Public space design in an era of climate change, approaching flooding and increased urban temperatures. Applying theory into practice through a bottom up approach: The Lisbon Case

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Urbanized estuaries and deltas. In search for a comprehensive planning and governance. The Lisbon Case

J. P. Costa Et. al

(PTDC/AUR-URB/100309/2008)

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Public space design

Urban flood adaptation through public space design. A contribute to a conceptual framework. The Lisbon case

M. Matos Silva

(SFRH/BD/76010/2011)

Addressing scenarios of flooding in public space design

City identity in uncertain climate change horizons. A research approach for microclimatic urban design in public spaces

A. Santos Nouri

(SFRH/BD/94521/2013)

Addressing scenarios increased temperatures and heat waves in public space design
“What attracts people most, it would appear, is other people”
W. Whyte (1988)

"Water disarms and binds people. In adaptation projects in the city, citizens and different cultures come together. This can reinforce social ties and the sense of safety".
Rotterdam Climate Proof (2009)

“By asking the right questions in sun and wind studies, by experimentation, we can find better ways to board the sun, to double its light, or to obscure it, or to cut down breezes in winter and induce them in summer. We can learn lessons in semiopen niches and crannies that people often seek.”
W. Whyte (1980)
Based on movements such as the Project for Public Spaces by CABE;

What the ingredients that make a public space successful?
Lisbon’s climate change projections with regards to flooding and increases in temperature
1) Greater frequency of low-pressure systems leads to an increase in storm surges (Santos, Forbes et al. 2002, p.185).

2) Average acceleration of sea level rise of 2.6 mm/year\(^2\) (± 1,5 mm/year\(^2\)) - increase of the average sea level (Antunes 2010)

3) Changes in the water cycle flow due to the precipitation and evapotranspiration anomalies, including “more frequent extreme events, such as heavy rainfall in short periods of time” (Santos, Garrett et al. 2014)


Expected climatic thermal hazards until the end of the century for Lisbon include:

(1) Increase of urban ambient and surface temperatures
(2) Increased frequency of heat waves
(3) Increase of maximum temperatures
(4) Amplification of the Urban Heat Island Effect
Köppen Geiger Classification System
Temperature

Mid 20th Century

2100 Projections based on GCMs

F. Rubel & M. Kottek (2010)
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It is often that climatic assessments and thermal comfort studies have resorted to more simplistic and limitative analysis tools.

As an example, the reports of the IPCC from 2001 – 7:

“describe the effect of weather and climate on humans with a simple index based on a combination of air temperature and relative humidity. The exclusion of important meteorological factors such as wind speed and radiation fluxes (...) seriously diminishes the significance of the results.”

(Matzarakis and Amelung, 2008)
Temperature

(Bioclimatic Chart by Olgyay, 1963)
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