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Spatial Justice in Low-Income Settlements in the Global South – Using Grounded Data from Ahmedabad and Lima to Explore Thermal Comfort and Wellbeing

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Scholars have examined various aspects of spatial justice, including its theoretical foundations, measurement and practical implications. This paper contributes to studies that focus on capturing and explaining spatial inequalities and social exclusion by adopting a longitudinal lens to understand how, in the face of climate change, planning and policies on low-income housing in the Global South can lead to lock-in scenarios that maintain vulnerability and perpetuate spatial injustice. With a focus on energy and housing, it addresses a gap in knowledge regarding how housing trajectories of the urban poor relate to their energy needs over time, and the implications for vulnerability to energy poverty. There is a prevailing assumption that, with connection to electricity, a household can satisfy its energy needs and move out of energy poverty. However, this overlooks several factors at the nexus of housing and energy that can trap inhabitants in energy vulnerability and have health and wellbeing implications. Thus, this research recognises that spatial arrangements can have significant impact on people's quality of life, opportunities and well-being, and focuses more specifically on measuring thermal comfort and understanding inhabitants' practices to cope with heat stress, as well as any implications on energy consumption.

Drawing on primary research in low-income settlements in Lima and Ahmedabad, we investigate two housing processes, auto-construction and in-situ redevelopment, to critically evaluate the hypothesis that, with time, the urban poor will climb the poverty ladder, improve their living condition and wellbeing, and in turn reduce their overall vulnerability. This research adopts quantitative and qualitative methods to capture different aspects of spatial justice: in Lima, data on indoor environmental conditions from a sample of auto-constructed houses were used to construct a calibrated urban building energy model using an open-source tool which can perform dynamic thermal simulations of multiple buildings. This model was then employed to forecast spatially distributed indoor environmental conditions across all houses in the settlements, and investigate the spatial injustice in terms of exposure to health hazards due to poor indoor thermal conditions. In Ahmedabad, household surveys, transit walks, and focus group discussions with female residents in three settlements were conducted to capture perceptions of thermal comfort and energy use behaviors of women in particular. Through this, a gendered lens could be applied which is especially relevant as women typically spend more time indoors, bearing the disproportionate burden of thermal discomfort and related issues.

By examining thermal comfort and the implications on energy access and consumption as well as social and physical wellbeing, this paper seeks to contribute to spatial justice debates as well as draw lessons for more just and sustainable futures. The institutional silos from which energy and urban planning are conventionally approached mean that critical linkages between vulnerability to energy poverty and the built environment remain overlooked. Yet, they have important lessons to offer for spatial justice debates. The findings of this research will help to inform policy and planning which seeks to improve the living conditions in low-income housing in informal settlements such as in Lima and Ahmedabad.