Environmental Densification Strategies for Berlin`s Urban Blocks
Mitigating the Urban Heat Island

Berlin`s built environment is changing due to urban growth and a resulting high demand for new living space, whereas the impact on the microclimate is widely neglected. The Berlin climate is already challenged by the urban heat island effect. Climate Change and increased urban density will exacerbate this in the future. Hence, the dissertation investigates in environmental densification strategies for the city centre and reflects on applicable measures to mitigate the urban heat island effect.

The core focus of the analysis is the Berlin compact block as the predominant central typology, which accommodates the majority of Berlin`s population and shows the main heat stress pattern during the summer season. The investigations started with literature review and fieldwork at one typical block in order to understand the climatic conditions framed by the prevailing urban layout. Based on that, the climatic behaviour of different notional block configurations was computationally simulated in ENVImet, Diva-for-Rhino and Ladybug. This evaluates the impact of both horizontal and vertical densification strategies on the microclimate, because different urban form configurations essential influence the wind and solar access.

The results evidence that a sensible placement of vertical building mass can help to maintain the microclimatic conditions and preserve space to apply urban heat island mitigation strategies such as shady trees and ecological valuable ground surfaces. This vertical densification approach includes the maintenance of sky view factors to accommodate the majority of Berlin`s population and shows the main heat stress pattern during the summer months in Berlin and Brandenburg.

Outcomes