

# URBAN DEPAVING

“Project for the reduction of the heat island and mitigation of extreme climatic events in the Piazza Savelli area”



***Greenery, Parks and Urban Agriculture Dept. | Municipality of Padova***

# URBAN DEPAVING - PIAZZA SAVELLI

## **“Project for the reduction of the heat island and mitigation of extreme climatic events in the Piazza Savelli area”**

It is an urban regeneration project, but above all it is an environmental mitigation project, capable of significantly reducing the risks generated by climate change:

- both in terms of hydraulic impacts (considerable impermeable surfaces affected by increasing meteoric water flows)
- as well as in terms of urban heat island (particularly dense urban context, where approximately 200 management companies with a high number of employees are concentrated).

# URBAN DEPAVING - PIAZZA SAVELLI NEW STYLE

This initiative is inspired by the Padua Soft City project conceived with the intention and desire to make Padua a more 'European', innovative and ecological city.

The Municipality of Padua and the Chamber of Commerce identified the area of the 'Padua 1' business centre as the site where this project should be developed, exactly in the large car park in Piazza Giovanni Savelli.



# The project

The project was developed by a multidisciplinary working group composed of technicians from the Green Parks and Urban Agriculture Sector and the Public Works Sector of the Municipality of Padua, the University of Padua, and coordinated by Dr. Ciro Degl'Innocenti.

At present, the project has been completed.

The financing of the work is guaranteed by the Ministry of Ecological Transition within the framework of the 'Experimental Programme of Interventions for Adaptation to Climate Change in Urban Areas' to which the Municipality has adhered, obtaining funding of € 809.000,00.



# Key aspects

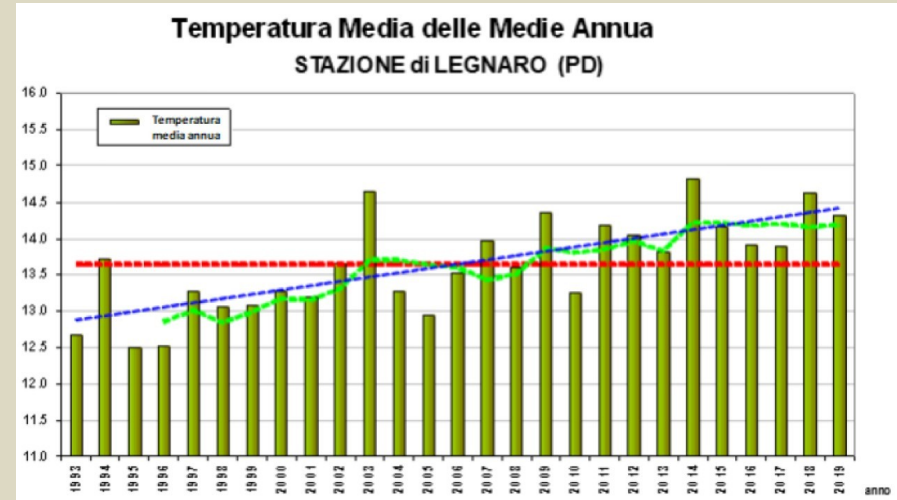
The project emphasises two main aspects:

- the increase in temperatures;
- rainfall.

With regard to the first aspect, data show that the urban area of Padua has experienced an average increase of approximately 0.6 °C every 10 years from 1993 to 2019.

Contrasting solutions include:

- introduction of tree and shrub plantations;
- creation of paved surfaces more thermally 'absorbent'.



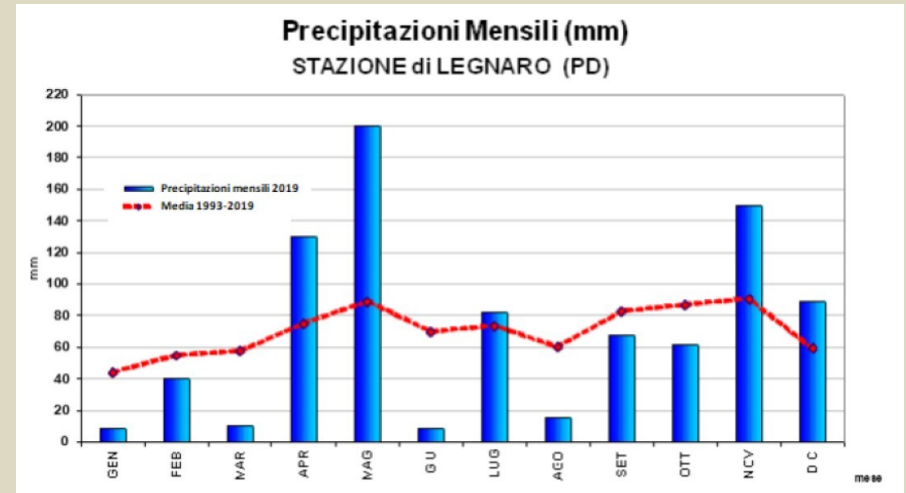
# Key aspects

With regard to rainfall, during the same period, there was a substantial differentiation of the monthly averages found:

- +137% in May;
- - 88% in June.

These clearly show that the differentials between periods of rainfall and drought are increasing.

In this second case it is necessary to intervene on the drainage and permeable capacity of the different surfaces: green areas, pedestrian path, parking and driveway.

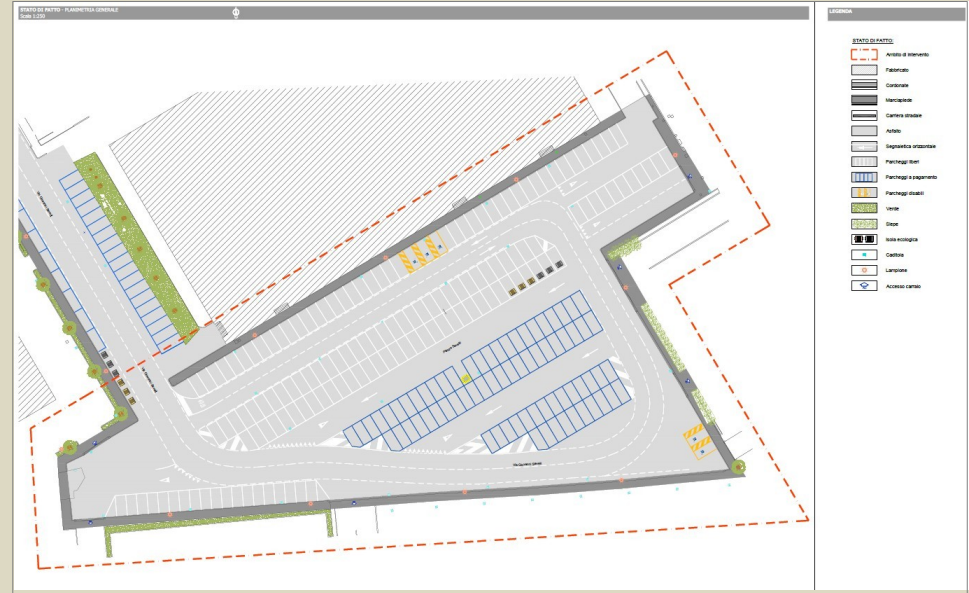


# State of the art before project implementation

Piazza Savelli was a simple, single space used exclusively for public parking, roughly trapezoidal in shape with a small offshoot (roughly square) on the eastern side.

The boundary of the public space coincides with the edge of the perimeter pavements.

A total of 216 parking spaces and a small platform for rubbish bins were present in the area.



## State of the art before project implementation



The square has an area of approximately 6800 square metres and was entirely paved with bituminous conglomerate and therefore completely impermeable.

Within its perimeter the area was devoid of any form of vegetation.





# Aims

The project aims to significantly reduce the negative impacts associated with the effects of climate change, and has as its main focus:

- heat waves;
- intense precipitation events.

In our case, the focus was placed on certain factors that immediately proved to be the supporting and qualifying elements of the project and consolidated tools for achieving the strategic objectives that had been set, namely:

- 1) Decisive increase in the permeability of the intervention area;
- 2) Substantial rainwater capture/reduction/retention systems;
- 3) Planting of trees to reduce the heat island and to capture and store CO<sub>2</sub> emissions.





# Design solutions

## Green areas

Public green areas are the main novelty of the project. As much area as possible has been reclaimed as green space by taking it away from car parks.

A rain garden (draining garden) with a constant width of about 10 m and a length of about 150 m was introduced.





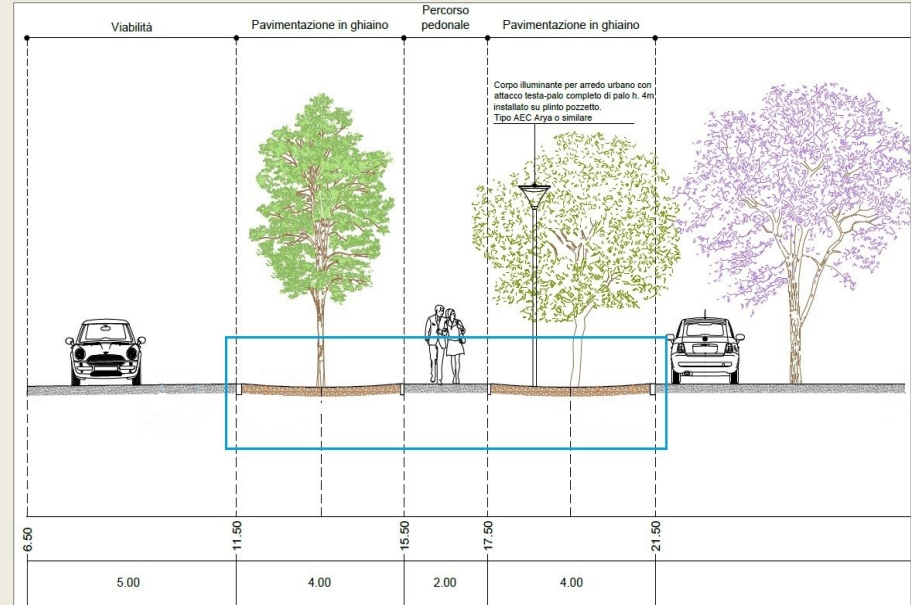


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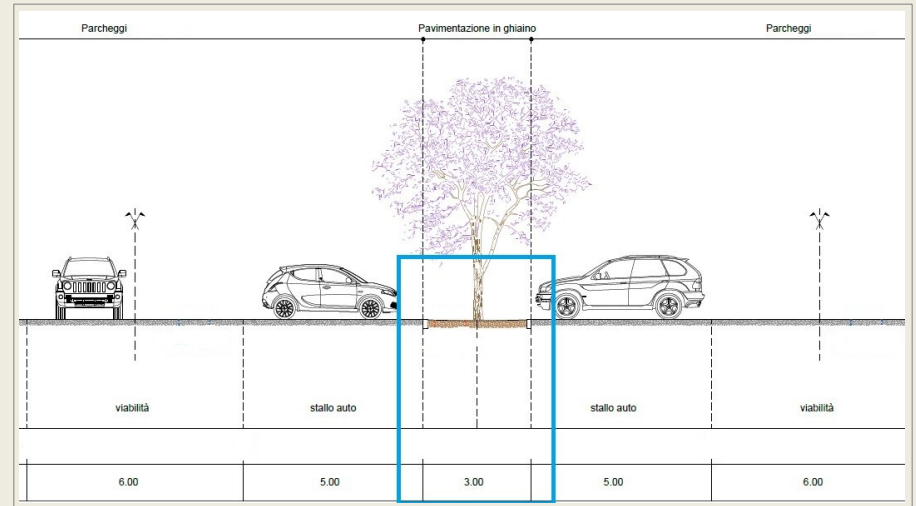




# Design solutions

## The parking spaces and tree-lined flowerbeds

The central car park consists of four comb modules interposed between the four tree-lined green belts delimiting the modules.











# Drainage system

It mainly comprises two types:

- one at public green areas (rain garden).
- in correspondence with road and public parking areas;

The first typology envisages:

- an area of approximately 2000 square metres of green areas;
- a theoretical hydraulic reservoir volume of approximately 300 m<sup>3</sup>.

The second typology envisages:

- an area of approximately 4800 m<sup>2</sup> of paved areas with draining material;
- a theoretical hydraulic reservoir volume of approximately 500 m<sup>3</sup>.

On the whole, there will be a theoretical hydraulic reservoir available over the entire Piazza Savelli of the order of approximately 800 cubic metres, corresponding to a water draught of approximately 12 cm for each square metre of surface area of the square.



# Benefits

To sum up, the project is designed to achieve substantial environmental mitigation benefits.

With regard to the improvement of urban drainage, this intervention will therefore

- return approximately 2000 square metres of the current asphalt paving to a green area
- plant approximately 160 trees of 5 different species
- planting approximately 500 herbaceous perennials.

Regarding the reduction of the heat island, the benefits will be obtained by creating a new pavement characterised by high reflectance.







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Thanks for your attention