



INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI
SHORT ABSTRACT OF THESIS

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Thesis Title:

**Influence of Urban Forms on Social Sustainability:
A case of Guwahati, Assam**

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SHORT ABSTRACT

The social dimension of sustainability and the extent to which the physical form of cities may foster it, is gaining importance in the international sustainable urban development context, however in India, the concept remains poorly conceived. New approaches and tools at policy, design and implementation levels are highly biased towards environmental and economic sustainability, ignoring the social dimension which is fundamental to the character of Indian cities. This narrow focus coupled with massive and inequitable urban growth has resulted in social crises often evident in the cities physical forms posing critical challenges to sustainable urban future. Past investigations in the western context have also remained less satisfactory, further raising concerns about their applicability to the developing world cities which face essentially different urbanisation challenges and socio-cultural shifts. As India prepares itself to become an urban majority in 2050 by giving shape to its futuristic smart cities, there is clearly a pressing need to develop stronger empirical evidence about the influence of urban forms on social sustainability that links to sustainable designs, policies and practices. This research therefore, tests the influence of urban form components (open spatial-network, land-use, density, blocks and built-components) on six aspects of social sustainability using both, qualitative and quantitative strategies, which are calibrated and validated for Guwahati, the dominant city of North-East region of India. It asks: Do urban forms (at neighbourhood and block-segments scales)

*significantly affect various aspects of social sustainability? If yes, to what extent and in what ways? The quantitative findings for two urban form types using six case studies show that neighbourhood forms with connected and integrated street network, higher proportion of accessible open recreational spaces, higher mix of uses, higher densities and smaller compact urban blocks display higher levels of social sustainability amongst its residents, after controlling for intervening variables. Qualitative findings for four urban form types using twelve case studies further illuminate this complex relationship at the scale of block-segments. It highlights five key theories: 1) Intervening Variables (high number of intervening external variables), 2) Spatial Proximity (relative closeness based on physical distance), 3) Favourable Spatiality (spaces for social opportunities) 4) Complementing Synergies (integration of urban form components to produce a combined positive effect) and 5) Tipping Point (point after which urban form components starts to show negative effects). The research findings are finally translated into social sustainability framework focusing on 1. Robust and achievable **Social Policies** (topdown); 2. Incremental and flexible **Social Design** principles (linking top-down & bottom-up); 3. Participatory and empowering **Social Actions** (bottom-up). Based on this framework the thesis further provides urban form design guidance specific to the city of Guwahati.*