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Improving Livability in Doha: The Role of Neighborhood Microclimates, Land Use, and Materials in Rapidly Urbanizing Regions

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Recent evidence suggests that some densely populated areas of the world will be uninhabitable in the coming century due to extreme climate events (e.g. heat waves, atmospheric pollution, and drought) and due to shifts in microclimate and breathable air, which are directly related to livability. With estimates that over 75% of the global population will be living in cities by mid-century, scholars, practitioners, and government officials are asking what cities can do to address the pressing social and environmental challenges that emerge from climate change. They are also seeking to learn how this knowledge may inform policy decisions regarding physical, social, and economic planning to ensure an inviting quality of life and livability in these future places. We believe that we have an unprecedented opportunity to use our knowledge, technology, and social capacities to reduce the likelihood of producing a catastrophic future.

This study compares the livability of two seemingly unlikely locations – Doha, Qatar, a capital city on the Arabian Gulf, and Portland, Oregon, an important American city in the Pacific Northwest. These cities are growing at different rates, have diverse cultural histories and varied development patterns, yet are attempting to improve urban livability for citizens in each place and its surrounding region. Through an in-depth examination of the physical changes that have occurred in both places and their corresponding urban climate conditions, especially thermal comfort, we describe the similarities and differences that help to define the challenges facing the management of each. We look specifically at two important empirically-derived measurements of livability: air quality and urban heat island effect. By focusing on these environmental stressors in each place, we are able to evaluate the extent to which different growth and policy drivers have impacted the ability for people to enjoy a desirable quality of life in both cities – different, but appropriate to each. We include as part of our approach a conceptual framework, which describes

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the coupling of environmental and human conditions for which changes in development patterns have direct implications on the livability of each location.

As a result of our analysis, we offer insights about actions that show promise of managing future livability in each city and focus primarily on the ability to manipulate selected aspects of urban form – those characteristics of massing, surface materials, and tree cover that can change the air pollution and urban heat stress experience in each place. We focus specifically on landscape and site scale modifications that show promise of improving air quality and/or reducing urban heat as a stressor. Since cities around the world are looking to nature to provide benefits to city inhabitants, we emphasize the salutary role of green infrastructure.

While much is still to be discovered regarding the capacity for cities and their managers to adapt to the emerging challenges of climate change, population growth, and conventional development patterns, yet without sustained and promising actions, the cities that are home to the majority of people today may likely become either obsolete in the coming centuries or present less than desirable living conditions for their future residents.

We recognize that while all cities are unique reflections of their unique biophysical, microclimatic, social, cultural, and natural contexts, they also share many similar circumstances and conditions – the identification of which may help policy makers address climate change more effectively. Our conclusions also support the fact that seemingly diverse cities do, in fact, contain similarities in terms of the local, environmental, and urban design conditions that determine air quality and contribute to urban heat island effect.

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