## LOCLIM3 Project

Cities face significant impacts from climate change now and into the future (Hallegatte, 2009). These impacts have potentially serious consequences for human health, lively-hoods, and assets, especially for the urban poor informal settlements. Climate change (IPCC, 2013) impacts range from an increase in extreme weather events like hotter temperatures or flooding and effects public health (Matzakaris, 2001). Climate change is a serious challenge for cities around the world, particularly in developing countries where urbanization is happening at neck-breaking speed. It threatens to increase vulnerabilities, destroy economic gains, and hinder social and economic development. The urban poor will bear the brunt of its effects since they live and work in informal settlements and will be more exposed to hazards (Meyer, 1999). Building resilience and adapting to climate change is increasingly a very high priority for cities. Besides mitigation, on which efforts have largely focused in the past, cities should play today a larger role in adaptation.

This study on climate change adaptation in cities is intended to offer mayors and other city officials, in developing countries, practical guidance on how to respond to the challenges of climate change adaptation in their cities. It provides a comprehensive overview of key climate adaptation issues that are relevant to cities, offers examples of good practices and successful experiences, and is a useful guide to other available resources and policy tools on the topic. Therefore an interdisciplinary team is necessary to search on climate change adaption as well as on Urban Heat Island (UHI) mitigation strategies in cities. Climate researchers in this project have experience on how to analyses climate data as well as on simulation with microclimate models. But they need inputs and also discussion with the urban and landscape planners and architects regarding the building structure, material, and the potential change of the city structure. The results of the microclimate simulations for the urban area in the current situation and for the future will be discussed. Therefore it is important to work together with the stakeholders, urban and landscape planners from the city to find an optimal solution for a sustainable and climate change oriented city for the future. The advances of LOCLIM3 is to analyse and simulate the microclimate for Istanbul, Nairobi and Cairo in real time as well as for the future with a high spatial resolution regarding different adaption strategies. These cities have different population, land use, urban structure, climate characteristics (http://www.worldpopulationstatistics.com/cairo-po-pulation-2013/) as well as urban form.

*The first goal* of this project is to estimate the local climate change in these cities till 2090 using the regional climate model COSMO-CLM. *The second goal* is to check different climate

change adaptation strategies like landscape and land use changing, climate oriented urban planning and urban design with an urban model. As an example for urban design the albedo will change such as green roofs (possible use for crop growing, urban gardening) and green facade. *The third goal* is the discussion of climate results (from now up to 2090) and useful adaption strategies for these cities with the project partners as well as with the national stakeholders like architects, landscape planners, which will be invited during the project discussion.

For validation of the microclimate simulations with 200m in these cities, the project will use the permanent weather stations of the national weather service. But these networks were not dense enough to analyse the microclimate. Therefore a meteorological measuring campaign will support the temporal and spatial density of data, like temperature, rel. humidity and wind speed. These mobile measurements will be operated by students from each city with the guide of german meteorological students. This will focus the great interdisciplinary research for young scientist from different countries and different research groups to develop sustainable climate efficient cities.