

Summary

Climate change adaptation and mitigation measures against heat stress regarding architecture will be researched within this project. Climate change will influence the architecture in the future. In this regard, there are different approaches to be chosen. The major questions should be: Shall we spend more energy for reducing heat stress in terms of cooling and air conditioning, or can we optimize building designs for a better indoor climate reducing heat stress with less energy consumption? The second way is obviously the smarter one, and provides enhanced measures against the risks according to climate change. In this regard, this research project will focus on the effectiveness and efficiency of passive architectural measures on heat stress in buildings, and will aim to provide design solutions for existing and planned buildings. Another question is: What are the interactions between indoor climate and outdoor micro-climate regarding heat stress in the buildings, and how can we develop solutions with parametric design? Building energy and fluid dynamics simulations based on EnergyPlus will be run using real and projected weather data in order to make buildings heat-stress-resistant while optimising their design. Hereby, from building envelope to particular materials, each criterion will be analysed collaborating with sub-projects at human and building systems scales.