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Bioclimatic upgrade of public spaces

Thessaloniki, Greece

IN A NUTSHELL

The municipality of Thessaloniki is committed to designing and implementing pilot projects of urban regeneration based on the local bioclimatic characteristics, in order to adapt to the impacts of climate change.

Background

The city of Thessaloniki, the second largest city in Greece, joined the Covenant of Mayors initiative in 2011, committing itself to increasing energy efficiency and the use of renewable energy sources. The city suffers extreme temperatures, extended heatwaves and water scarcity as well as the threat of flooding during extreme rainfall. Several bioclimatic measures – measures taking advantage of the interdependence of climate, human activity, urban structures, and plant life - have been implemented to combat these dangers. In particular, these measures have focussed on the urban heat island effect. The urban heat island phenomenon, or UHI, occurs in densely populated metropolitan areas with a high level of activity. As a result, metropolitan areas become a lot warmer than the rural areas surrounding them. Even at night, temperatures remain high because buildings, sidewalks, and parking spaces trap the heat. In UHI areas, air and water quality is usually lower than in the rural surroundings.

Beyond water management and heat stress reduction, greening the city contributes to reducing air and noise pollution, increasing biodiversity, and capturing CO2. Antwerp's green plan, adopted in 2017, acknowledges these environmental and ecological benefits. But in many cases, those benefits are barely known and not easy to quantify.

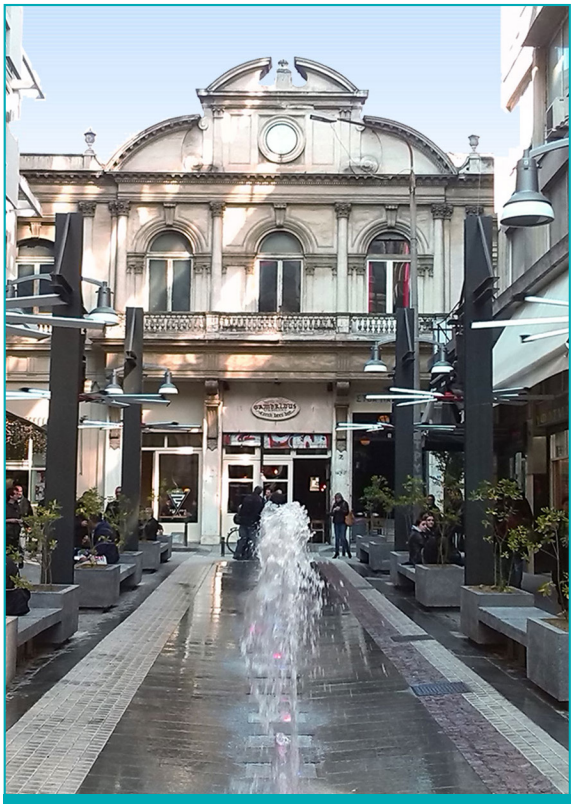
The project 'Bioclimatic upgrade of public spaces' aims to retrofit part of the declining historical centre and modify the microclimatic conditions of this area, especially during the summer period, to protect the vulnerable population from heat and to reduce the energy consumption of buildings with the use of modern materials.

Interventions on the Chrimatistiriou square and commercial centre

The study for reformation of the project area in the historic centre was prepared by the municipal buildings and open spaces studies department of the Municipality of Thessaloniki.

The project includes the bioclimatic upgrade of Chrimatistiriou (Stock Exchange) Square and a significant portion of the old commercial and business centre of Thessaloniki, a total area of approximately 107,000 m^2.

Cut-off from newly developed shopping areas, this neighbourhood suffered from the degradation and abandonment of buildings, traffic congestion and a lack of pedestrian traffic.



Upgrade of Chrimatistiriou Square with fans, fountains and trees

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Population: 375.000	Area: 19,307 km^2
Signatory to the Covenant of Mayors since: 2011	CO_2 emission-reduction target: -40% by 2030

Various interventions have been conducted, such as coating objects with cold materials, installation of bioclimatic systems promoting water evaporation (water jets, water curtains and sprinklers) and forced air movement (throughuse of outdoor fans), installation of new lighting equipment and creation of a pedestrian network as well as tree planting. In the middle of Emporiou (Trade) square, a big suspended fan hanging from an arch ensures a mild airflow thatreaches up to the surrounding buildings and cools down the space. Moreover, part of Emporiou Square has been covered with new stabilised ecologicalmaterial.

In Emporiou street, the pavements have been widened and protected withbarriers along their entire length, trees planted and new urban equipment such as benches, bicycle racks and new lamp posts make the street more liveable and accessible to disabled people. A pedestrian network was created, exceptionally allowing the use of emergency vehicles as well as the vehicles for loading and unloading at certain times of the day. In order to manage the large amount of waste produced in the area during the project, the infrastructure for the installation of high capacity submerged bins was completed.

Several private buildings in the area were retrofitted by their owners and converted from storage sites into spaces for other functions such as offices, residences, education and recreation premises. The project started in July 2014 and was delivered to the public in March 2016: the renovation was implemented in close cooperation with all stakeholders and utilities.

Benefits

This initiative has already proved multiple benefits. The project generated an estimated air temperature reduction of 3°C, which has resulted in energy savings of approximately 141 MWh/year and CO_2 reduction of approximately 156 tonnes/year, by reducing reliance on air-conditioning.

The upgrade of the city centre area should also lead to a stimulation of commercial activities, provide a feeling of security and contribute to the visibility of the history and cultural heritage of the city. Moreover, the area is now more accessible by people with disabilities and the renovation prevents the transit of a large number of vehicles. Permanent parking of vehicles is also prohibited, but the area includes temporary parking spaces in particular for loading and unloading. Furthermore, a Cultural Route has been created to highlight the historical significance of the area and the preserved buildings.

Financing the project

The project's budget amounts to approximately €5,500,000 and was financed by the National Strategic Reference Framework 2007-2013 (the programme under which EU structural funding is implemented in Greece).

KEY FIGURES

3°C of air temperature reduction

141 MWh/year of energy savings

156 tonnes/year of CO_2 reduction (approximately)

FINANCING THE PROJECT

- Financing source(s):
  European Regional Development Fund
- Total amount:
  €5,500,000

USEFUL LINKS

- Covenant of Mayors profile of Thessaloniki: http://bit.ly/2EYR3QE
- Municipality of Thessaloniki (Greek): http://bit.ly/2vOV9tV

CONTACT

For more information on the project, please contact:
Ioanna Tsikoti, Energy and Bioclimatic Department - Division for Urban Planning & Architectural Design
i.tsikoti@thessaloniki.gr