

CONFERENCE ON CLIMATE CHANGE

Observatory of Urban Environment (OMAU), Malaga City Council

Thursday 31th May 2018

Genoa smart city: the axes of change

prof. R. Morbiducci



Università degli Studi di Genova
Dipartimento Architettura e Design
Scuola Politecnica



COMUNE DI GENOVA



Università degli Studi di Genova
Dipartimento Architettura e Design
Scuola Politecnica

Prof. **Renata** Morbiducci - e-mail renata.morbiducci@unige.it

Delegate of
the Department, of City Planning, Genoa City Council, IT



1

COMUNE DI GENOVA

WHY ARE WE HERE???

Prof. **Renata Morbiducci** - e-mail renata.morbiducci@unige.it
Delegate of
the Department, of City Planning, Genoa City Council, IT

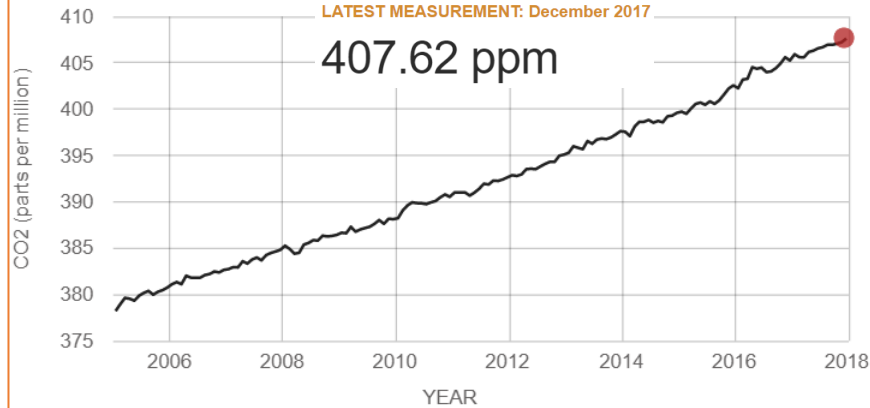
DIRECT MEASUREMENTS: 2005-PRESENT

Data source: Monthly measurements (average seasonal cycle removed). Credit: NOAA

Carbon Dioxide

LATEST MEASUREMENT: December 2017

407.62 ppm



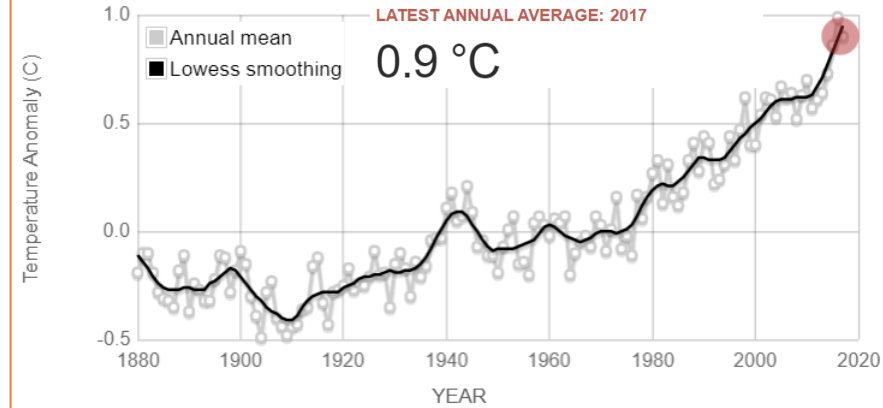
GLOBAL LAND-OCEAN TEMPERATURE INDEX

Data source: NASA's Goddard Institute for Space Studies (GISS)
Credit: NASA/GISS

Global Temperature

LATEST ANNUAL AVERAGE: 2017

0.9 °C



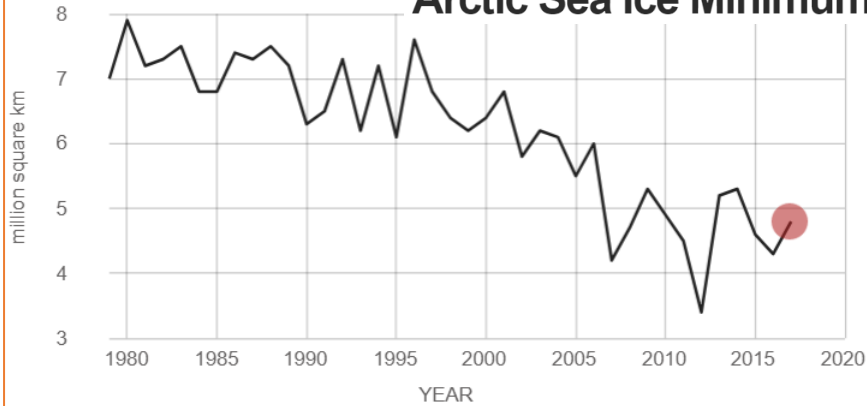
AVERAGE SEPTEMBER EXTENT

Data source: Satellite observations. Credit: NSIDC/NASA

RATE OF CHANGE

↓ 13.2
percent per decade

Arctic Sea Ice Minimum



SATELLITE DATA: 1993-PRESENT

Data source: Satellite sea level observations.
Credit: NASA Goddard Space Flight Center

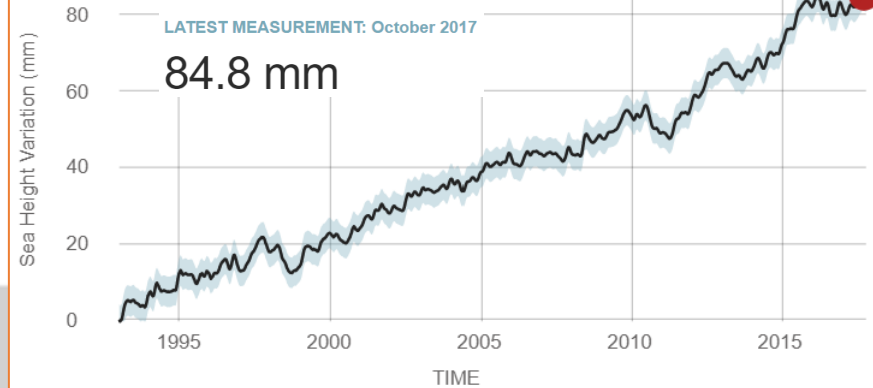
RATE OF CHANGE

↑ 3.2
millimeters per year
margin: ± 0.4

Sea Level

LATEST MEASUREMENT: October 2017

84.8 mm



Prof. Renata Morbiducci - e-mail renata.morbiducci@unige.it

Delegate of

the Department, of City Planning, Genoa City Council, IT

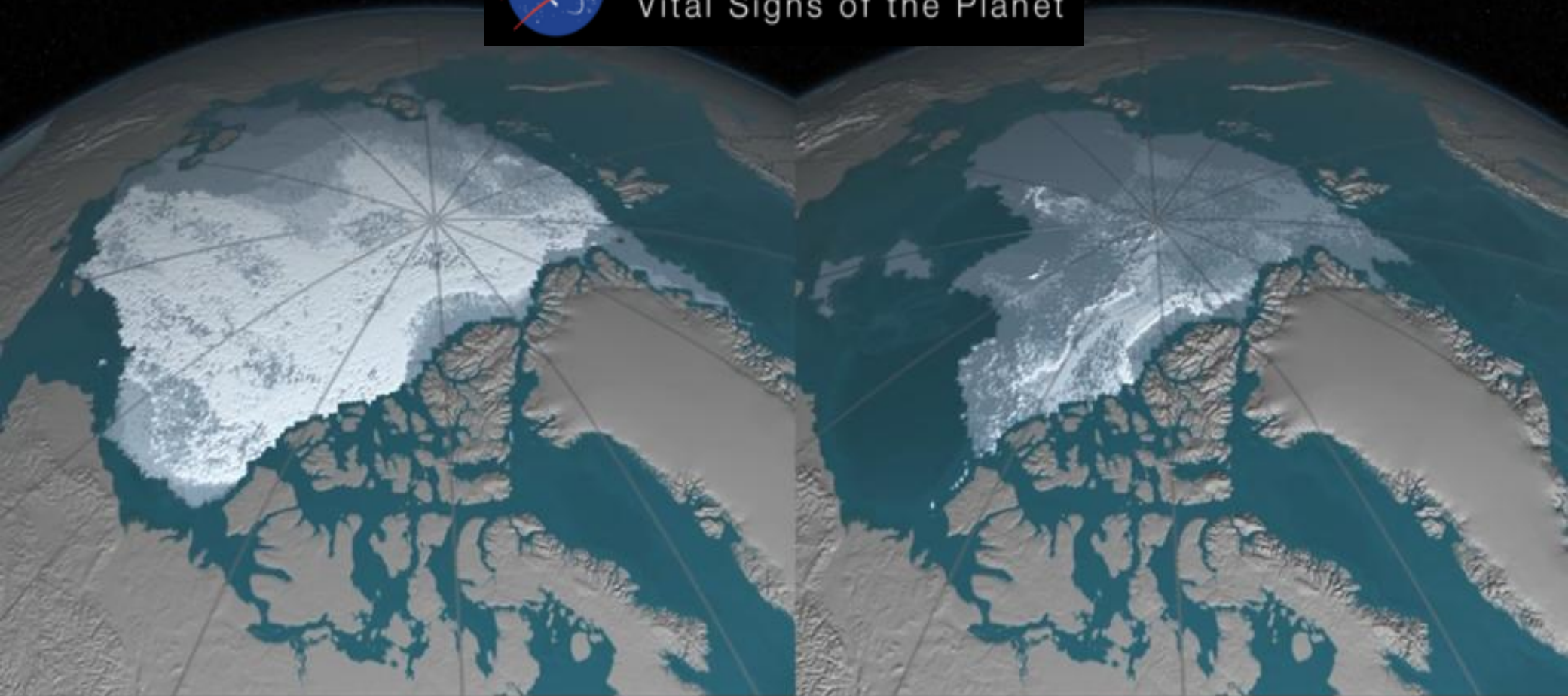
Sep 1984

Sep 2016



GLOBAL CLIMATE CHANGE

Vital Signs of the Planet

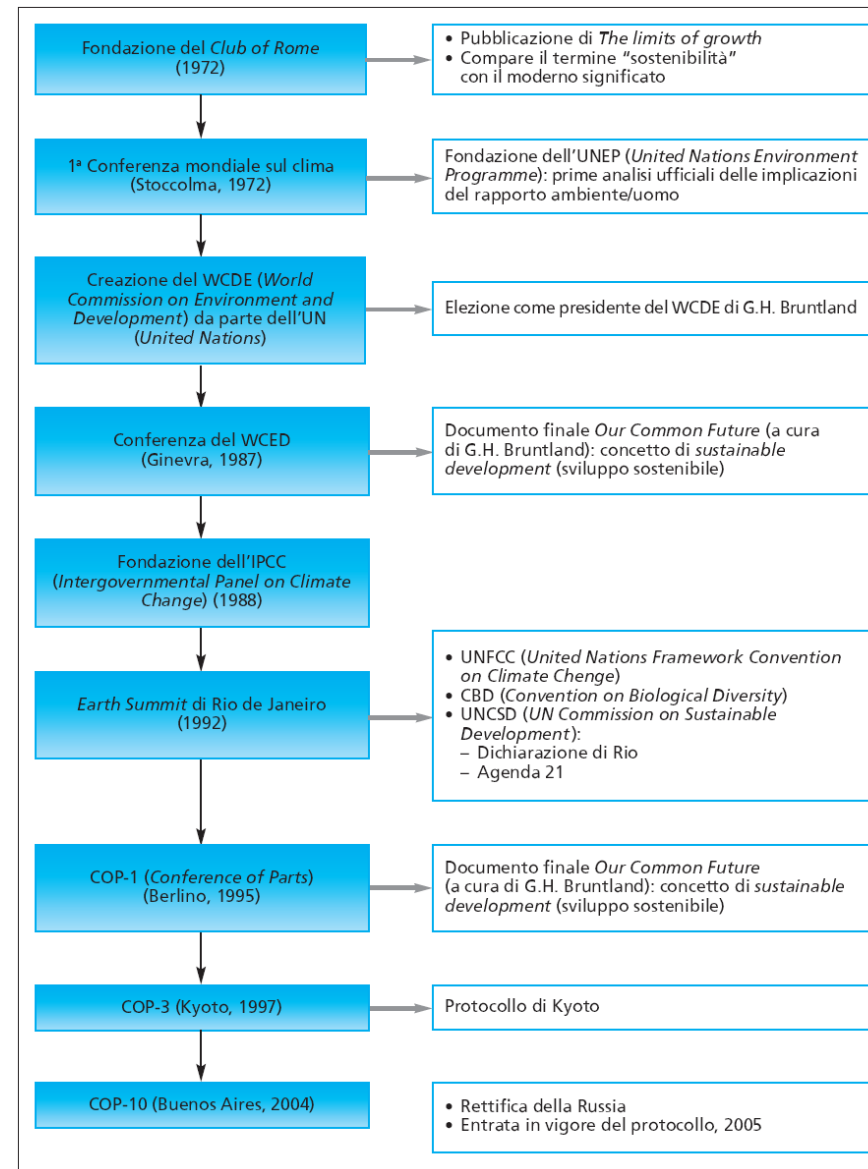


Sustainable Development

1972 - 2018



United Nations
Climate Change



Prof. **Renata Morbiducci** - e-mail renata.morbiducci@unige.it

Delegate of

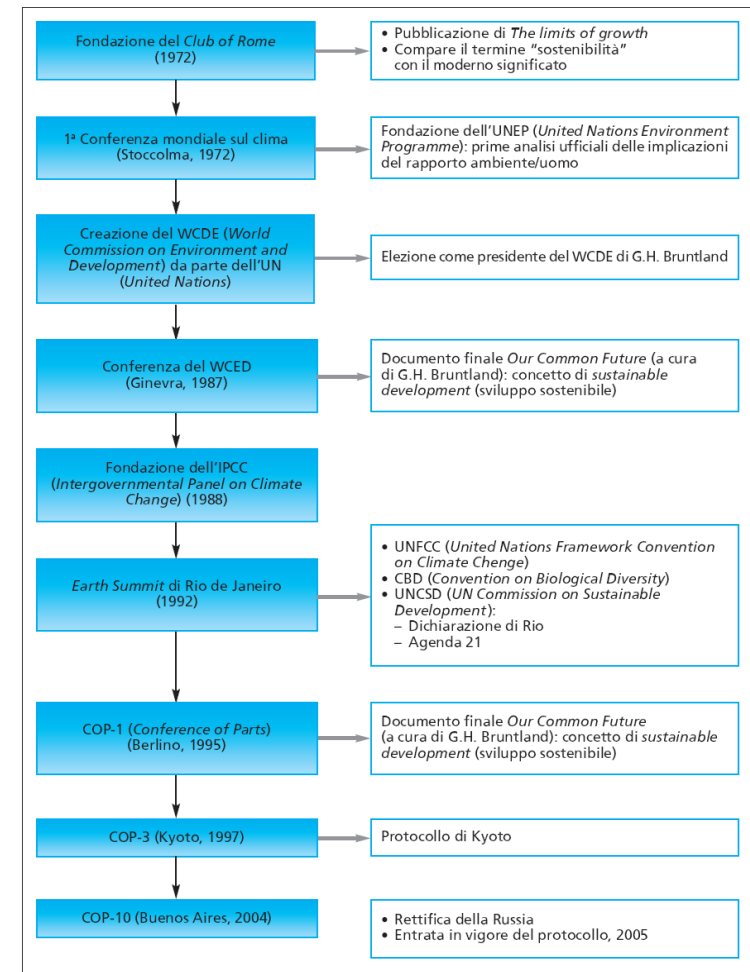
the Department, of City Planning, Genoa City Council, IT

Sustainable Development

1972 - 2018

2015

The
COP 21 - PARIS 2015



COP 21/CMP 11

Paris (Le Bourget) France
30 November–11 December 2015



PARIS2015
COP21-CMP11

Prof. Renata Morbiducci - e-mail renata.morbiducci@unige.it

Delegate of
the Department, of City Planning, Genoa City Council, IT

Sustainable Development

1972 - 2018

ACT OF PARIS 2015



Prof. **Renata Morbiducci** - e-mail renata.morbiducci@unige.it
Delegate of
the Department, of City Planning, Genoa City Council, IT

Sustainable Development

1972 - 2018

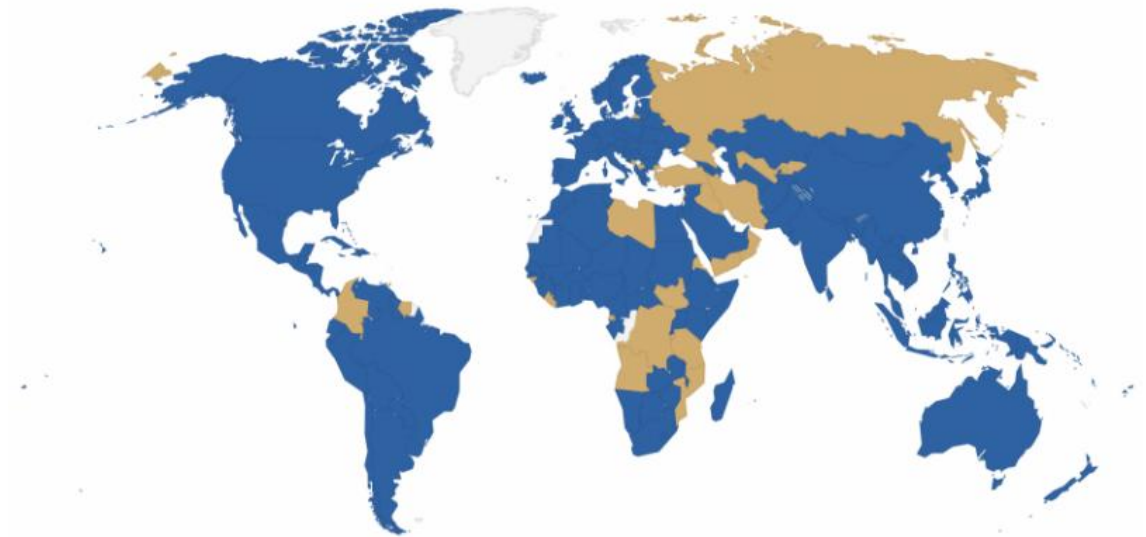
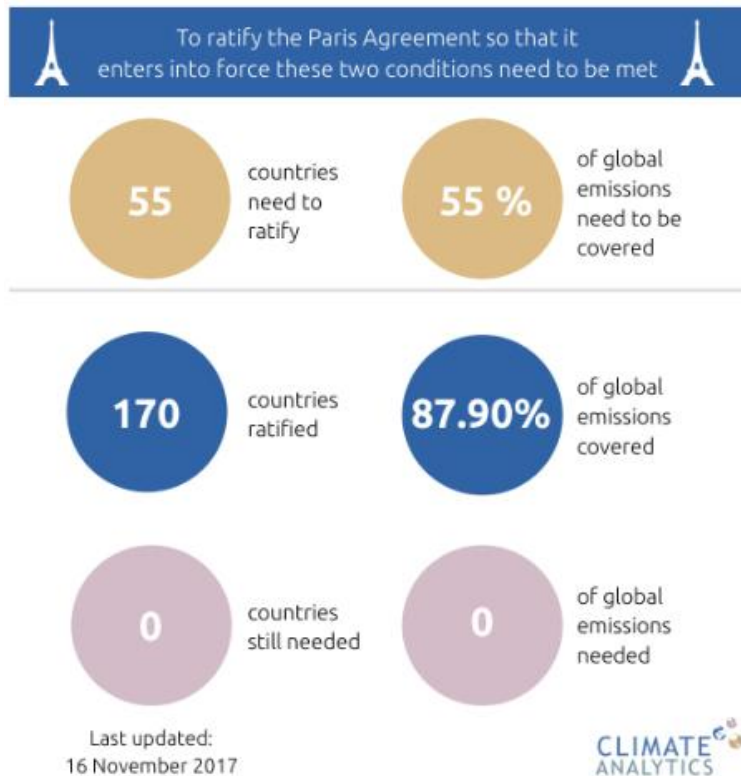


Prof. Renata Morbiducci - e-mail renata.morbiducci@unige.it

Delegate of
the Department, of City Planning, Genoa City Council, IT

Sustainable Development 1972 - 2018

Agreement of Paris



As of 16 November 2017: **195 Parties signed the Agreement, 170 Parties ratified.**

Prof. **Renata Morbiducci** - e-mail renata.morbiducci@unige.it

Delegate of
the Department, of City Planning, Genoa City Council, IT

Sustainable Development 1972 - 2018



Prof. Renata Morbiducci - e-mail renata.morbiducci@unige.it

Delegate of
the Department, of City Planning, Genoa City Council, IT

Europe 2020 - 2050 Strategy

Employment - R&D - Education - Poverty/Social Exclusion - Climate & Energy



Smart growth: developing an economy based on **knowledge** and **innovation**;



Sustainable growth: promoting a more **efficient, greener** and **more competitive** economy



Inclusive growth: fostering a **high-employment** economy delivering **social** and **territorial cohesion**

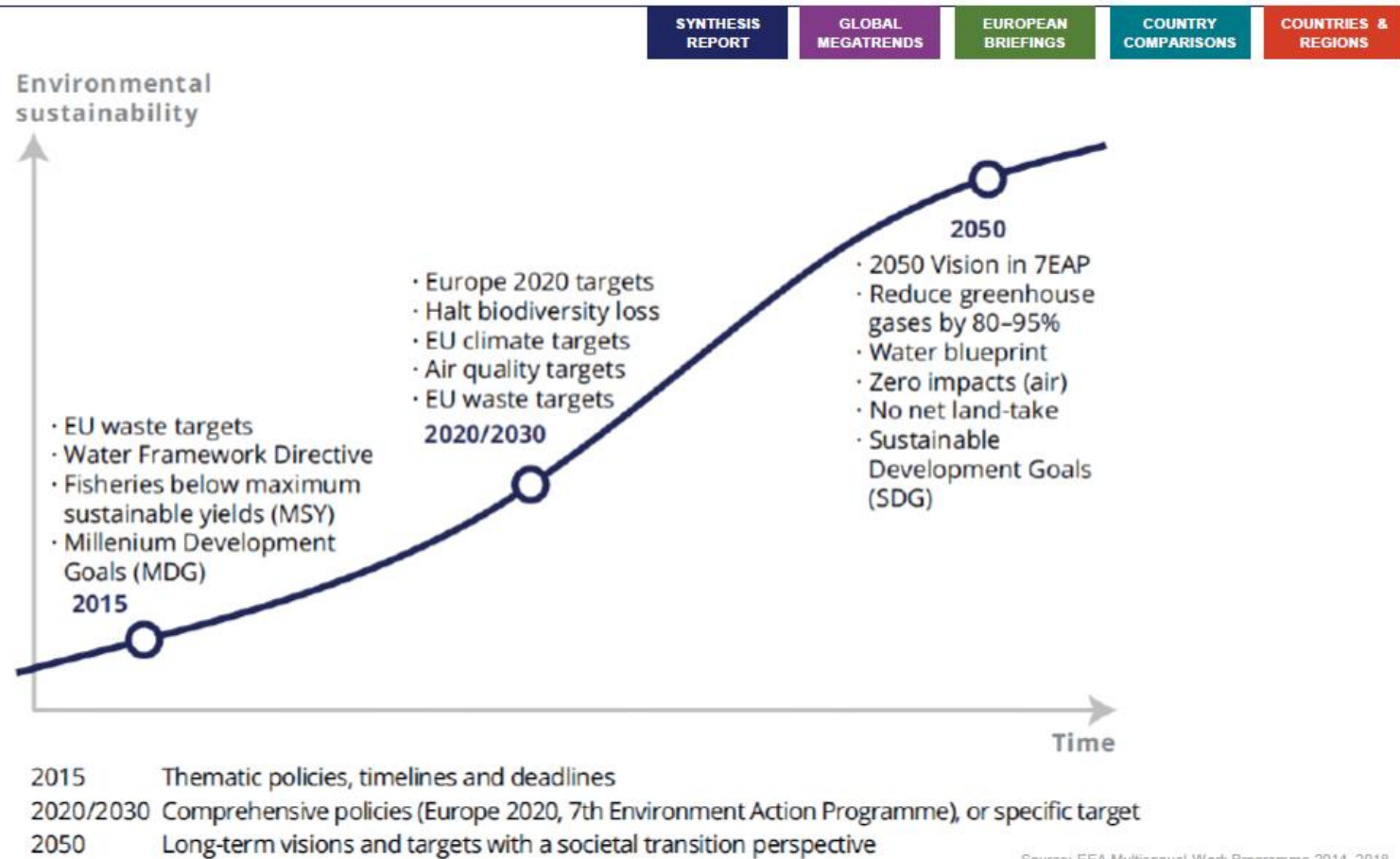


Prof. **Renata Morbiducci** - e-mail renata.morbiducci@unige.it

Delegate of
the Department, of City Planning, Genoa City Council, IT

Europe 2020 - 2050 Strategy

The policy context has evolved over that time



Source: EEA Multiannual Work Programme 2014–2018

European Environment Agency 

Prof. **Renata Morbiducci** - e-mail renata.morbiducci@unige.it

Delegate of
the Department, of City Planning, Genoa City Council, IT

WHAT DID AND DOES GENOA DO??

Prof. **Renata Morbiducci** - e-mail renata.morbiducci@unige.it

Delegate of
the Department, of City Planning, Genoa City Council, IT

Genoa

Over the last few decades, has to face challenges that have forced it to radically reconsider its role and future

prospects. **Challenges** partly common to the rest of Italy and Europe, partly specifically local: **the end** of the economic model based on **heavy public industry**; the **adaptation of the port** to **modern technologies**; the **growing vulnerability of the territory** to **hydrogeological risk**; the particular **inefficient mobility** the **ageing population** and the **growing migration flows**; the need for a new relationship between administration and citizens that **takes into account sustainable development, digital revolution** (Revolution 4.0), and **globalization**, which synthetically defines all these challenges.

Prof. **Renata** Morbiducci - e-mail renata.morbiducci@unige.it

Delegate of
the Department, of City Planning, Genoa City Council, IT

The **first great resource**, which is leading to a qualitative leap in city policies, is the **PON Metro** (National Operational Programme **Metropolitan Towns 2014-2020**), with the creation of the Metropolitan City of **Genoa**.

A considerable amount of **European structural funds** are allocated to our territory. The program will allow integrated management with the Municipalities of the Metropolitan City.

There are **five axes** of intervention: the **digital agenda, sustainable public services, smart mobility, services and infrastructures for social inclusion, and innovative technical assistance.**

Prof. **Renata Morbiducci** - e-mail renata.morbiducci@unige.it

Delegate of
the Department, of City Planning, Genoa City Council, IT

The **second great resource** is used on various levels, from the promotion of **Genoa** as a **tourist city** to the **safety of the territory**. In particular, Genoa has been active, not to say pioneering, in the field of **smart city policies, technological innovation, energy and mobility**. A recent research on the use of European funds by Italian municipalities (by Gfinance and EasyGov Solutions in collaboration with Politecnico di Milano) has established that Genoa is clearly the first Italian city in the raising of **EU funds**.

The projects funded cover different areas of **Sustainability: energy efficiency, urban regeneration, smart mobility, hydrogeological resilience**.

The latter theme is fundamental for the city and has led to the choice of Genoa City Council as **Coordinator** of the three-year partnership provided for by the **European Urban Agenda** on climate adaptation, the **"Climate Adaptation Partnership"**.

Prof. **Renata Morbiducci** - e-mail renata.morbiducci@unige.it

Delegate of
the Department of City Planning, Genoa City Council, IT

Genoa

EU funds

energy efficiency

Prof. **Renata Morbiducci** - e-mail renata.morbiducci@unige.it
Delegate of
the Department, of City Planning, Genoa City Council, IT

Genoa

EU funds

energy efficiency

The **three proposals** with which Genoa participated in the European call "**Smart Cities and Communities 2011**" of the European Commission's Directorate - **General for Energy** have all had access to funding, achieving the highest

scores. Within the framework of the sustainable strategic planning of cities, the **"Transform"** project will work on the **definition of a methodology for the transformation of cities into smart cities**, in a path coordinated by the Municipality of **Amsterdam**.

As far as the Heating and cooling issue is concerned, Genoa will be part of the **"Celsius"** project led by **Gothenburg**, with an experiment on **district heating and cooling networks**, which will lead to the creation of a local energy network in the Gavette, in Staglieno.

With regard to the energy efficiency of buildings (Refurbishment), the **"R2CITIES"** project will allow the **energy requalification of a social housing district** in the "Lavatrici" district. Project led by **Valladolid**.

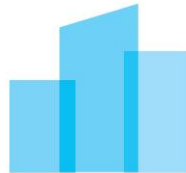
Prof. **Renata Morbiducci** - e-mail renata.morbiducci@unige.it

Delegate of
the Department, of City Planning, Genoa City Council, IT

Genoa

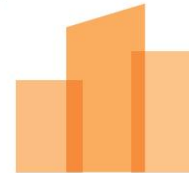
EU funds

energy efficiency



GENOA

The social housing district of Lavatrici was developed during 1980-1990. The pilot is located on the west part of the city in the so called Pegli 3 District on a natural hill.



KARTAL

The use of low efficiency lighting systems and appliances and a slim insulation means very high energy consumption for Yakacik district of Kartal, Istanbul and therefore a high potential for improving.



VALLADOLID

A complete retrofitting based on façade improvements, ICTs and renewable energy systems will be implemented in the Cuatro de Marzo district, the demo site chosen for the R2CITIES project.



Project Coordinator
Rubén García
(Fundación CARTIF)

Project Duration
48 Months



The purpose of the R2CITIES project is to **develop and demonstrate replicable strategies** for designing, constructing and managing **large scale district renovation projects** for achieving **nearly zero energy cities**. **Three demo sites** are addressed for demonstrating the framework and associated impacts by developing real cases going beyond current market standards but ensuring the replicability of the concepts deployed.

Prof. Renata Morbiducci - e-mail renata.morbiducci@unige.it

Delegate of
the Department, of City Planning, Genoa City Council, IT

Genoa

EU funds

energy efficiency



Genoa Demo Targets

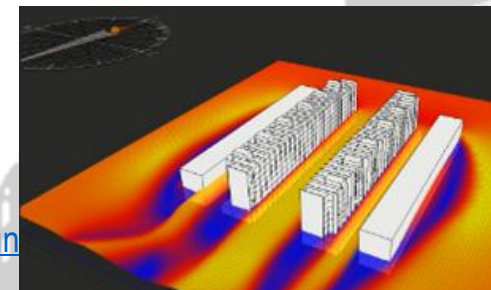
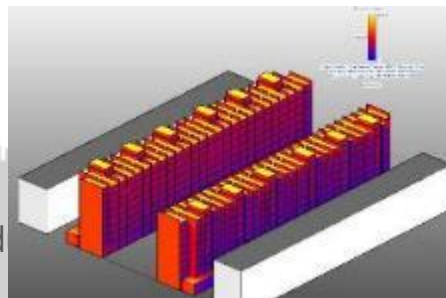
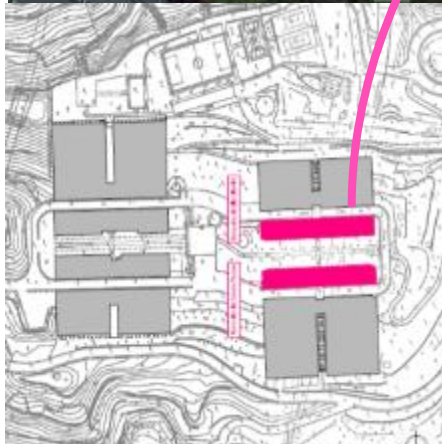
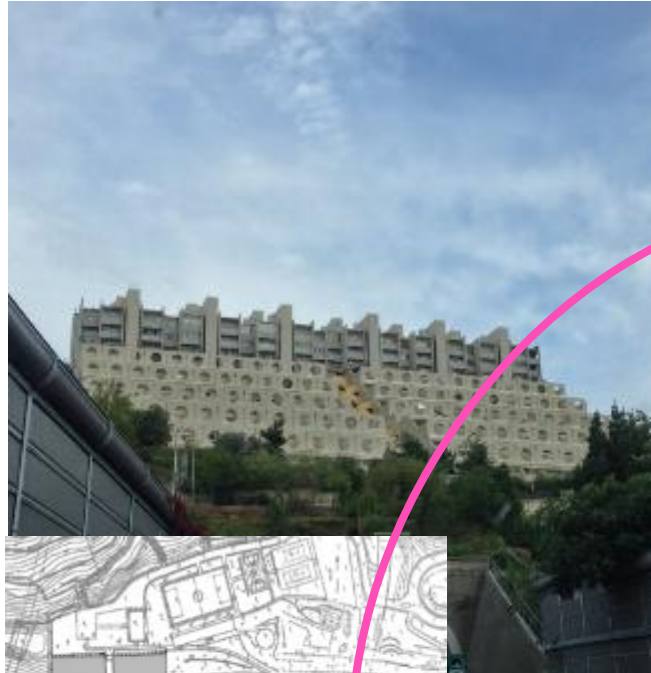
- 50% energy consumption
- 50% CO₂ emissions
- 100 €/mq

through the following "simple" solutions:

- Replacement of windows
- New centralized heating plant
- PV to supply the electrical request of the new boilers

Genoa Demo The "Lavatrici" "numbers"

- 18000 m²
- 460 inhabitants
- 2 in situ laboratories



The **second great resource** is used on various levels, from the promotion of **Genoa** as a **tourist city** to the **safety of the territory**. In particular, Genoa has been active, not to say pioneering, in the field of **smart city policies, technological innovation, energy and mobility**. A recent research on the use of European funds by Italian municipalities (by Gfinance and EasyGov Solutions in collaboration with Politecnico di Milano) has established that Genoa is clearly the first Italian city in the raising of **EU funds**.

The projects funded cover different areas of **Sustainability: energy efficiency, urban regeneration, smart mobility, hydrogeological resilience**.

The latter theme is fundamental for the city and has led to the choice of Genoa City Council as **Coordinator** of the three-year partnership provided for by the **European Urban Agenda** on climate adaptation, the **"Climate Adaptation Partnership"**.

Prof. **Renata Morbiducci** - e-mail renata.morbiducci@unige.it

Delegate of
the Department, of City Planning, Genoa City Council, IT

Genoa

EU funds

urban regeneration

Prof. **Renata Morbiducci** - e-mail renata.morbiducci@unige.it
Delegate of
the Department, of City Planning, Genoa City Council, IT

Genoa

EU funds

urban regeneration

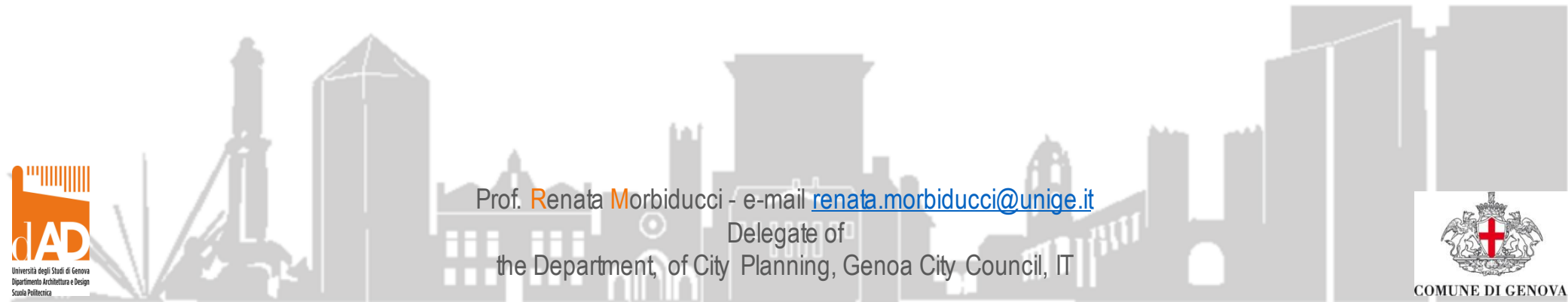


The world's major cities are now facing new challenges in terms of **urban regeneration**, as a result of climate change and the progressive increase in population density. **Nature Based Solutions (NBS) techniques** involve the use of nature and natural solutions, in order to increase the resilience of a site and respond to the need for more ecological, sustainable and inclusive

choices. **”UnaLAB”** - **Urban Nature Labs** represents a consortium of **28 partners**

(municipalities, research bodies, private bodies) from 10 European and non-European cities. **Genoa** is, together with **Tampere**

(Finland) and **Eindhoven** (the Netherlands), a **front-runner city** or "demonstrator" of NBS practices through which the urban park will be built, which will extend over about 1 hectare of the 5 of the Gavoglio area.



Prof. **Renata Morbiducci** - e-mail renata.morbiducci@unige.it

Delegate of

the Department, of City Planning, Genoa City Council, IT



www.unalab.eu • info@unalab.eu

www.facebook.com/UNaLab.EU

www.linkedin.com/company/11217993/

twitter.com/UNaLAB_EU



European
Commission

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 730052 Topic: SCC-2-2016-2017: Smart Cities and Communities Nature based solutions

PROJECT CONCEPT

The project concept is based on the validation of NBSs by implementing urban living labs demonstration areas in three frontrunner cities: Eindhoven, Genova and Tampere. They will address identified urban climate- and water-related challenges by co-creating NBS with local stakeholders and end users, using an innovative systemic decision support tool. To ensure their replicability, these NBS will be coupled with innovative and cost-effective business models. Moreover, innovative municipal governance guidelines and decision-making schemes for enabling NBS implementation will be tested in the frontrunner cities. Subsequently, the five follower cities Başakşehir, Cannes, Castellón, Prague, and Stavanger will work in collaboration with frontrunner cities to develop individual NBS roadmaps in a co-creation approach. The non-European follower and observer cities Buenos Aires, Hong Kong, Guangzhou as well as the Network of Brazilian Intelligent Cities will actively learn from the European NBS approach and enable the creation a truly global NBS marketplace.

PARTNERS:



The Project is funded
by the European Union



Genoa

EU funds

urban regeneration

Genoa case

The Gavoglio Barracks: a derelict military complex in the middle of the urban district.

H2020 – SCC-2-2016-2017: Smart Cities and Communities Nature Based Solutions

1st June 2017 – 31st May 2022:
60 months

Total budget: 13.822.449,25 Euros



Prof. **Renata Morbiducci** - e-mail renata.morbiducci@unige.it

Delegate of
the Department, of City Planning, Genoa City Council, IT



COMUNE DI GENOVA

The **second great resource** is used on various levels, from the promotion of **Genoa** as a **tourist city** to the **safety of the territory**. In particular, Genoa has been active, not to say pioneering, in the field of **smart city policies, technological innovation, energy and mobility**. A recent research on the use of European funds by Italian municipalities (by Gfinance and EasyGov Solutions in collaboration with Politecnico di Milano) has established that Genoa is clearly the first Italian city in the raising of **EU funds**.

The projects funded cover different areas of **Sustainability: energy efficiency, urban regeneration, smart mobility, hydrogeological resilience**.

The latter theme is fundamental for the city and has led to the choice of Genoa City Council as **Coordinator** of the three-year partnership provided for by the **European Urban Agenda** on climate adaptation, the **"Climate Adaptation Partnership"**.

Prof. **Renata Morbiducci** - e-mail renata.morbiducci@unige.it

Delegate of
the Department, of City Planning, Genoa City Council, IT

Genoa

EU funds

smart mobility

Prof. **Renata Morbiducci** - e-mail renata.morbiducci@unige.it
Delegate of
the Department, of City Planning, Genoa City Council, IT

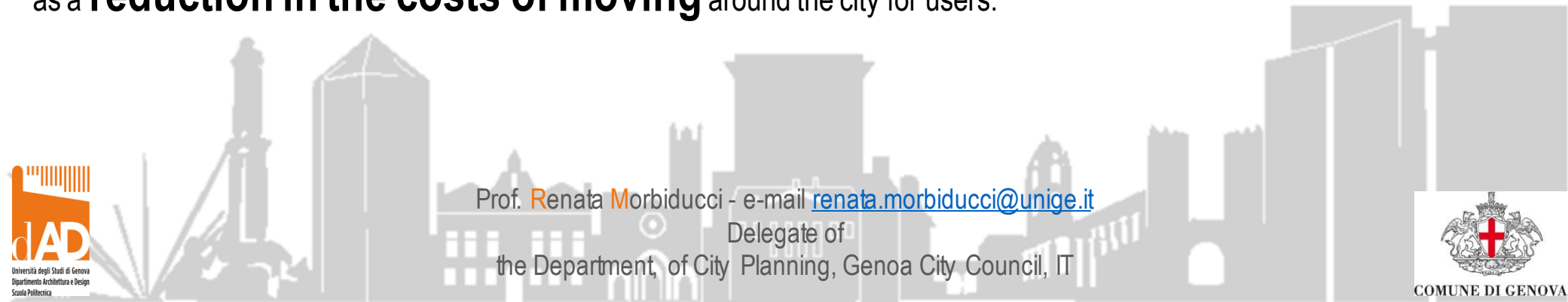
Genoa

EU funds

smart mobility



Elviten capitalises on the positive results of two previous European mobility projects: **ELE.C.TRA** (electric mobility) and **WEEENMODELS** (environment). It brings together **30 partners** from 8 European countries. Italy is represented by Rome, Bari and Genoa. In the development of the pilot project for our city, besides the Municipality of Genoa, T-Bridge and Duferco Energia participate as industrial partners. In Genoa, the project started on 1 December 2017 and lasts three years: the challenge to be overcome is to spread the use of **L-category vehicles (e-bikes, scooters and motorcycles, light quadricycles)** more widely in the urban environment so as to improve the impact of the need to transport different categories of users, such as **commuters, private individuals, logistics** and the various **forms of sharing**: from electric bicycles to small cars. This would lead to an improvement in terms of **noise** and **environmental pollution**, a **reduction in time** and **parking space** as well as a **reduction in the costs of moving** around the city for users.



Prof. **Renata Morbiducci** - e-mail renata.morbiducci@unige.it

Delegate of
the Department of City Planning, Genoa City Council, IT

[ABOUT](#)[PROJECT CITIES](#)[NEWS](#)[EVENTS](#)[CAMPAIGN](#)[LIBRARY](#)

OUR PROJECT

ELVITEN demonstrates how electric light vehicles (EL-Vs) can be used in urban areas and be integrated into the existing transport network of six European cities.

We propose replicable usage schemes for EL-Vs such as electric bicycles, tricycles, scooters and quads. Our consortium unites 21 partners from multiple European countries.

PROJECT INFORMATION AND FUNDING

- Name of Project: Electrified L-category Vehicles Integrated into Transport and Electricity Networks
- Starting Date: 1 November 2017
- Project Duration: 36 months
- Total Cost: EUR 9.5 million
- EU Contribution: EUR 7.8 million
- Project Coordinator: Angelos Amditis (ICCS)

 info@elviten-project.eu



The **second great resource** is used on various levels, from the promotion of **Genoa** as a **tourist city** to the **safety of the territory**. In particular, Genoa has been active, not to say pioneering, in the field of **smart city policies, technological innovation, energy and mobility**. A recent research on the use of European funds by Italian municipalities (by Gfinance and EasyGov Solutions in collaboration with Politecnico di Milano) has established that Genoa is clearly the first Italian city in the raising of **EU funds**.

The projects funded cover different areas of **Sustainability: energy efficiency, urban regeneration, smart mobility, hydrogeological resilience**.

The latter theme is fundamental for the city and has led to the choice of Genoa City Council as **Coordinator** of the three-year partnership provided for by the **European Urban Agenda** on climate adaptation, the **"Climate Adaptation Partnership"**.

Prof. **Renata Morbiducci** - e-mail renata.morbiducci@unige.it

Delegate of
the Department of City Planning, Genoa City Council, IT

Genoa

EU funds

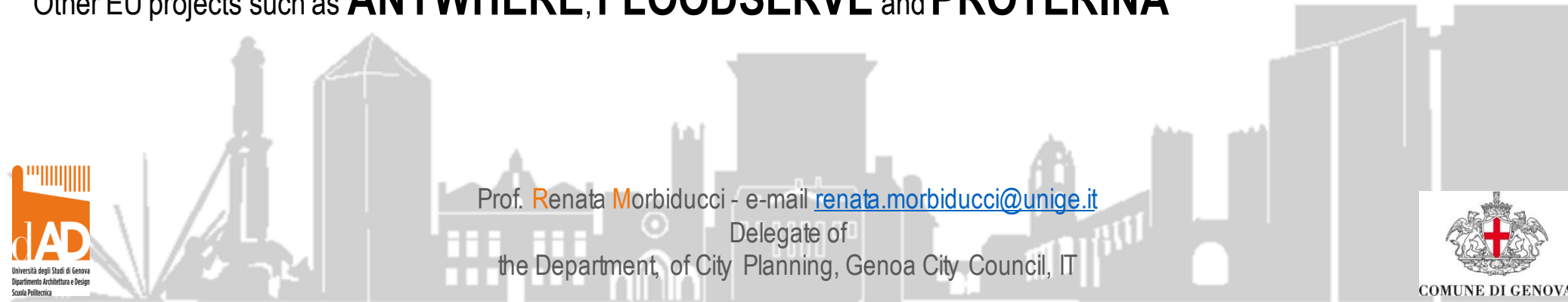
hydrogeological resilience

Prof. **Renata Morbiducci** - e-mail renata.morbiducci@unige.it
Delegate of
the Department, of City Planning, Genoa City Council, IT

Genoa EU funds hydrogeological resilience

HARMONISE addresses the issues of **security and resilience of urban contexts from all points of view**, management, economic, social and planning. The project helps city officials and public safety in the process of culture expansion, understanding resilience against existing and emerging threats; it defines for the first time a **resilience cycle** divided into several phases (prevention and planning, operational management of disasters and restoration of early conditions after the critical event) analyzing them against a case study of natural and man-made threats and risks. An **information and decision-making support tool** at European level enclosed in an **intelligent platform** has been tested by those responsible for city administrations and public safety; depending on the choices of the operator, it allows to use some tools developed ad hoc that represent possible solutions to the problems for which the system is questioned.

Other EU projects such as **ANYWHERE, FLOODSERVE** and **PROTERINA**



Prof. **Renata Morbiducci** - e-mail renata.morbiducci@unige.it

Delegate of

the Department, of City Planning, Genoa City Council, IT

Genoa EU funds hydrogeological resilience



This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 312013

HARMONISE 
www.harmonise.eu

The **second great resource** is used on various levels, from the promotion of **Genoa** as a **tourist city** to the **safety of the territory**. In particular, Genoa has been active, not to say pioneering, in the field of **smart city policies, technological innovation, energy and mobility**. A recent research on the use of European funds by Italian municipalities (by Gfinance and EasyGov Solutions in collaboration with Politecnico di Milano) has established that Genoa is clearly the first Italian city in the raising of **EU funds**.

The projects funded cover different areas of **Sustainability: energy efficiency, urban regeneration, smart mobility, hydrogeological resilience**.

The latter theme is fundamental for the city and has led to the choice of Genoa City Council as **Coordinator** of the three-year partnership provided for by the **European Urban Agenda** on climate adaptation, the **"Climate Adaptation Partnership"**.

Prof. **Renata Morbiducci** - e-mail renata.morbiducci@unige.it

Delegate of
the Department, of City Planning, Genoa City Council, IT

Genoa

EU funds

hydrogeological resilience

The latter theme is fundamental for the city and has led to the choice of Genoa City Council as **Coordinator** of the three-year partnership provided for by the **European Urban Agenda** on climate adaptation, the **"Climate Adaptation Partnership"**.

Prof. Renata Morbiducci - e-mail renata.morbiducci@unige.it

Delegate of
the Department, of City Planning, Genoa City Council, IT

Genoa

EU funds

hydrogeological resilience



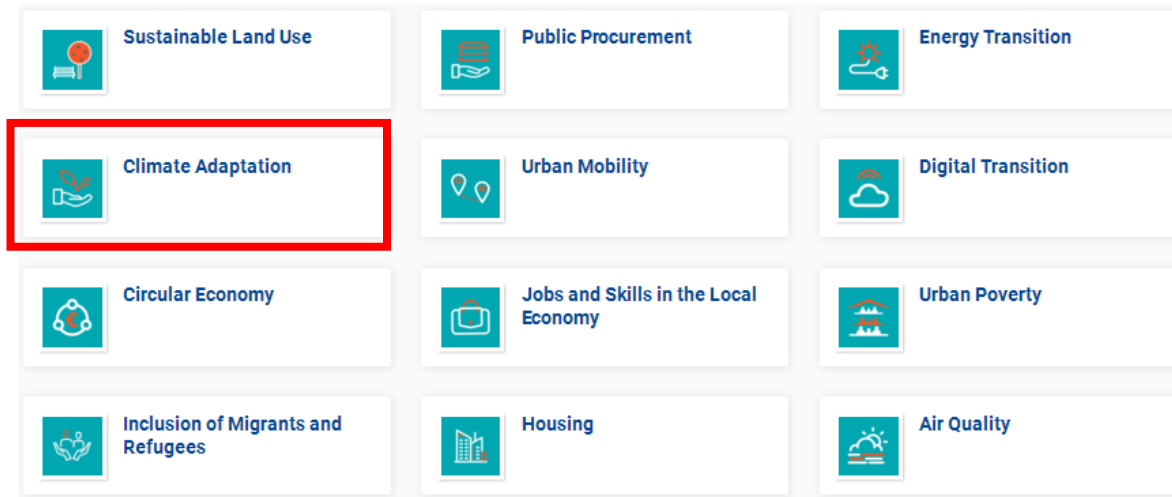
The meeting held on 3 and 4 July 2017 in Brussels saw the start of the work of the **Climate Adaptation Partnership** that will be working for the next three years on the theme of adapting to climate change in urban areas, **coordinated by Genoa City Council.**

The work is aimed at formulating proposals to improve the current **regulatory framework**, making it more suitable for **growing urban realities**, providing guidelines on the issues that may be the **subject of future funding of European Programmes** and proposing ways of exchanging **knowledge and experience** through **new networking models.**

Prof. **Renata Morbiducci** - e-mail renata.morbiducci@unige.it

Delegate of
the Department, of City Planning, Genoa City Council, IT

Genoa EU funds hydrogeological resilience



The network is made up of **6 local authorities** (the Province of Barcelona and the Cities of Glasgow, Trondheim, Potenza, Loulè in Algarve and Sfântu Gheorghe in Transylvania), **4 Member States** (France, Poland, Hungary and Bulgaria) and **3 Directorates-General of the European Commission** (REGIO, CLIMA, ENV). The programme provides for the participation of bodies representing **local authorities** (EuroCities and the Council of European Municipalities and Regions), the **European Investment Bank** and the **European funding programmes** (Interreg Europe, Urbact, Espon, etc.).

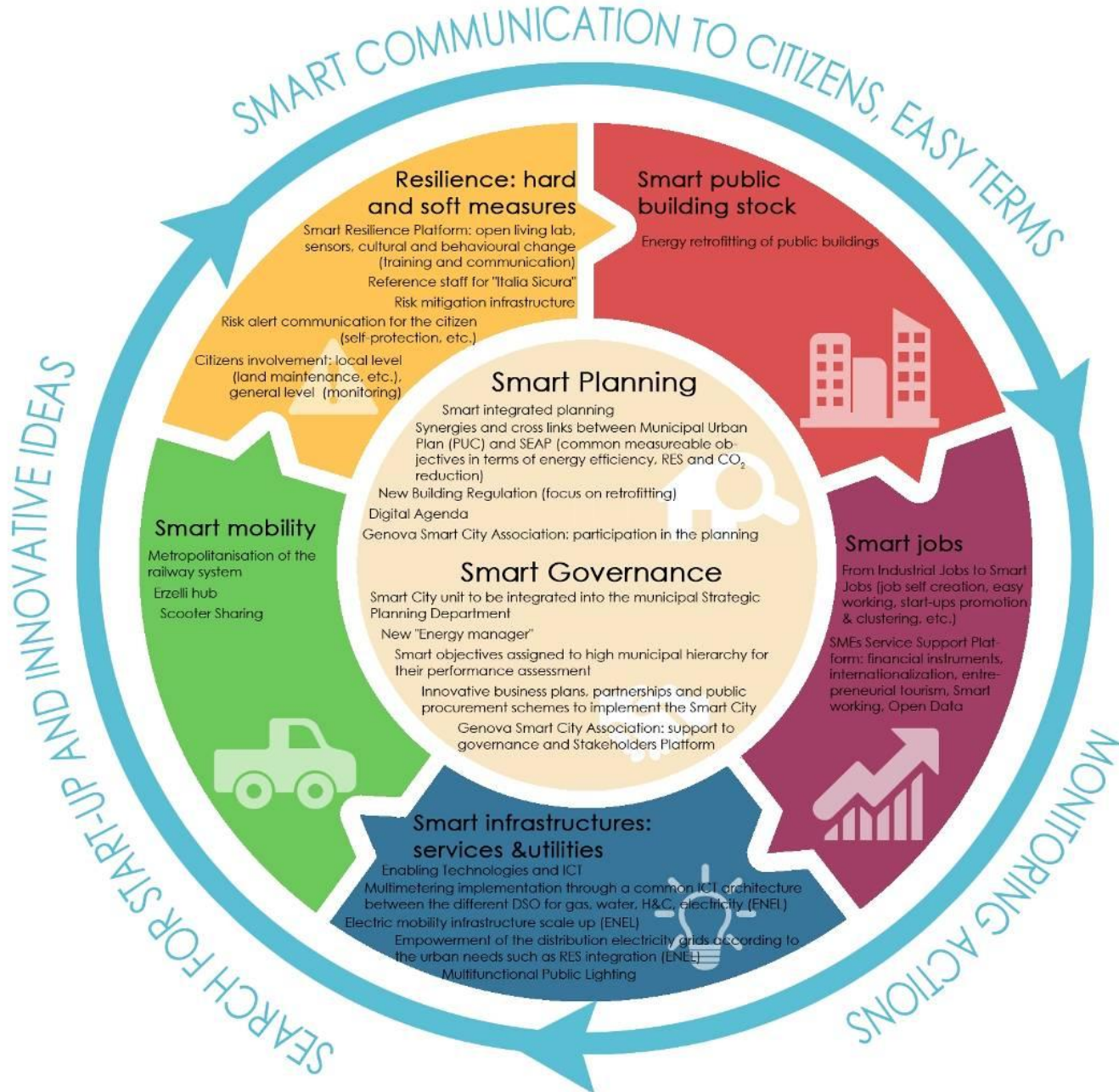
The **theme of adaptation to climate change**, which will be dealt with by the working group for the next three years, is **one of the 12 themes** related to the development of urban areas selected in the context of the Urban Agenda for the European Union with the aim of finding common solutions to these challenges, **improving the urban areas of the EU territory.**

Prof. **Renata Morbiducci** - e-mail renata.morbiducci@unige.it

Delegate of
the Department of City Planning, Genoa City Council, IT

TRANSFORMATION AGENDA

Genoa Smart Planning themes to focus on in the coming years



CONFERENCE ON CLIMATE CHANGE

Observatory of Urban Environment (OMAU), Malaga City Council

Thursday 31th May 2018

Genoa smart city: the axes of change

prof. R. Morbiducci

THANK YOU!!



COMUNE DI GENOVA



Università degli Studi di Genova
Dipartimento Architettura e Design
Scuola Politecnica

Prof. **Renata** Morbiducci - e-mail renata.morbiducci@unige.it

Delegate of
the Department, of City Planning, Genoa City Council, IT



39

COMUNE DI GENOVA