

Introduction

Coping with heat islands in the dense urban area of Athens, Greece – Five concepts and integrated needs of action

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Global climate change creates new challenges for urban and regional development all over the world. Adapting to a changing climate requires dealing with multiple uncertainties and complexity in order to allow proactive action. Therefore, cities and regions around the globe face the challenge of exploring flexible and innovative forms of governance which have to address specific local vulnerabilities and build capacity to accommodate future change – the resilient city as planning goal.

From 22 to 27 May 2017 the first out of three Summer Schools within the research program “HeKriS – Challenges of resilience in European” cities took place in Athens, Greece. The topic „Resilience to Environmental Challenges in European Cities“ focuses on extreme weather events in the urban area of Athens, especially urban heat islands and their consequences for humans, the built environment as well as all kinds of infrastructures and services within the city. The germinal question to be discussed during the Summer School is how to handle climate change induced extreme events as planners or architects to aim a resilient, liveable city even for future generations. The task to come to an integrated perspective on the phenomenon of urban heat islands in several neighbourhoods of Athens was realized by five mixed working groups of German and Greek students. The concepts to be developed should not only include aspects about the built environment (like density of housing, fresh air corridors etc.), but, furthermore, questions about planning processes and awareness-rising on the local level, about dealing with uncertainty and complexity and reflecting on the roles of different stakeholders should be raised.

*The scope
of work for
the Summer
School*

Urban heat islands are one of the major challenges in Athens during summertime and will even get more problematic with the ongoing climate change (see FOUNDA et al. 2015). The participating students had to identify these heat islands within a specific neighbourhood, to develop a concept how to tackle this challenge and to describe in detail what this could look like, how the process of implementation can be organized or which stakeholders can be integrated in their concept. The outputs are three posters from each group, including analyses, concepts and detailed plans encountering the above mentioned challenges. These are presented and discussed at the end of the summer school in the auditorium of the participants and keynote speakers.

The neighbourhood the students work with verge on the “Larissa Railwaystation” in the west and the places “Karaiskakis Square” and “Omonia Square” in the south. In the central of the neighbourhood there is the „Viktoria square“ and the „archaeological museum Athens“ next to the National Technical University of Athens. One of the largest public parks „Pedion tou Areos“ is located in the east of the studied neighbourhood.



Figure 1: Studied neighbourhoods in the summer school (Source: Google Maps 2017, changed)

Five student groups started their analysis of the areas by literature reviews on urban heat islands and make fieldtrips to get to know the neighbourhood on-site. This was part of in the first poster: Where is the neighbourhood situated? What characterizes the local context (built environment, societal dimension, and environmental aspects)? How is the surrounding affected by heat islands? What are the main challenges

for you? The second poster should illustrate the main idea of a concept responding to the challenges analysed in the first poster: Which solutions should be realized for preventing the consequences? What visions can change the built environment as well as planning process designs as part of an actor-centred approach? By means of the third poster the students give a closer view through one or more details of their case study. Some of the concepts focus on a large scale, others worked out detailed aspects of their concept either spatially-bounded or facing on spatial relations. Furthermore the time horizon of the concepts differs quite a lot: some concepts play on middle-term effects, others focus a long-term implementation.



Figure 2: Participants of the summer school (Source: Frank Othengrafen)

It is interesting, that starting from international literature and having included the local circumstances all concepts emphasize on so-to-say green solutions. Greening the neighbourhoods plays an important role, especially where the built environment seems to be very dense and unrealistic measures like changing the built environment are not taken into account. Another aspect worth to mention is that in most cases the scope of action doesn't end with environmental issues, but instead tries to find multi-layered solutions to several challenges like social, financial or economic issues. So, an integrated perspective on the challenges climate change increases on the local level is presented in all of the five following concepts:

*Five concepts
and some
integrated
needs*

The concept **Green Networks Exarchia – Resilience Strategy 2050** wants to create a greener, safer and more resilient neighbourhood with more leisure areas, more pedestrian zones and picturesque streets while improving the overall air quality. For the implementation the concept consists of seven steps (1. Information of the public, 2. Emerge self-awareness,

3. Introduction of an intelligent guidance system for traffic, 4. Implementation of incentives to increase multimodality, 5. Implementation of green corridors, 6. Implementation of pocket parks, 7. Connection of spaces and corridors by creating the “green network”). Important condition for a successful realization is the willingness of the local community and the possibility of financing it.

Transforming heat islands to neat islands focuses on three main goals to reduce air temperature and as side-effect to improve the quality of living in generally. The goals cover economic, societal and environmental issues. By reducing heat islands, increasing resilience of the study area and in the long run of the whole city of Athens as well as defining an ‘environmentally friendly development’, the concept contains an action and monitoring plan.

On a residential, district and city level with short- and long-term aims the concept **Inclusive Green for Tackling the Urban Heat Island Effect in Athens** highlights mental and physical health, economic, social and environmental benefits. Through different actions and measures such as transforming Atriums as Miniature Parks, implementing Awareness Raising Campaigns, opening public spaces and a long-term Pilot Project “The Public Park-Station”, the integrative approach by including private as well as public spaces establishes an overall turn of the district in terms of resilience.

With the help of the App “Greender” the concept **The Victoria Square Neighbourhood** tries to create social and environmental resilience through neighbourhood networking. The aim is to plant and share food in community Gardens as well as to reduce traffic and emissions through car sharing. Greender helps to coordinate the network and sensitize people in the topic urban sustainability.

Wind of Change consists of short-term actions such as temporary measures and a launch event to empower the residents to get involved in their neighbourhood’s development. By discovering dedicated persons and informing relevant actors and groups in events and working groups, ideas will be collected and different projects were launched, implemented and monitored. This will lead to a change of mindset.

Bibliography

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