

# Covenant of Mayors Investment Forum ■

## Energy Efficiency Finance Marketplace

15-16 June 2021



### *GENOA'S PATH TOWARDS CLIMATE RESILIENCE*

## HOW TO MOBILIZE FUNDING FOR URBAN CLIMATE ADAPTATION

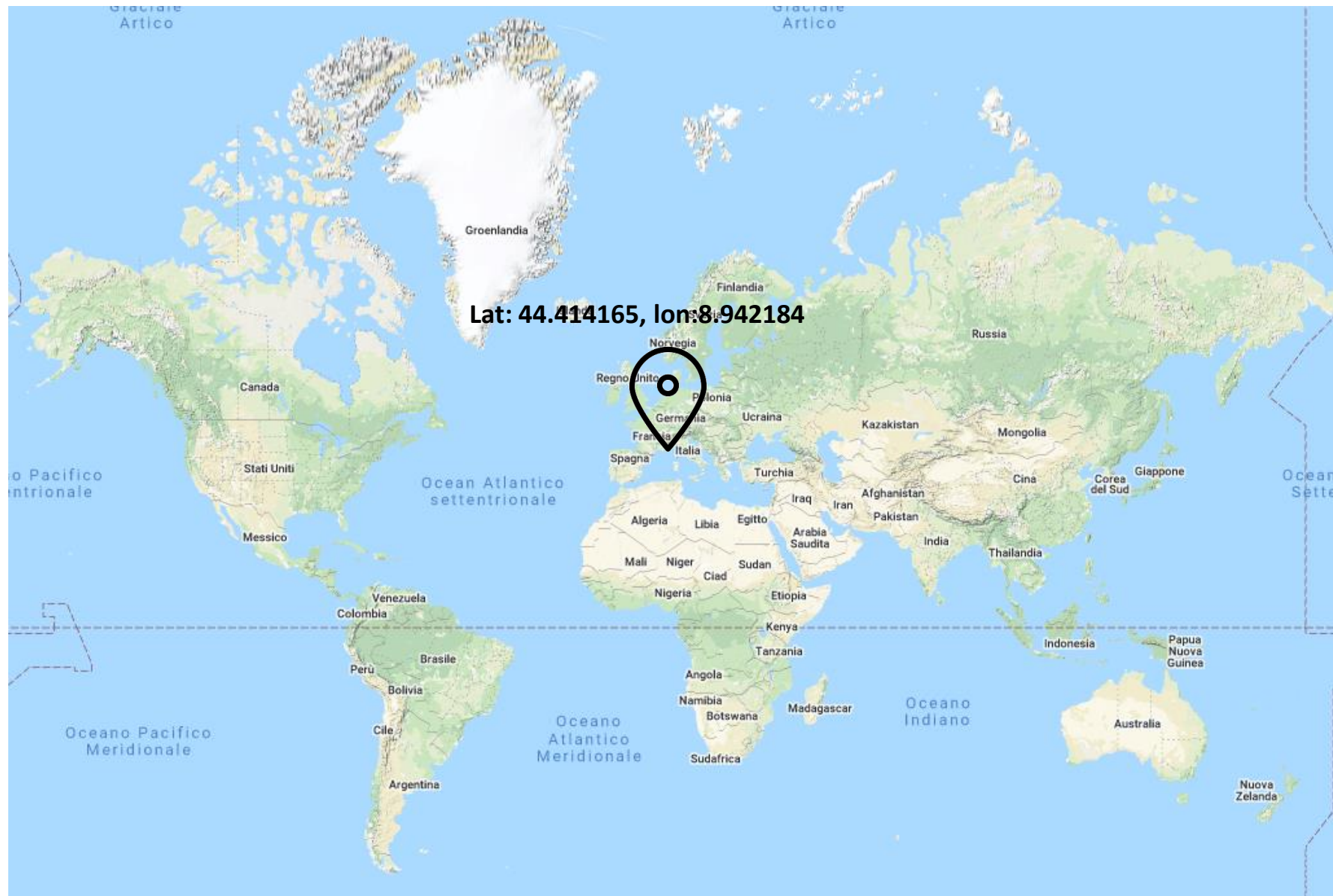
16 JUNE 2021



Genoa Municipality

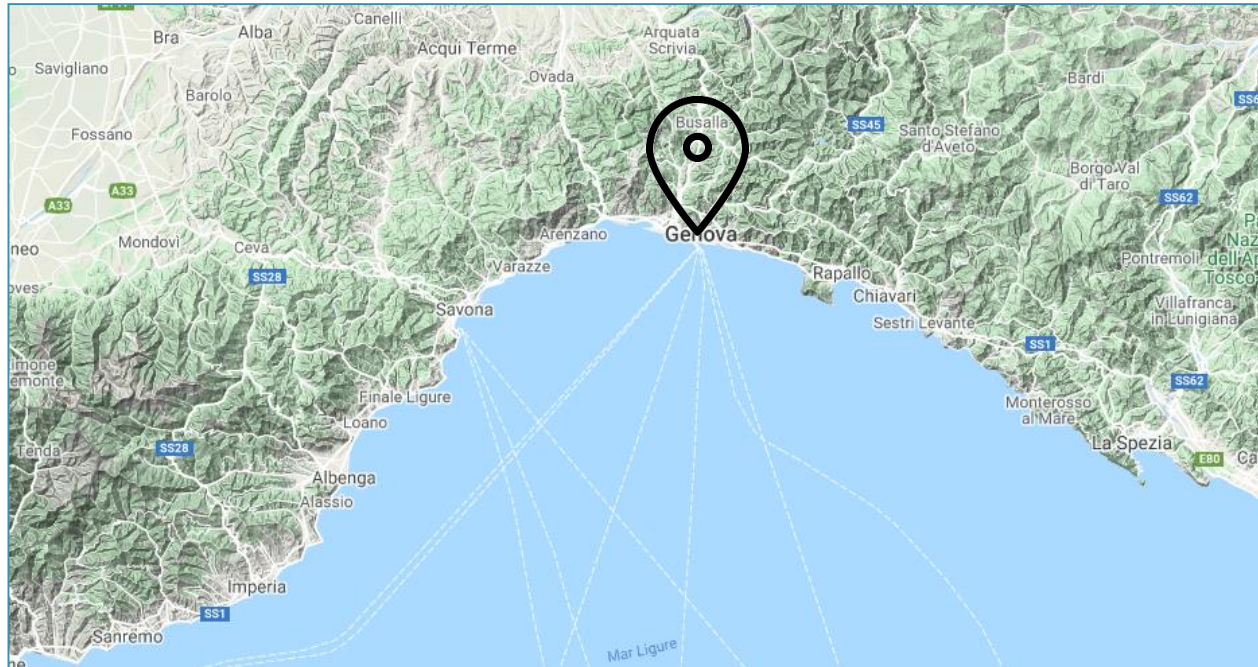
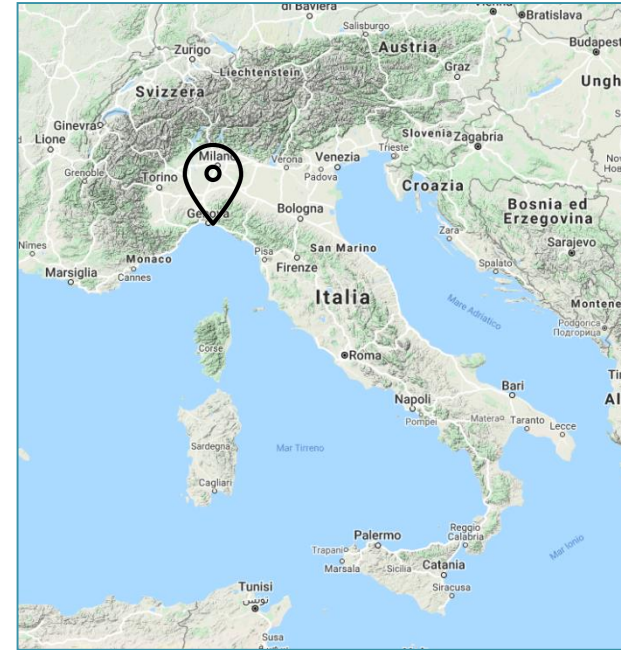
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Resilience Manager  
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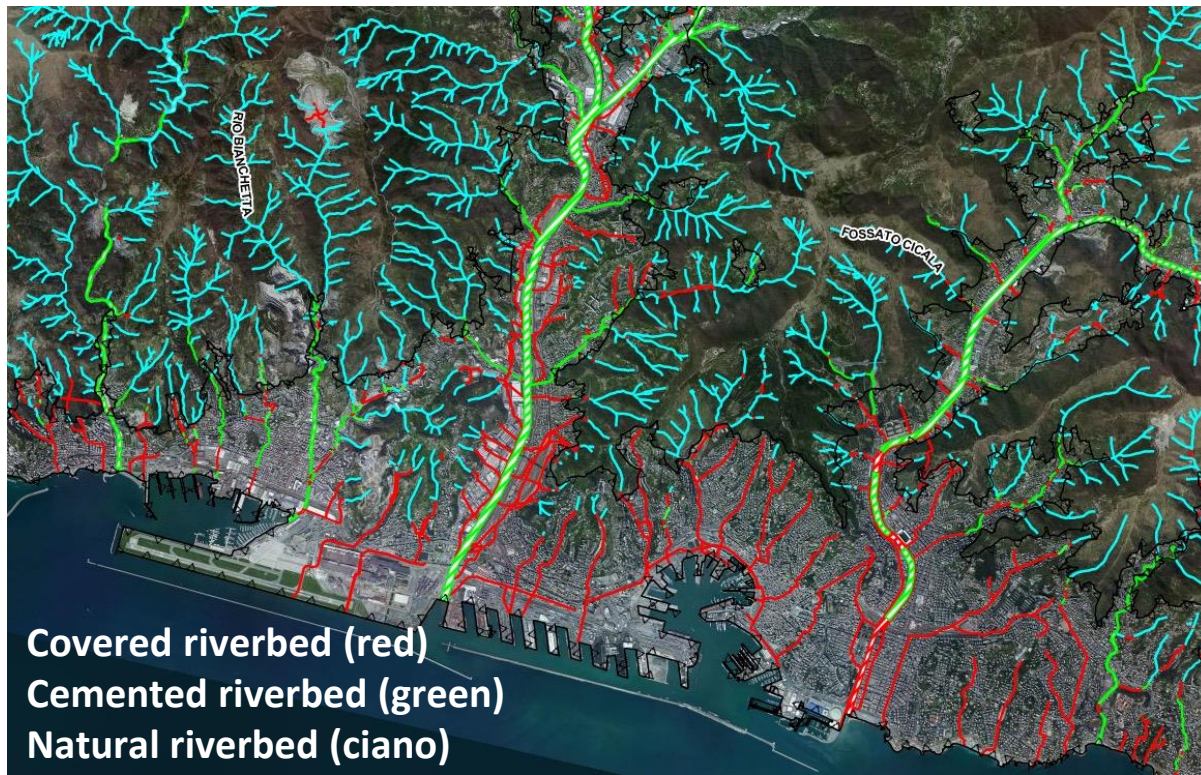




- Capital city of the Liguria Region
- Surface: 243sqkm
- Population: 582.000
- 65 river basin in urban area
- Coastal line of 30km
- City stretch along the cost between the Appenine Mountains and the Ligurian Sea







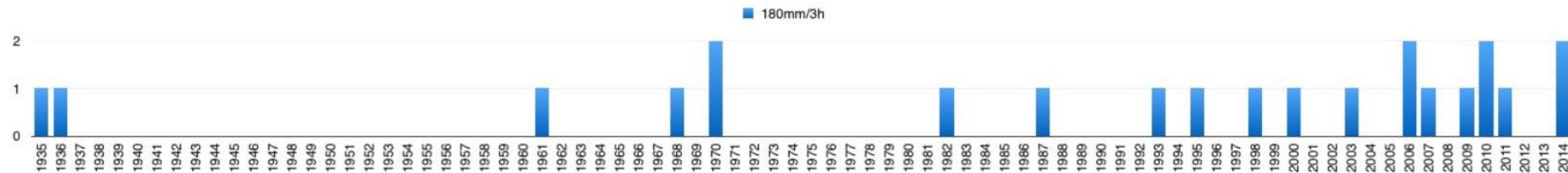
## HYDROGRAPHIC NETWORK

65 river basin  
235km in urban area

The largest share of this network, 151 km crosses the city area in covered conduits built over several centuries and different urbanization stages.

Inside the urban fabric, in the perfluvial areas at risk of flooding with different return periods live nearly 150.000 inhabitants.

A number of these areas, which correspond to the most heavily urbanized part of the territory, are frequented – for reason of work, study, leisure and access to services - by a large part of the population living in the larger Metropolitan area



**RAIN EVENT >180mm/3h per YEAR (1935-2014)**





Part of the old town of Genoa was inscribed on the World Heritage List (UNESCO) in 2006 as “Genoa: Le Strade Nuove and the system of the Palazzi dei Rolli”.

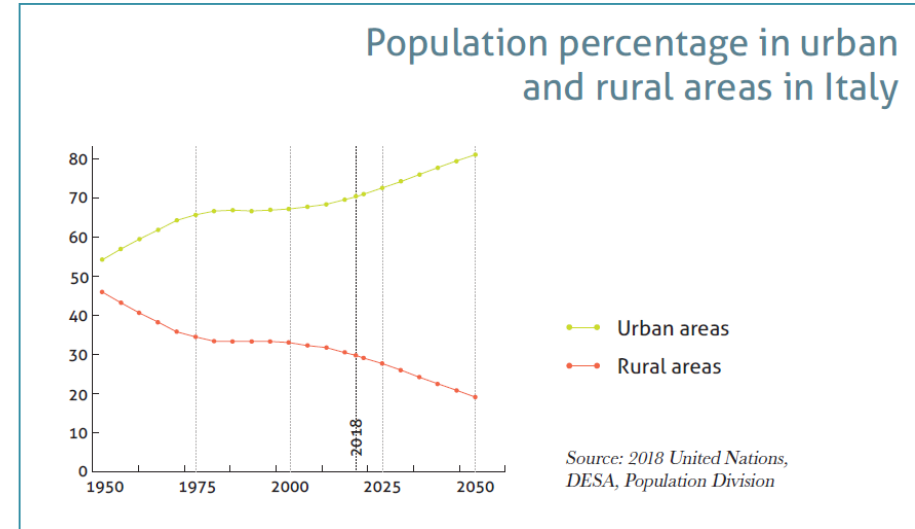


The system of the *Palazzi dei Rolli* is an original example of a network of private residences designated to host state visits.

It contributed to spreading an architectural model and a culture that attracted the attention of artists and travellers, whose writings and works promoted it abroad.

## Demographic change

**Global perspective:** by 2050 68% of the world's population will live in urbanized areas of the planet

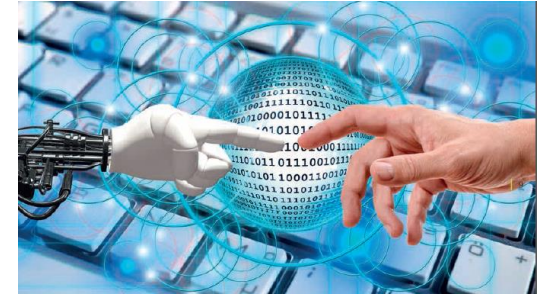


**European perspective:** in 2050 Europe's urban areas will host 82% of the population.

**Local impacts in Genoa context:** Genoa and its metropolitan area will face a similar process of urbanization, which will be accompanied by a progressive increase in population longevity and by the abandonment of rural and suburban areas.

This expected demographic change will require deep transformations of the urban ecosystem as well as of its socio-economic fabric and the public services offered to citizens.

## Digital – Technological change (or transition)



**Global perspective:** future improvement and use of Artificial Intelligence, Automation, Robotics, 5G, Big Data, Augmented Reality, IoT, Cloud, etc. will improve our ability for anticipation, innovation and new experimentation if no-one is left behind

**European perspective:** new digital resources will improve collection and processing of fine-scale useful data for a plurality of subjects, if they will apply a collaborative process able to provide scenarios and solutions addressing the real problems of the different parties

**Local impacts in Genoa context:** it is perhaps the one that is more commonly utilized both in the traditional and innovative fields pertaining to the issue of resilience, both in terms of innovative capacity and flexibility of application in different sectors

The development of ICT technologies for the management of shocks and stresses will allow to experience innovative analytical methods, communication and a decentralized cooperative coordination.



## Climate Change

Major variability in temperature (rising) and precipitation rates (scarcity or extremely heavy) would exacerbate multiplier impacts all over the contexts (global, EU, National, Local)

### BIOGEOGRAPHICAL REGIONS IN EUROPE



### Mediterranean region

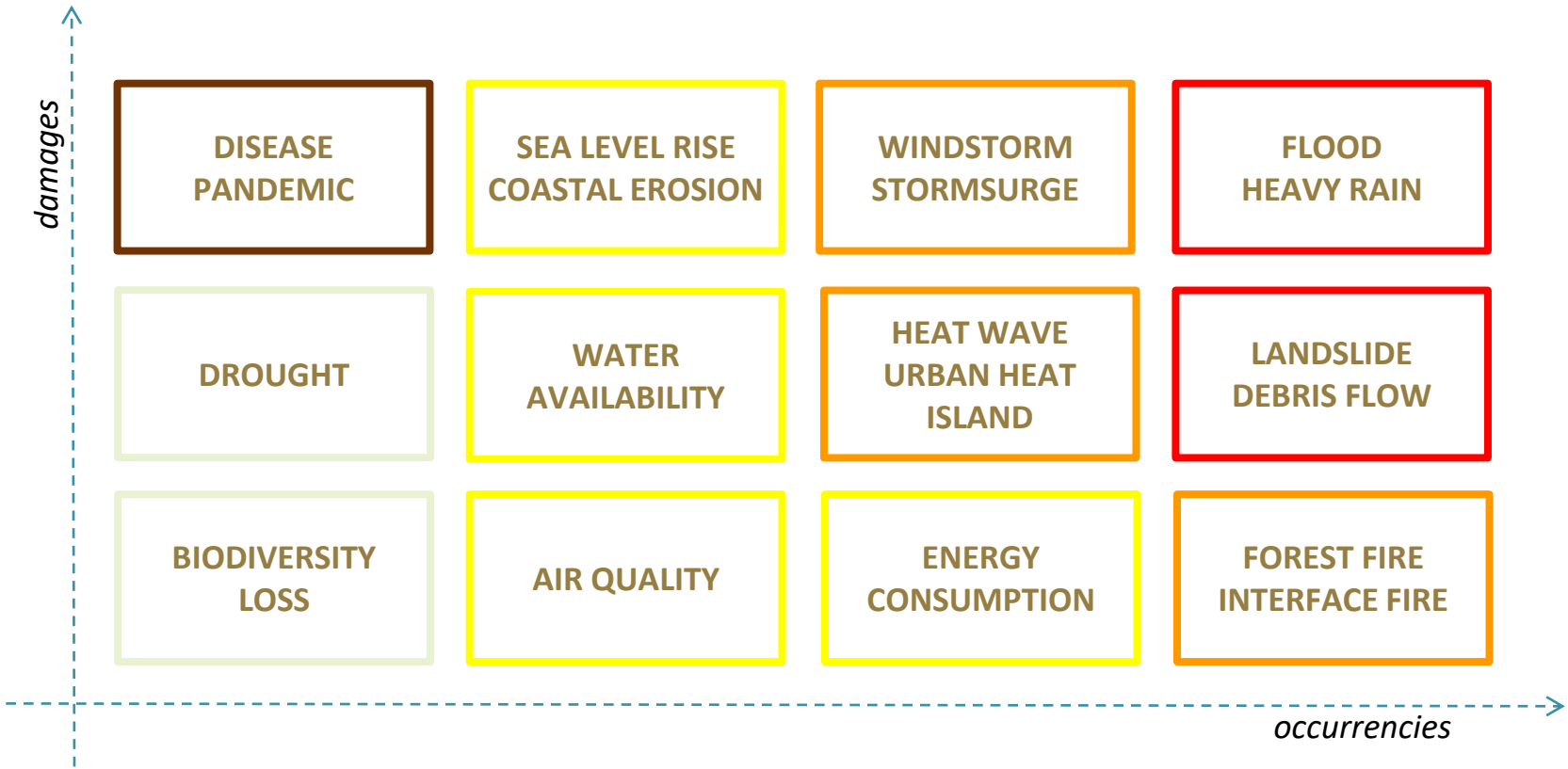
- Large increase in heat extremes
- Decrease in precipitation and river flow
- Increasing risk of droughts
- Increasing risk of biodiversity loss
- Increasing risk of forest fires
- Increased competition between different water users
- Increasing water demand for agriculture
- Decrease in crop yields
- Increasing risks for livestock production
- Increase in mortality from heat waves
- Expansion of habitats for southern disease vectors
- Decreasing potential for energy production
- Increase in energy demand for cooling
- Decrease in summer tourism and potential increase in other seasons
- Increase in multiple climatic hazards
- Most economic sectors negatively affected
- High vulnerability to spillover effects of climate change from outside Europe

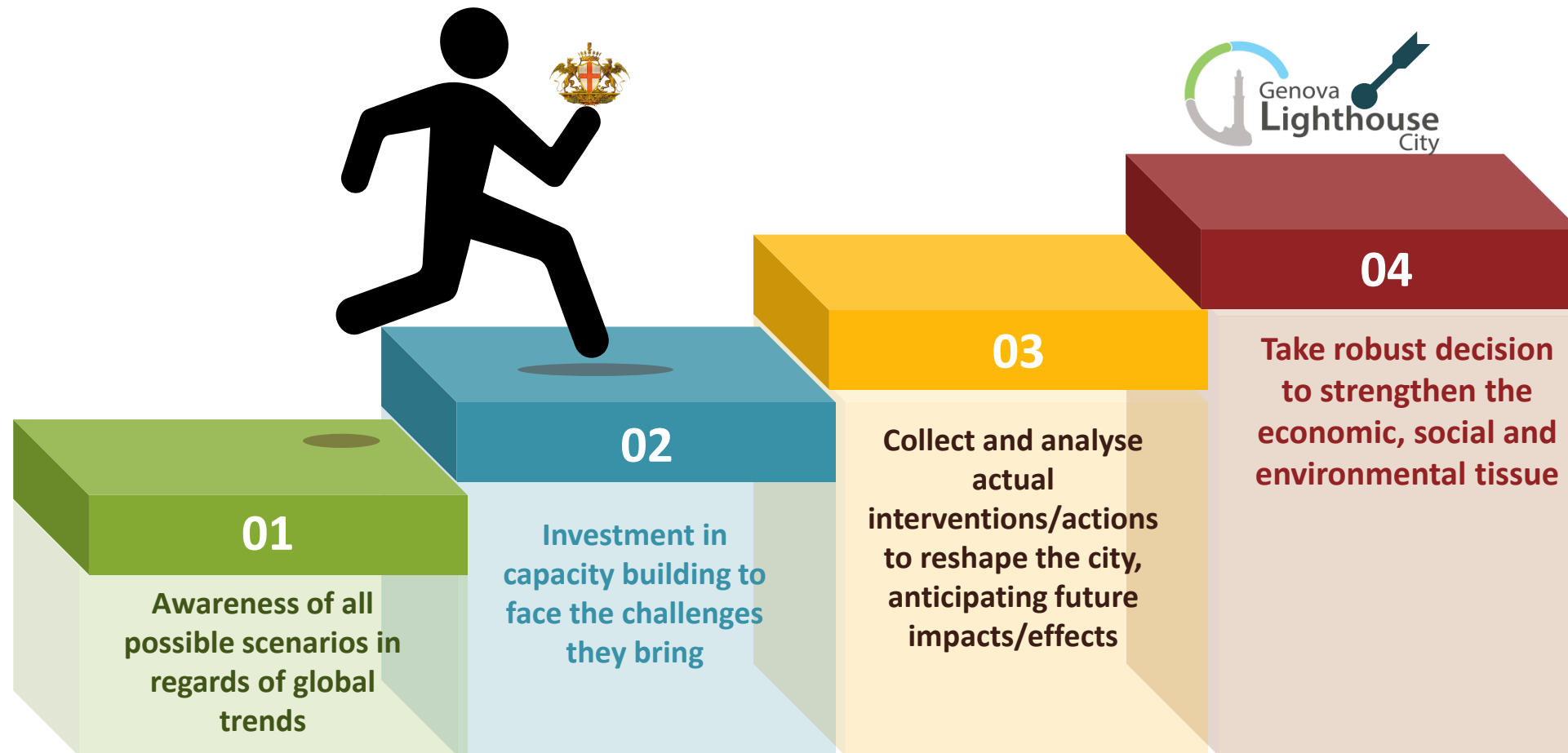




The CITY carry on an analysis of 108 possible scenarios regarding the three mega trends, with indication of impact severity at local scale; among them 51 occurrences have been identified as the most affecting the Genoese territory. Climate scenario analyzed have been 53 and the most affecting occurrences are 17 clustered below.

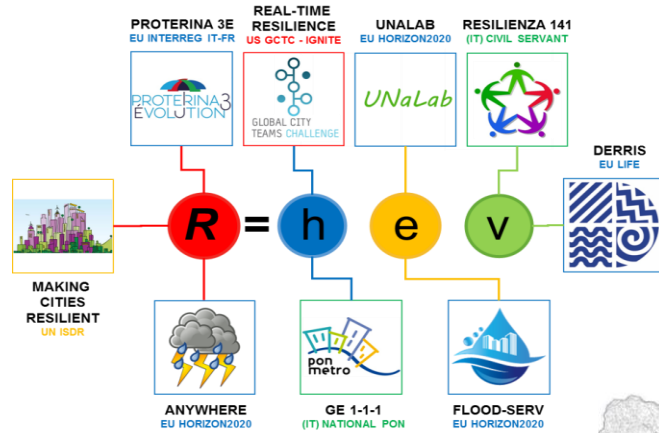
Current situation, expected to worse in the next mid-long-term period



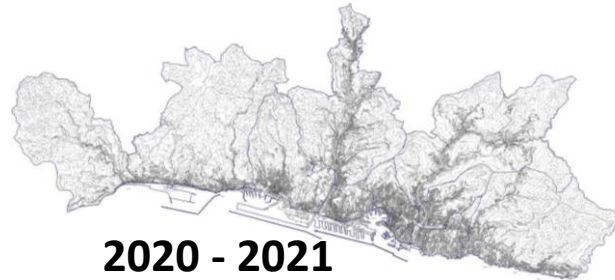




## 2014 - 2020 INITIATIVES & PARTNERSHIPS



## 2020 - 2021 ACTION PLAN



## 2017 - 2020 UPSCALE SYSTEMIC APPROACH FOR AN EU ACTION PLAN



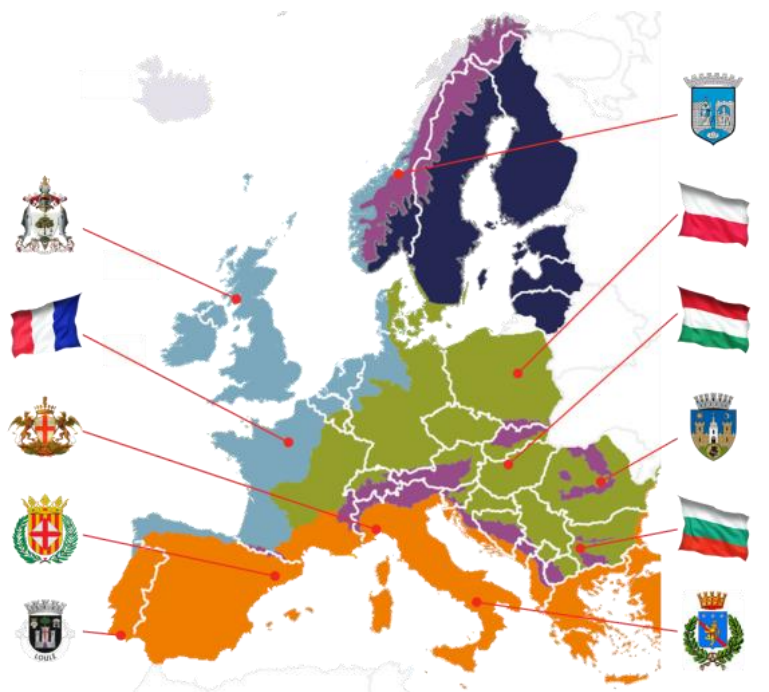
## 2018 - 2019

## DOWNSCALE METHODOLOGY FOR A LOCAL STRATEGY

## 2014 LOCAL AWARENESS



*Goal: to anticipate the adverse effects of climate change and take appropriate action to prevent or minimise the damage it can cause to Urban Areas.*



Member States	Local Authorities	European Commission	Other EU Organizations	Stakeholder officially engaged
FRANCE	GENOVA (IT) - Coordinator	DG REGIO	EUROCITIES	EEA
POLAND	BARCELONA Diput. (ES)	DG CLIMA	CEMR	JRC
HUNGARY	GLASGOW (UK)	DG ENV	EIB	CoMo
BULGARIA	TRONDHEIM (NO)	DG RTD	URBACT	
	LOULÈ (PT)			
	POTENZA (IT)			
	SFANTU GHEORGHE (RO)			







**MANAGING THE RISKS OF EXTREME EVENTS AND DISASTERS TO ADVANCE CHANGE ADAPTATION**  
IPCC 2012



**CLIMATE CHANGE 2014 IMPACT, ADAPTATION AND VULNERABILITY**  
IPCC 2014



**PARIS AGREEMENT**  
UNFCCC 2015



**SENDAI FRAMEWORK FOR DISASTER RISK REDUCTION**  
UNISDR 2015



**NEW URBAN AGENDA**  
HABITAT III



**TRANSFORMING OUR WORLD THE 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT**  
UNGA 2015



**HABITAT III HOUSING AND SUSTAINABLE URBAN DEVELOPMENT**  
UNGA 2016



**ADAPTATION IN EUROPE 2016**  
EEA 2013



**URBAN ADAPTATION IN CLIMATE CHANGE IN EUROPE 2016**  
EEA 2017



**CLIMATE CHANGE IMPACT AND VULNERABILITY IN EUROPE 2016**  
EEA 2017



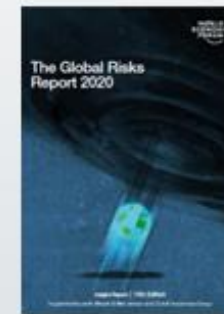
**GLOBAL WARMING OF 1.5 °C**  
IPCC 2018



**HEALTHY ENVIRONMENT, HEALTHY LIVES: HOW THE ENVIRONMENT INFLUENCES HEALTH AND WELL-BEING IN EUROPE**  
2020



**THE GLOBAL RISK WEF 2019 - 2020**



**EU Biodiversity Strategy for 2030**



**Marine Strategy Framework Directive**



**NBS Europe EEA 2021**



**F2f Strategy**



**EU Water Framework Directive**



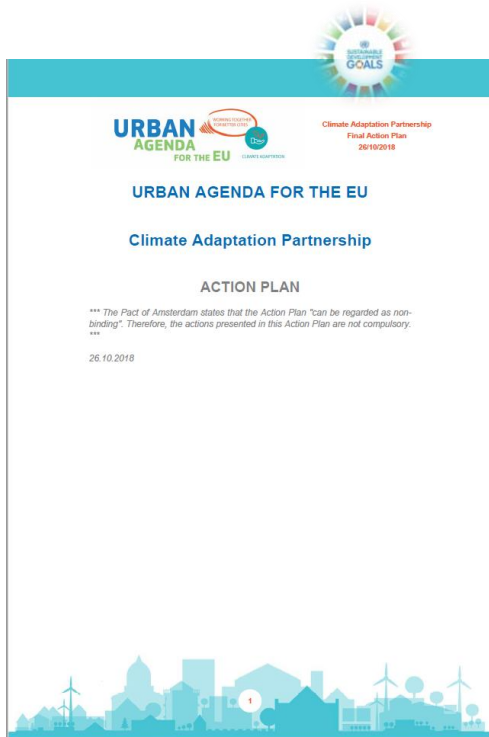
**EU Circular Economy Action Plan**



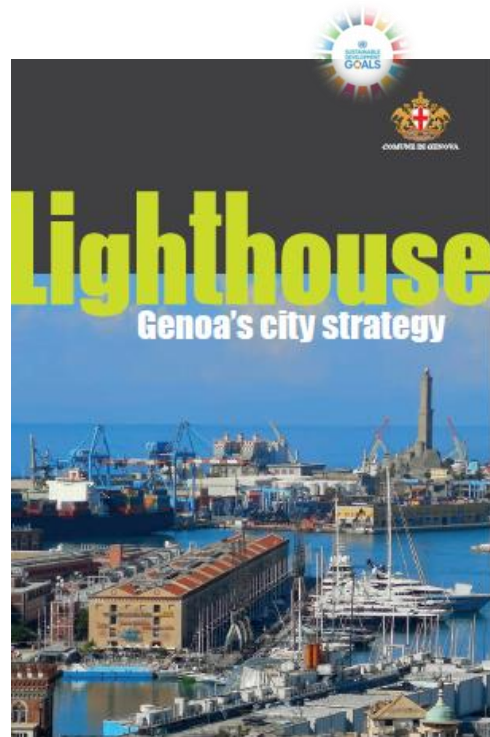
**EU Floods Directive**



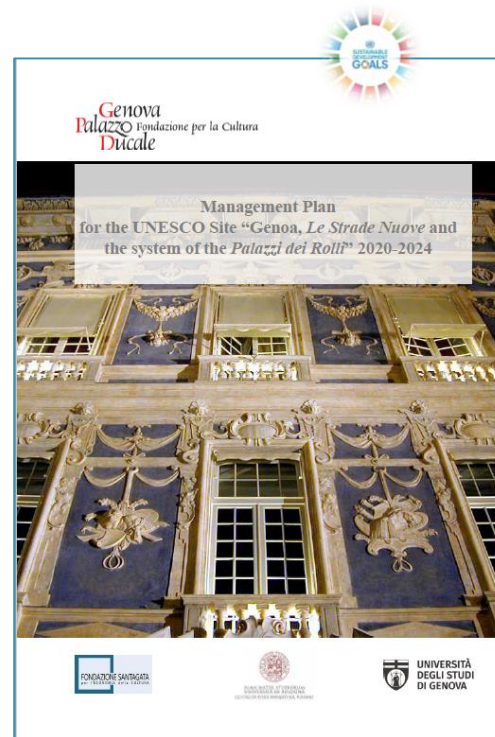
**Genoa's path:** learning from the past, studying the future and prepare, anticipate, prevent, transform challenge into opportunities



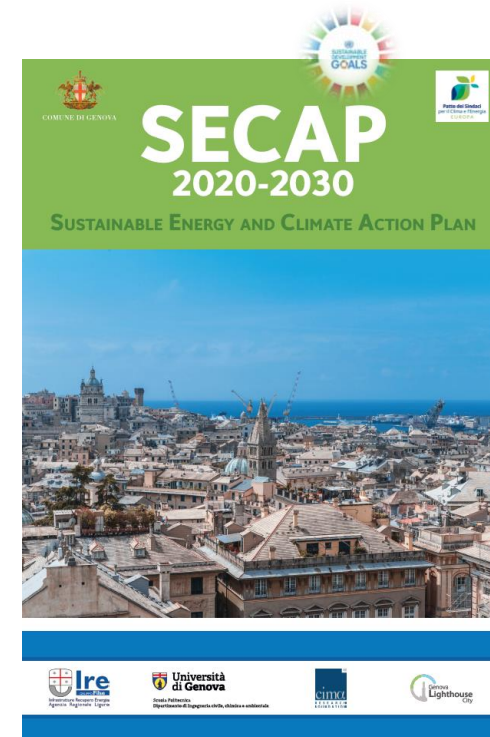
2017 - 2021



2018-2025



2020 - 2024



2020 - 2030



2020 - 2050

**Building the FUTURE** with engaged citizens contribute to a city's sustainability by helping identify risks and contributing ideas and solutions to address city issues.



### 3 Drivers of change



**01.**  
Climate



**02.**  
Demographic



**03.**  
Digital Transition

### 3 assets



**01.**  
Innovative  
Development of  
Infrastructures



**02.**  
Urban  
Regeneration



**03.**  
Community Enterprise

### 3 Goals



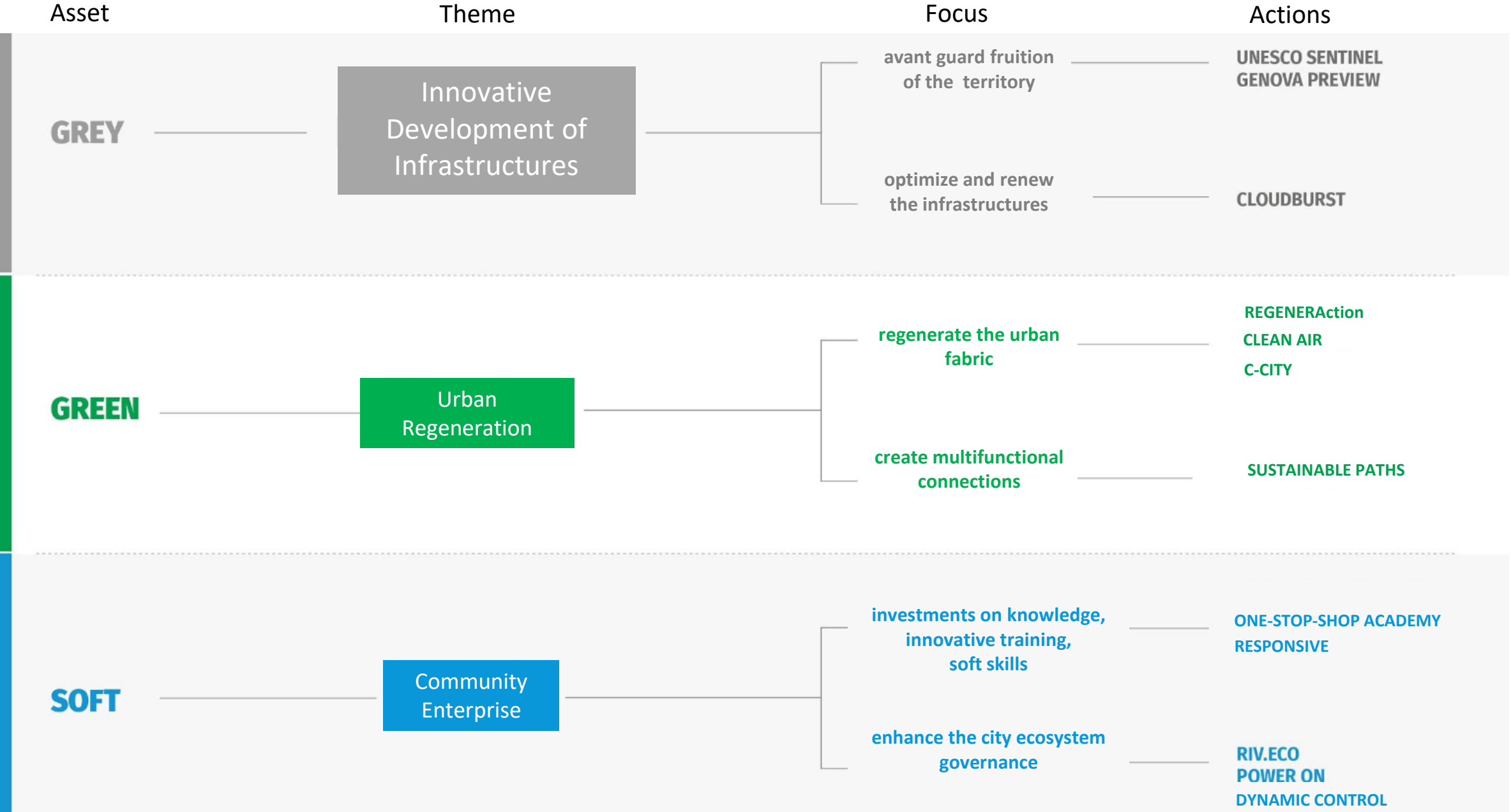
**01.**  
*Innovation*

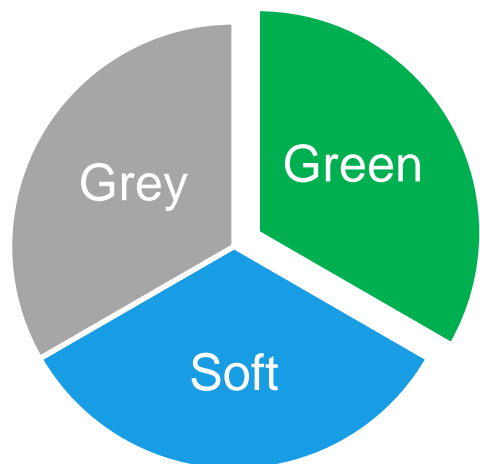


**02.**  
*Anticipation*



**03.**  
*Strengthening*





## Baseline 2014-2020: more than 500ml Euros

- Eu Funding Programme i.e H2020, Life, IT/FR, Interreg EU
- ERDF - Structural Funds and i.e. Operative Plan for Metropolitan Cities
- Private Investors i.e. Banks and Banks Foundations
- National Funds
- Municipality budget

**6 QUALITIES**

**3 ASSETS**

**6 FOCUS**

**18 ITEMS**

**45 MACRO INDICATORS**

**160 INDICATORS AND METRICS**





## Grey asset

## Green asset

## Soft asset

In 2019 CEB and Municipality staff made up a technical and financial assessment of the Lighthouse City Strategy, its assets, proposition, coherency with both UN, EU policies and concrete steps at local scale. Then CEB trust in our project and chose our city as the only city beneficiary of a **Funding loan facility for the adaptation to climate change and sustainable development fostering a Green, Just transformation of 50.000.000 €**

## Risk Reduction

Mitigation and prevention measure against flooding, wildfire, storm surge

## Green Maintenance interventions

Extraordinary maintenance of buildings, infrastructures and municipal services, with particular attention to schools

## Urban Regeneration

Timely interventions of urban regeneration and protective measures of the cultural heritage, open access to disadvantaged people



### Resilience planning in Genoa

## Sustainable, resilient, *superba*

Genoa, known as 'La Superba', is Italy's largest port. A €50 million loan from the CEB is helping this historic city to develop the resilience it needs to meet ecological, economic and social challenges.

Genoa has experienced four major floods in the last 50 years. Urban sprawl across flood plains, hills and river valleys has narrowed riverbeds and flattened coastal areas, making the city and its surroundings more vulnerable to natural disaster. Today, Genoa is one of the urban areas where climate change is expected to significantly increase the risk of flooding, sea level rise, storm surges and landslides. Alongside its susceptibility to natural disaster, the city also faces the social challenge of demographic change and an ageing population, and the economic challenge of diversifying its economy and creating high-value jobs.

**Planning for resilience**  
In November 2019 Genoa's city administration approved a Resilience Strategy to help strengthen the city's capacity to adapt and grow in the face of stresses and shocks. The Action Plan, the implementing tool of the Resilience Strategy, is under preparation. The Resilience Strategy will be implemented through the city's investment planning process, in particular the Municipal Investment Plan. The Municipal Investment Plan for 2019-2021 has three key priorities:

- Enhancing access to, and quality of, public infrastructure and services, with a focus on education
  - Increasing the area's resilience to hydrogeological risk through flood control works
  - Improving quality of life and the historic city centre through urban regeneration and conservation
- The commitment of the city administration to building resilience is expected to enhance the social and economic impact of these municipal investments.

**Promoting a positive future**  
The city's Municipal Investment Plan will be supported with a €50 million loan from the CEB. The loan agreement was signed by the Mayor of Genoa, Marco Bucci, and CEB Vice-Governor, Carlo Monticelli, in October 2019.

The CEB loan aims to create the conditions for development, which will in turn help to stop depopulation and promote Genoa's growth in the medium to long term. The loan will improve the safety and attractiveness of Genoa by:

- Improving the area's resilience to natural disasters through the city's increased capacity to recover, function and grow in the aftermath of a shock or a crisis
- Enhancing the quality of, and access to, education and sporting facilities
- Supporting urban regeneration and the preservation of the city's historic centre, this will improve quality of life for residents, grow commercial activity, attract more tourists, and foster social cohesion through access to quality public spaces

**“Regions and city governments have a role to play in improving conditions for living conditions, fostering sustainable and inclusive growth.”**  
Carlo Monticelli,  
CEB Vice-Governor



**60.000.000 already spent**  
**24.000.000 reported to CEB**

## Grey asset

**1.UNESCO SENTINEL** The main purpose is to acquire detailed information on the state of conservation of the city's architectural heritage, which is essential to be aware of their vulnerability to the effects of climate change, in order to ensure a lasting usability of the historical and cultural heritage for future generations.

**TIMING:** 1-3 YEARS

### Starting project

- Access to satellite data to improve climate resilience to cultural heritage
- Digital co-working platform to monitor the Unesco Management Plan **45.000**





## Grey asset

**2.GENOVA PREVIEW** Careful process of virtualization of the City's entire heritage, in order to make it livable even when the sites should not be visited due to temporary restrictions i.e. weather alerts, infrastructural break, safety or health requirements, with immersive preview enriched with different contents, suitable for the multi-age of users and visitors.

**TIMING:** 2-5 YEARS

**Starting projects**

- Strengthening and diversification of the city's cultural offer in Museo della Città, Sale Paganini, Mostra Deredia pilot sites by Bank Foundations about **6.000.000 €**
- Rolli Days Digital Week 2020-2021 promotion of the Rolli-Unesco artistic heritage in a sustainable way, in case of prolonged shocks or stresses such as those brought about by adverse weather events or the recent pandemic restrictive situation **320.000 €**





## 2014 Weather Extremes

October, 9th

1.200.000 sqm urban area flooding



November, 15th

129 landslides occurred in 24h



### Losses

1	victim
144	displaced families
290.000.000	€ in damages for private property and commercial
270.000.000	€ in damages for public property
3.500.000	€ in damages for cultural heritage and strategic buildings

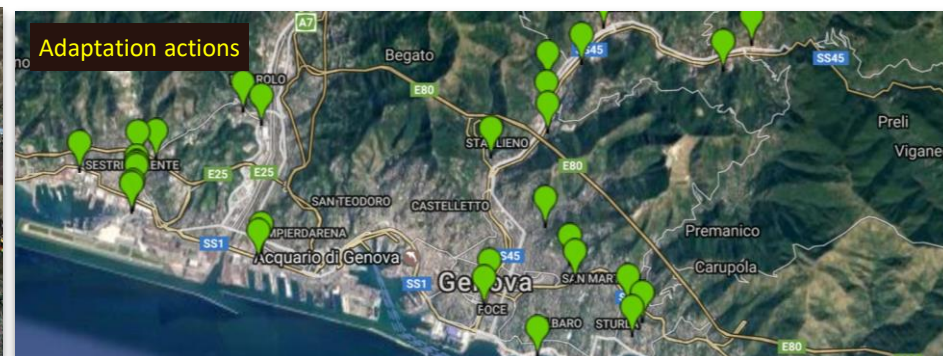
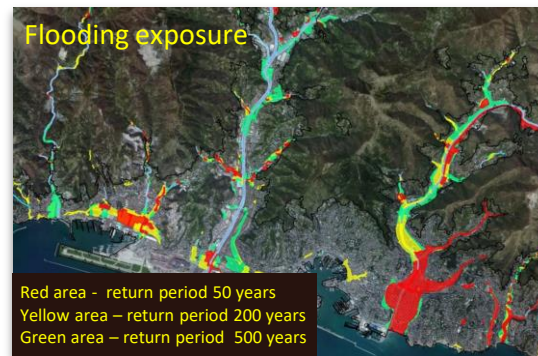
## Grey asset

**3.CLOUDBURST:** The main objective of the action is to reduce the damage caused by intense meteorological events through the optimization and improvement of infrastructures devoted to the collection and outflow of rain and stormwater.

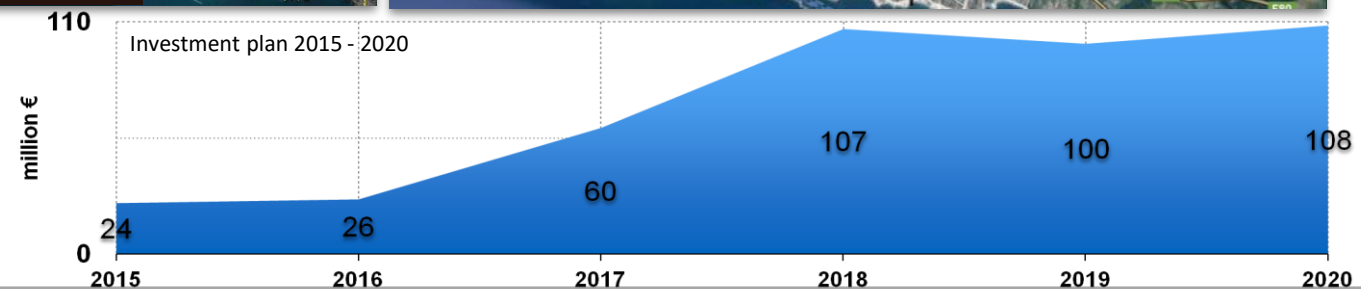
**TIMING:** 3-6 YEARS

### Starting project

- Grey intervention on infrastructures, to assess hydrological recovery, located on the main three river basin **423.778.000 €**
- H2020 ANYWHERE Project - to innovate the management of weather emergencies **205.000€ (combined Grey and SOFT measure)**
- IT/FR Lose+ Project - Video surveillance systems for monitoring the road traffic of dangerous goods at port gates **350.000 €**
- SRS SMART RAINFALL SYSTEM - Pilot on real-time rainfall intensity maps by disruptive monitoring technology that analyzes the fade of satellite television signals measured by a network of low- power IoT devices connected to common TV parabolic antennas **20.000 (combined Grey and SOFT measure)**
- OP Metropolitan cities - Digital rain and water level data model **428.560 € (combined Grey and SOFT measure)**
- OP Metropolitan cities - Unique information system for emergency management **68.000 € (combined Grey and SOFT measure)**



Funding source





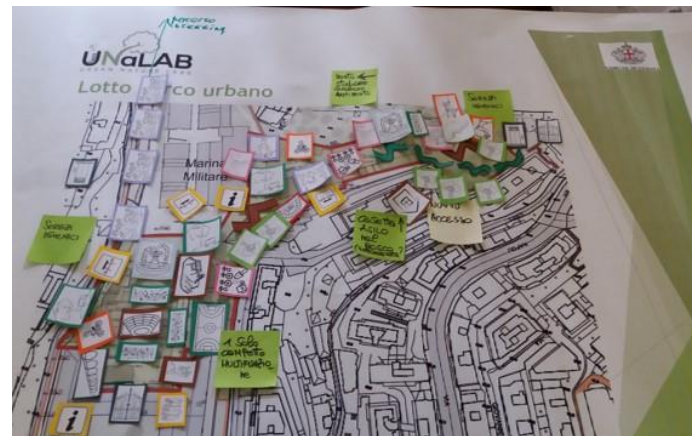
## Green Asset

**4. REGENERAction** This action aims to regenerate neighborhood spaces at district level through innovative planning criteria, synergistic measures to both mitigate pollution and to **mainstream** the value of adaptation to climate change, promoting the improvement of the urban environment's quality, the increase of its residential and real estate value, the satisfaction and participation of the population as well as the neighborhood economic development.

**TIMING: 3-6 YEARS**

### Starting project

- EIB Cost benefit and value of adaptation, economic analysis applied in case studies, guidance document on the use of urban adaptation economics via the UA CAP partnership Action F1
- 3 Master thesis on green measures to apply in the Bisagno, Chiaravagna and Polcevera Valley
- H2020 UNALAB Project - Regeneration of the former Caserma Gavoglio's area based on NBS **1.700.000 €**






**CHALLENGES**

Biodiversity loss   Flooding   Habitat loss   Heat stress   Pollution   Scarcity

**SOLUTIONS**

Green spaces   Green walls and Roofs   Permeable Pavements   Reforestation   Rivercourse daylighting   Stormwater Retention ponds   Vegetated Floodway

**GENOVA'S DEMONSTRATION SITES**

**LAGGACCIO**

Nature-based solutions will be demonstrated in Genoa's Laggaccio district, which is a central and densely populated district characterised by disorganised post-war urbanisation mainly formed by residential multi-storey buildings and derelict sites.

[www.unalab.eu](http://www.unalab.eu)  
[www.twitter.com/UNaLab\\_EU](https://twitter.com/UNaLab_EU)  
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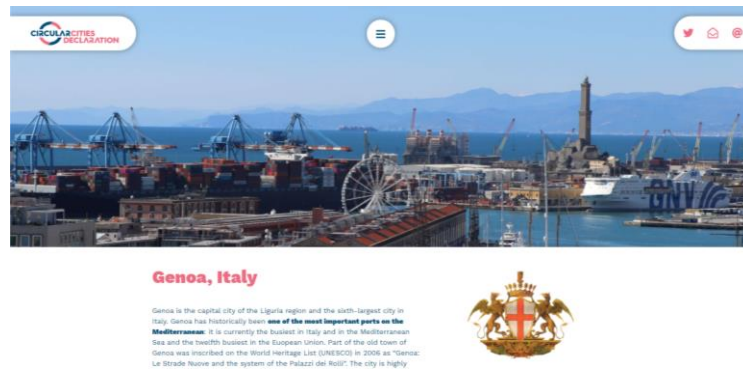

## Green Asset

**6.C-CITY** The action improve the bioeconomy sectors, the circularity of the energy service supply and support the paradigm shift from consumer to prosumer. The city, signer of the European Circular City Declaration, look after prevention, reuse and up-cycling, improved collection schemes, strengthening food policies and the stakeholder network. Finally, in the field of circularity and energy positivity, the city will experience the potential of energy communities on a neighborhood scale.

**TIMING:** 1-3 YEARS

### Starting project

- H2020 FORCE 2016-2021 Value chain base partnership to to develop tailored and innovative co-designed solutions on Reengineer Plastic, WEEE, Wood, Food Streams; opening reuse centers for wood item and repair café for weee, awareness campaign and active delivery on food and valorization of wood waste **850.000 €**
- 2 Master Thesis on food policies integration, agrifood and networking activities tax reductions and incentives at local scale
- Eu Circular Cities Declaration Signatory
- Circular Economy City Strategy (starting phase)
- Waste Management Company AMIU Circular Investment Plan **91.500.000 millions €**



## Green Asset

**7.SUSTAINABLE PATHS** The process to create connection paths for regenerative mobility on at neighborhood and urban scale count on the use of innovative “on-hand” technologies through which people can be encouraged to change behaviors. In this way it is possible to act, in the medium term, on the neighborhood economy, road safety linked to the separate use of streets and improve pilot sites adaptation to the effects of climate change and city pollution.

**TIMING:** 1-4 YEARS

**Starting project**

- OP Metropolitan Cities - Network of regenerative bike lanes to reconnect neighborhood areas to the city center **about 3.000.000 €**
- H2020 Elviten Project - Combined actions to support transition to electric mobility. Creation of 60 charging points in 4 city HUBs **350.000 €**
- IT/FR MobiMart Project - Informative smart system in tourist areas (Maritime Station, railway stations...); analysis of tourist flows linked to urban mobility **400.000 €**



## Soft Asset

**8. ONE-STOP-SHOP ACADEMY** It proposes an investment in innovative skills of administrations, stakeholders, entrepreneurs, business communities, civil society and, more generally, individuals to foster new models of sustainable behavior, both in the urban fabric (environmental, social and economic) in the governance processes and tools via a one-stop-shop platform.

**TIMING: 1-3 YEARS**

### Starting project

- Training academy for local politicians and decision makers Action K3 UACAP (Municipality budget)
- Training the trainer with sub national municipality associations Action K6 UACAP (Municipality budget)
- Scuola di amministrazione (Municipality budget)

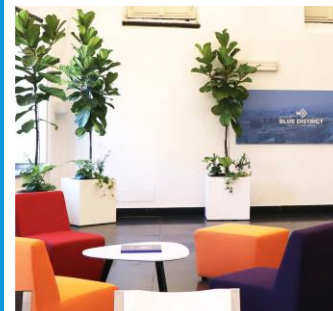


**9. RESPONSIVE** to acquire the necessary skills in emerging professions to guarantee investment in innovative sectors and to keep alive the high professionalism recognized in the identity fields of the city, developing new forms of entrepreneurship, favoring eco-loyalty mechanisms and investments in sustainable finance.

**TIMING: 1-3 YEARS**

### Starting project

- H2020 Hub-In Project - Redevelopment of the historic center's areas through support for the establishment of creative companies and start-ups **600.000 €**
- Open Innovation City Hackathon – Experimentation of an innovative membrane prototype for the onboard treatment of black and grey water **7.500 €**
- OP Metropolitan Cities Job Policies Platform **351.000 €**





## In a nutshell



**Kyoto Fund - Schools:** appx. **€ 1.000.000** loan (rotational fund) to perform 204 Energy Audits for Schools.



**ELENA Support:** *European Local ENergy Assistance* for appx. **€ 1.300.000** grants to support energy efficiency project development for public procurement of ESCo.



**N.O.P - Metro:** *National Operational Programme* for appx. **€ 10.500.000** grants to finance energy efficiency measures on Street Lighting, public buildings and Social Housing real estate.



**Gen-IUS Project:** *Genoa Innovative Urban Sustainability*, ESCo public procurement process supported by ELENA for appx. **€ 26.000.000 TPF** for energy efficiency measures on public assets.

Total: about 40ml Euros



40%

CO2 Reduction compared with 1990

32%

Renewable Energy Share

32.5%

Energy Efficiency



## *Thanks for the attention*

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Climate Adaptation Partnership Coordinator – Urban Agenda for the EU - available on **Futurium** platform  
[www.urbanagendaforthe.eu](http://www.urbanagendaforthe.eu)  
<https://ec.europa.eu/futurium/en/climate-adaptation>  
Twitter account: @EUUrbanAgenda

