

Teresa Zölch, Centre for Urban Ecology and Climate Adaptation (ZSK), Technical University of Munich, Munich, Germany. Presenting author.
Stephan Pauleit, Strategic Landscape Planning and Management, Technical University of Munich, Freising, Germany.

Title:

Mitigating heat and heavy rain events via urban green infrastructure: nature-based solutions for urban adaptation planning

Keywords:

Climate change adaptation, ecosystem-based adaptation, multifunctionality, urban planning

Summary of presentation:

Future climate change with more frequent and more intense extreme events is projected to especially affect cities due to high building densities and surface sealing. Hence, urban planning needs to foster adaptation measures to cope with heat and heavy rain events. Traditional, hard infrastructure measures are often perceived as expensive and inflexible. In addition, competition for urban space makes it difficult to introduce new infrastructure that serves only single objectives of risk reduction. Therefore, urban green infrastructure has gained increasing attention as a nature-based solution to climate change adaptation that provides multiple benefits. However, adaptation potentials of urban green infrastructure still lack quantitative assessments, particularly, when it comes to the provision of multiple adaptation benefits through the delivery of regulating ecosystem services. The paper addresses this gap by investigating the mitigating potential of different green infrastructure types to heat as well as heavy rain events. Scenarios of trees and green roofs are modelled by two simulation approaches, a microclimatic and a hydrological one, for a densely built-up inner city area in Munich, Germany. The scenarios' effects on outdoor thermal comfort of pedestrians and the regulation of surface runoff are compared to each other. Finally, synergies and trade-offs between the mitigation of heat and heavy rain are discussed to support urban planners in decision-making for effective climate change adaptation.

Significance of your presentation to adaptation practice, policy and/or business:

This work aims to develop recommendations for urban planners and decision-makers for effective climate change adaptation. Through the provision of quantitative assessments of multiple adaptation benefits of urban green infrastructure the decision-making and the practical implementation of adaptation measures is supported.