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Compact or cool? The impact of Brownfield redevelopment on inner-city micro climate

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Highlights

- We evaluate potential tensions between the Ecosystem Service of regulating the micro climate and urban densification processes using the case of the brownfield redevelopment of Bayerischer Bahnhof in Leipzig, Germany.
- Our findings demonstrate that a co-existence between regulating the urban micro-climate and dense urban structures is possible.
- Smart urban planning approaches can lead to cool *and* compact urban areas. Through ENVI-met modeling and virtual reality display system visualization, the complex connections between cool and compact could be assessed.

Abstract

While research has demonstrated that brownfield sites and vacant lots in inner-city areas have a cooling effect on the micro climate, less is known about how this effect changes during the redevelopment of a brownfield. It is often argued that redevelopment will lead to a loss of cooling effects. The connection between cool and compact cities is especially of interest as brownfield redevelopment is an important element of sustainable urban development strategies such as the dense city. We evaluate potential tensions between the Ecosystem Service of regulating the micro climate and urban densification processes using an empirical example, the case of the brownfield redevelopment of Bayerischer Bahnhof in Leipzig, Germany. We apply ENVI-met modeling and a virtual reality display system visualization to assess the complex connections between cool and compact cities. Our findings demonstrate that a co-existence between regulating the urban micro-climate and dense urban structures is possible. Smart urban planning approaches can, if properly implemented, reduce the so called “paradox of the compact city” and lead to cool *and* compact urban areas. Through ENVI-met modeling and virtual reality display system visualization, the complex connections between cool and compact could be assessed.

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