation and mitigation actions, and to select	1.CHL Domain: data attributes and relationships 2.CHL Functionalities as cloud-based services 3.CHL Interface: as a web-based application 4.App: allowing smart-phone users to interact with CHL and supporting the recruitment phase 3.5 Protocol to select citizens focus groups
4	USE CASES ADAPTATION, INTEGRATION AND EXPERIMENTATION	U05 with the contribution of U01-U02- U03-U04	Showing the feasibility of CCUHRE innovations by testing the selected adaptation and mitigation scenarios, to support the decision-making process	4.1. Activation of the software platform "Climate and Health Lab (CHL)" and formation of the Monticelli Focus Groups 2.Climate and Health Profile (CHP) for Monticelli 3.Climate and Health Actions (CHA) for Monticelli 4.Design prefiguring of scenarios for mitigation and adaptation (design laboratory) 5.Use of CHL to assess the scenarios 6.Selection of scenarios through comparison and projection in time
5	DISSEMINATION AND EXPLOITATION ACTIVITIES	U01 and U03 with the contribution of U02; U04; U05	Spreading of results among towns, public and private entities, etc, thereby leading to new ideas for further research at the national and European levels.	1. Project identity 2. Links to the websites of the institutions and research entities involved to provide public information about the project; 3.Publications and presentations 4. Exploitation activities

CCHURE_ Team:
Professors: Rosalba D’Onofrio, Elio Trusiani, Michele Talia, Maria Federica Ottone, Roberto Ruggero, Roberta Cocci Grifoni, Enrica Petrucci, Iolanda Grappasonni, Giuseppe Costa, Piera Di Martino, Leonardo Mostarda, Marta Magagnini, Franco Raimondi, Francesca Giofrè, Zoran Djukanovic, Luca Bradini, Mariana Pierantozzi, Gerardo Doti, George Zillante, Lina M. Calandra, Andrew Rundle ; **Researchers:** Chiara Camaioni, Tatiana Guarnier, Diletta R. Cacciagrano, Ingrid Gomes Braga; **PhD students:** Ilaria Odoguardi, Fabio Bagnotta, Gianmarco Mazzante, Graziano E. Marchesani; **Advisor Public bodies:** Maurizio Piccioni, Remo Appignanesi, Benedetta B. Ruggeri



	v.à.
Centro Storico	9.361
Borgo Solestà	6.203
Rione Parignano	5.716
Porta Maggiore S. Filippo	10.792
Mozzano	1.849
Venagrande	1.018
Piagge	2.201
Monticelli	9.115
Villa S. Antonio	4.345
Totale	50.600

% resident population 2011



PRG 1968, LEONARDO
BENEVOLO AND GIOVANNI ZANI

MONTICELLI DISTRICT



PRG 1968 PLANNED BY BENEVOLO AND ZANI expresses the idea of a linear development along a central axis, in the West-East direction they start a new zone.....

Monticelli District

Benevolo's operational strategy is achieved in a complete way:

- public urbanization of soils;
- expansion of the residential city by autonomous districts;
- expressive research of rationalism movement
- increase of infrastructure: the rapid crossing of the

Until the '70s, Monticelli is still an agricultural area then was identified by the new Plan as an area of natural expansion of the city.

The largest residential volumes had to be concentrated in the area of new construction with a view to settling 21,000 inhabitants compared to the 75,000 envisaged throughout the municipal territory for the year 1975.

This prediction was overestimated as also the data related to the nucleus of Monticelli.

BUILDING TYPOLOGIES



The multistorey line buildings

TowerThe old rural buildings

FEATURES AND USE OF THE SPACES



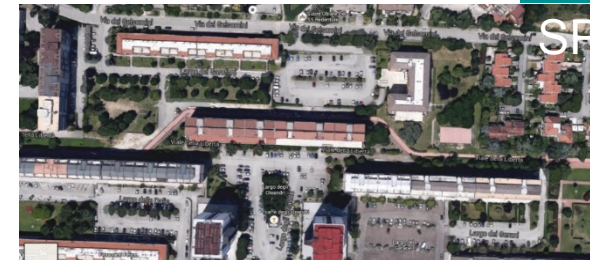
Areas along the Tronto river

Parking areas

Urban green park

Spaces adjacent to buildings

OUTDOOR SPACES



Monticelli is a district of public housing, characterized by situations of building degradation, insufficient social aggregation centers and public and private services, scarcity of equipped green areas, in a context of poor social cohesion...

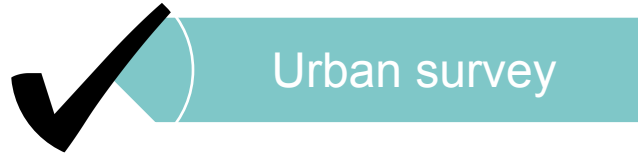
The district is also crossed by an equipped infrastructure, used as a crossing road and traveled by high-speed vehicles; this infrastructure causes a





WORK-PLAN

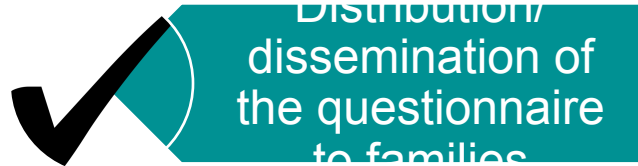
1ST STEP COMPLETED



Urban survey



Presentation of the research to community



Distribution/ dissemination of the questionnaire to families

With the collaboration of the secondary school Don Giussani, 600 questionnaires were given to families to learn about the habits and problems they face every day in the life of the Monticelli district and which can affect their health and quality of life .

The investigation deepens some themes, such as:

- THE CHARACTERS OF THE NEIGHBORHOOD AREA WHERE THE FAMILY LIVES
- NEIGHBORHOOD SECURITY
- ACCESSIBILITY TO SERVICES
- SOCIAL COHESION IN THE NEIGHBORHOOD
- DAILY TRAVEL
- THE SURVEY WILL PROVIDE QUALITY OF LIFE
- LIFE OUTDOOR

THE SURVEY WILL PROVIDE QUALITY OF LIFE
ELEMENTS THAT WILL
ALLOW US TO OUTLINE AN
OVERALL PICTURE OF THE
QUALITY OF LIFE OF
INDIVIDUALS AND
FAMILIES.

The image shows a questionnaire form titled "QUESTIONARIO ASPETTI VITA QUOTIDIANA PER LE FAMIGLIE" (Questionnaire Aspects of Daily Life for Families). The form is divided into sections for data collection, including birth date, sex, age, place of birth, citizenship, family composition, and other family members. It also includes a map of the Monticelli district with labels for "Ascoli Centro", "Opereale", "Istituto Comprensorio Don Giussani", and "Parrocchia St. Simone e Giuda". The form is part of a project called "Sistema di sorveglianza PASSI" (PASSI Surveillance System) by the Azienda Sanitaria per la Salute in Italia.

URBAN SURVEY

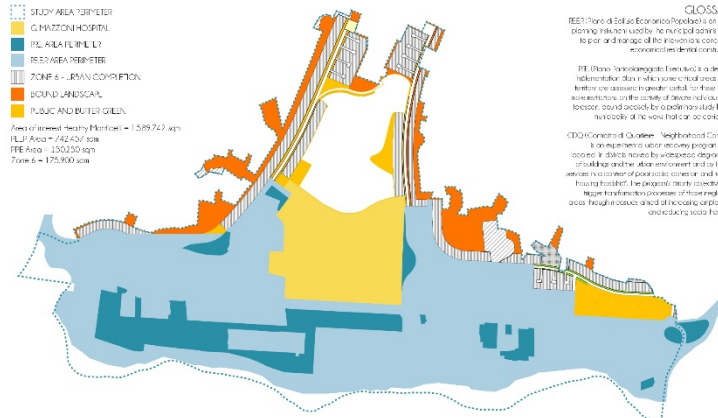
- Youth community centre of San Antonio and Jesus church
- Rental shop and guesthouse for the Hospital
- Multi-functional facility
- Environmental friendly residential building
- Removal and enlargement of San Giuseppe Nursing Home
- STUDY AREA PERIMETER
- UNFULFILLED PROJECTS



CDQ'S PRIVATE INTERVENTIONS

- STUDY AREA PERIMETER
- CLIMATIZING HOSPITAL
- POLYMER LINE LK
- RESEARCH PERIMETER
- ZONING & URBAN CONVERSION
- BOUND LANDSCAPE
- PUBLIC AND BUTTER GARDEN

Area of interest (Study Monticelli) = 15,897.42 sqm
 Total Area = 142,431 sqm
 Free Area = 130,535 sqm
 Zone A = 175,800 sqm



DESIGNATED USES FOR MONTICELLI QUARTER

GLOSSARY
 REE: There is a Social Economic Potential in urban planning which is useful to the municipal administration for the use and change of the intervention concerning the economic development of the area.
 IT: (Urban) Interdisciplinary (Technical) is a direct representative of the urban context of the future or current urban context. For this reason, the urban context is the study of the urban context and the urban environment and its lack of services in various of the urban context and the urban environment. The proposed study is to be a study of the urban context of the urban environment and its lack of services in various of the urban context and the urban environment.
 CDQ (Centro di Qualità - Neighborhood Center) is an experimental urban environment project to be located in the urban context of the urban environment and its lack of services in various of the urban context and the urban environment. The proposed study is to be a study of the urban context of the urban environment and its lack of services in various of the urban context and the urban environment.

- Middle school completion
- Middle school completion
- Square in front of San Giovanni's church
- Urban park restoration
- Public lighting along the Corso
- Demolition of architectural barriers, accessibility improvements, road signs and flower beds
- Daily center (Materiale - L. 1990)



CDQ'S PUBLIC INTERVENTIONS

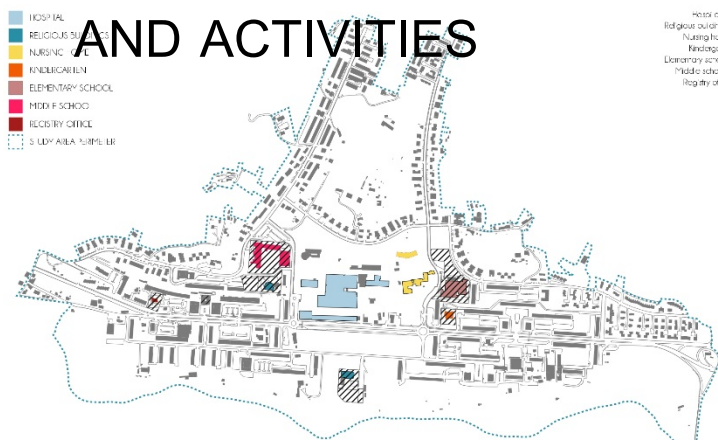
- Pedestrian paths renewal and creation of new gathering spaces
- Cycling lane along the river
- Restoration of a water tower
- 30 accommodation RSP
- 27 accommodation RSP
- STUDY AREA PERIMETER
- UNFULFILLED PROJECTS

DISTRIBUTION AND QUALITY OF OPEN SPACES AND ACTIVITIES

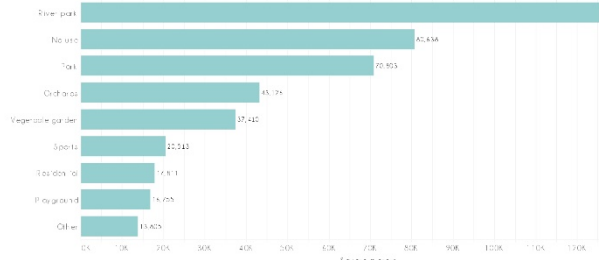
- SPORTS
- RESIDENTIAL
- PLAYGROUNDS
- OTHER
- PARKS
- RIVER PARK
- VEGETABLE GARDENS
- ORCHARDS
- NO USE
- STUDY AREA PERIMETER

Sports = 20,513 sqm - 4.78%
 River park = 175,502 sqm - 29.25%
 Parks = 70,803 sqm - 16.30%
 Playgrounds = 16,755 sqm - 3.76%
 Other = 18,805 sqm - 4.22%
 Residential = 17,811 sqm - 4.15%
 Orchard = 43,126 sqm - 10.02%
 Vegetable gardens = 37,410 sqm - 8.72%
 No use = 80,638 sqm - 18.65%

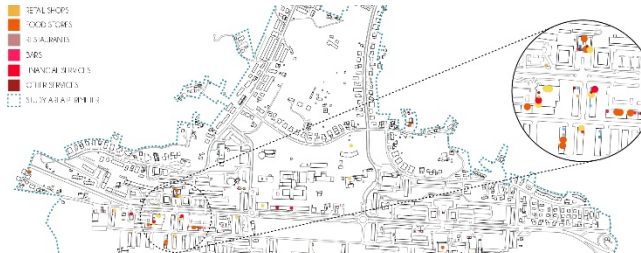
- HOSPITAL
- RELIGIOUS BUILDING
- NURSING HOME
- INDUSTRIAL
- ELEMENTARY SCHOOL
- MIDDLE SCHOOL
- RECREATION CENTER
- STUDY AREA PERIMETER



Hospital = 18,764 sqm
 Religious building = 15,744 sqm
 Nursing home = 35,712 sqm
 Industrial = 65,412 sqm
 Elementary school = 59,125 sqm
 Middle school = 46,776 sqm
 Recreation center = 23,712 sqm

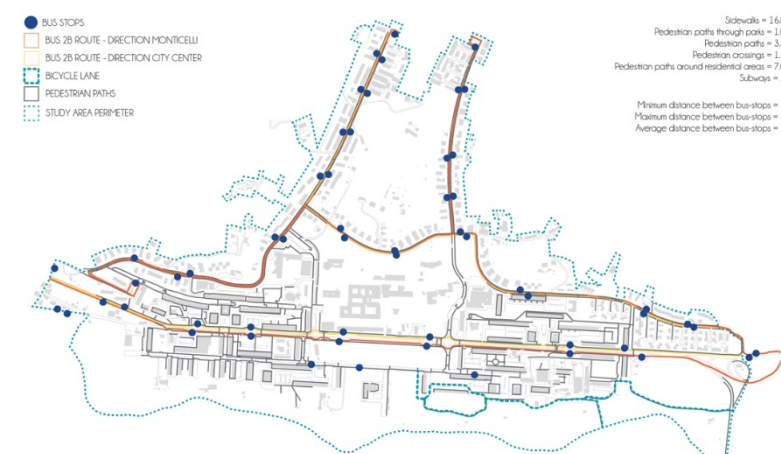


REPORT OF PRIMARY SERVICES



DISTRIBUTION OF SERVICES AND MOBILITY

- BUS STOPS
- BUS 28 ROUTE - DIRECTION MONTICELLI
- BUS 28 ROUTE - DIRECTION CITY CENTER
- BICYCLE LANE
- PEDESTRIAN PATHS
- STUDY AREA PERIMETER



Side walk = 1,681.6 m
 Pedestrian paths through parks = 1,042 m
 Pedestrian paths = 3,358 m
 Pedestrian crossings = 1,257 m
 Pedestrian paths around residential areas = 7,057 m
 Subways = 130 m
 Minimum distance between bus stops = 112 m
 Maximum distance between bus stops = 618 m
 Average distance between bus stops = 268 m

REPORT OF THE NEIGHBORHOOD MOBILITY

WORK-PLAN

1ST STEP COMPLETED WORK IN PROGRESS

✓ Urban survey

✓ Presentation of the research to community

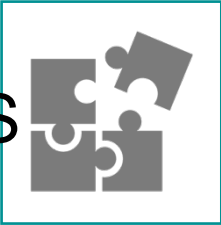
✓ Distribution/ dissemination of the questionnaire to families

⚙️ Distribution/dissemination of the PASSI questionnaire

⚙️ Elaboration of the results obtained from the first questionnaire addressed to families and first deductions

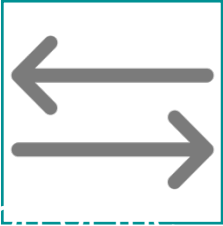
⚙️ Selection of quality of life indicators

⚙️ Identification of best practices with the support of international experiments



Construction of the neighborhood profile based on the results obtained

Comparison on the selection of quality of life and Best Practices indicators



Identification of methods or involvement of the district (participation and communication activities) FOCUS

communication strategy, programming and web links,



Definition of 2nd step



In summary, the most important issues are:

- traffic
- air pollution
- noise
- low street lighting/insecurity
- road pavement conditions



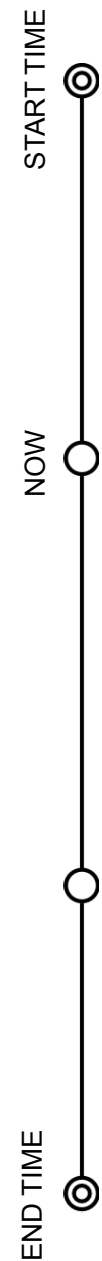
Elaboration of the results obtained from
the first questionnaire addressed to
families and first deductions



a) Climate Health Lab (CHL):

construction of a platform of sensors and automation technologies (Urban Internet of Things, IoT), which will provide real-time information/measurement of the physical/environmental conditions of the neighborhood and its inhabitants.

This platform will be implemented with citizen contribution through the use of mobile crowdsensing techniques, which will allow smart-phone users to interact with IoT devices.




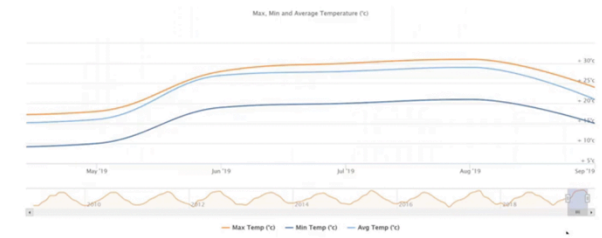
Monitoring Level

 +
Vegetation information

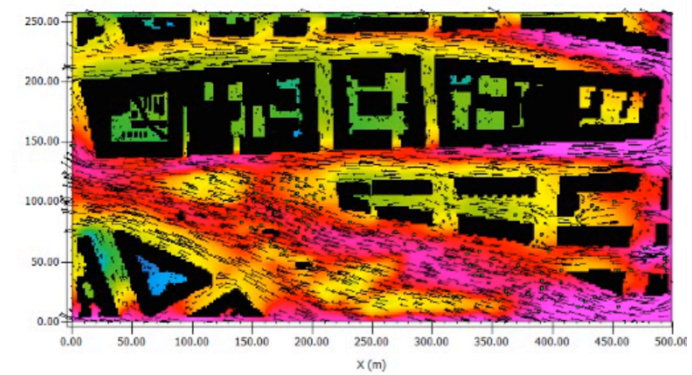
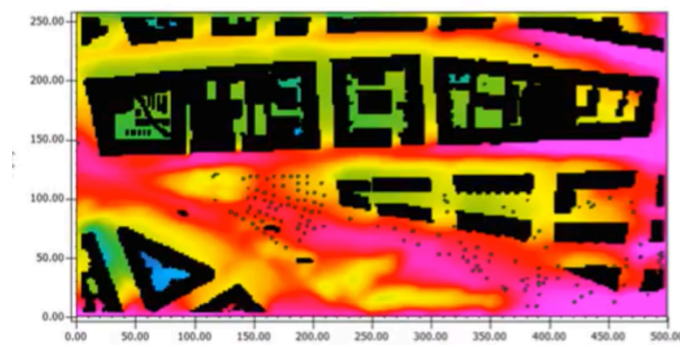
 +
Building and material information

 +
Orographic information

 +
Climatic scenario



Climatic scenario from historical weather data set



From weather data to simulation data


Urban diagnosis



+



Beacon sensors

Mobile application

Human input



+



+



Temperatures sensors

Humidity sensors


Air quality sensors

Urban input


Urban design


Urban planning collects climate analysis and participatory urban action plans

Prognostic level


numerical simulation to foresee the urban climate evolution and adaptation strategies

FRANCOANGELI/Urbanistica

Rosalba D'Onofrio, Elio Trusiani

Città, salute e benessere

Nuovi percorsi per l'urbanistica



SPRINGER BRIEFS IN GEOGRAPHY

D'Onofrio - Trusiani

Urban Planning for Healthy European Cities

Rosalba D'Onofrio
Elio Trusiani

Urban Planning for Healthy European Cities

 Springer

Than
k!



S A A D

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