



Technische Universität München

Teresa Zölch, Julia Brasche, Johannes Maderspacher, Rupert Schelle, Georg Hausladen, Stephan Pauleit, Werner Lang info@zsk.tum.de

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Multiple benefits of climate change through urban green infrastructure

Introduction

Due to heavy rain falls and urban heat island effect (UHI) cities have to manage an enormous problem, that even increases within the projected climate change. Urban green infrastructure (UGI) can significantly contribute to both climate adaptation by reducing temperature and water outflow as well as to climate mitigation by reducing energy demands. Still these different goals are rarely considered together. The project 'Climate Mitigation and Urban Green Infrastructure' at the Centre for Urban Ecology and Climate Adaptation addresses these challenges by developing integrated strategies for urban planning. While municipalities formulate general intentions for the measures for climate mitigation and adaptation, it is the local level of a neighbourhood scale that needs to translate these goals into action. In three case studies of different settlement types in Bavarian cities, the potentials and limitations of measures for mitigation and adaptation are analysed. Then opportunities and challenges local governments face for implementing climate policies into planning are identified.





ENVI-met modelling: PET (Physiologal Equivalent Temperature) at 3 pm on a hot summer day, colour range 32-62 °C

Qualitative Design of Green Infrastructure Scenarios



Quantitative Simulation of Green Infrastructure Scenarios



Current situation inside a block in Munich

Possible future situation with a maximum of greening

Approach

We examine synergies of different green infrastructure measures with quantitative analyses and qualitative studies. First simulations show how UGI has an regulating effect for the climate and can reduce the residential energy demand in the summer. In qualitative studies we assess how UGI improves the biodiversity in cities and influences the quality of urban open space. To realise climate change related measures, it is important to find strategies for their implementation in urban planning. As a result of the project we develop a guideline to promote the implementation of multifunctional green infrastructure for mitigation and adaptation and to help local governments and planers with implementing climate change related measures into urban planning.

Strategies for the implementation of UGI in urban planning



compact

mid-rise

centre

Mitigation and Urban Green Infrastructure, a project at Centre for Urban Ecology and Climate Adaptation (ZSK) Contact: ZSK, Technische Universität München, Arcisstr. 21, D-80333 München. Tel. +49 89 289 23852, www.zsk.tum.de