



SESSION DESCRIPTION

F2 Solutions for addressing the urban heat island effect

Presentations

Date: Wednesday, 10 June 2015

Time: 09:00-10:30

Rooms: S01-02

Language: English

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Organized by: ICLEI

OBJECTIVE

Concrete buildings, asphalt roads and other gray infrastructure claim progressively more of the urban surface, contributing to making cities "islands" of heat in comparison to their rural surroundings. City lifestyle and expanding inner-city industries, also contribute to the "*Urban Heat Island*" (UHI) effect. This phenomenon can have a serious negative impact on human health and climate change mitigation and adaptation efforts. Fortunately, cities can apply a number of solutions to reduce the UHI effect, including altering built infrastructure and increasing green spaces.

This session presented several such solutions to addressing the problem, starting with raising awareness among city dwellers. The first presentation discussed the benefits of green infrastructure, and introduced planning tools, including an app that can be used for educational programs. The following presentation introduced the INKAS information portal that can be used by urban planners to develop customizable adaptation strategies against urban heat. Next, a model for heat capture in cities by re-designing existing gray infrastructure was discussed. Solutions for mining heat for energy within old buildings and transferring heat from the urban exterior to heat sinks was explored. Lastly, the city of Almada presented its multi-functional, ecosystems-based adaptation approach to tackling the UHI effect.

OUTCOMES

- Participants learned which tools can be used by local authorities to cope with the UHI effect;
- They gained a better understanding of how infrastructure design (blue-green and gray) can provide a solution to mitigating the problem; and
- They were able to take this knowledge with them to apply in their own cities and regions.

METHODOLOGY

- The facilitator provided an overall introduction to the session topic and contributors. **(5 minutes)**
- Each presentation was allotted 10 minutes. **(4 x 10 minutes)**
- The facilitator managed questions and answers. **(40 minutes)**
- Closing remarks by the facilitator. **(5 minutes)**



CONTRIBUTORS

Facilitator *Michael R. Boswell, Professor, California Polytechnic State University, San Luis Obispo, USA*

Presenters *Ingrid Coninx, Senior Scientist, Alterra – WUR, Wageningen, Netherlands; and
Filip Lefebvre, Urban Environment Business Developer, VITO, Boeretang, Belgium*

Tackling the urban heat island effect

The aim of this presentation is to engage participants in exploring a variety of tools and methods to comprehensively estimate and tackle the Urban Heat Island effect. First, participants will learn more about the Urban Heat Island phenomenon and diagnostic evaluation methods (measurements, satellite imagery and modelling). Next, adaptation strategies will be explored such as green infrastructure. Lastly, a Heat-Check App will be shared that can be used in educational programs to raise awareness among children and adolescents.

Presenter *Saskia Buchholz, Researcher, Deutscher Wetterdienst, Offenbach, Germany*

INKAS – A guidance tool to assess the impact of adaptation on urban heat

This presentation will introduce a new information portal called INKAS which provides guidance for urban planners to develop adaptation strategies against heat in cities. INKAS is based on a large set of idealized urban climate simulations for different urban structures. Simulated adaptation measures include increased reflectivity of materials, and reduced surface sealing between buildings. This guidance tool enables users to assess and compare the effectiveness of adaptation measures for varying degrees of implementation.

Presenter *Anna Oursler, Graduate Student, Graduate School of Architecture, Preservation and Planning (GSAPP), Columbia University, New York, USA*

Mining Urban Heat: Innovation in design and planning of cities

This presentation will introduce a model for mining urban heat based on a case study of built infrastructure in New York City. Findings from a study which focused on recalibrating the demand of energy in urban environments with the supply of excess energy from passive and mechanical sources will be presented. This research thesis asked how much secondary heat is available in cities, from either solar or mechanical sources, and how we can design infrastructure solutions to avoiding wasting heat. Existing and potential solutions for heat capture and reuse will be presented and the transfer of heat from the urban exterior to identified heat sinks, such as water-bodies, salt beds or the deep earth will be explored.

Presenters *Catarina Freitas, Director, Sustainable Environmental Management and Planning Department, City of Almada, Portugal; and*

Nuno Lopes, Head, Division of Environmental Studies and Management, City of Almada, Portugal

Blue and green multifunctional adaptation to attenuate the urban heat island effect

The urban heat island effect is highly significant for Mediterranean cities where heat



waves have recently increased in duration, intensity, and frequency. This presentation will show how Almada is reducing the Urban Heat Island effect by integrating an ecosystem-based adaptation approach in its land use planning. Based on its Heat Island Effect map, the city of Almada has designed several blue-green multifunctional adaptation projects for microclimatic regulation. Examples of projects, bearing a high replication potential in local strategies in similar settings, will be introduced and their co-benefits for mitigating risk exposure and increasing city resilience explained.

Further recommended reading

Informationsportal Klimaanpassung in "Städten (INKAS)

Portal: www.dwd.de/inkas (Temporarily available only in German)
