The Future Ground: Urban Planning Under Climate Uncertainty (Case: Mumbai Metropolitan Region)

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Project Note and interview agenda

Making cities climate-resilient is a key priority for achieving the Sustainable Development Goals (SDGs) and several targets of the Sendai Framework (SFDRR). Towards this, cities are adopting a variety of approaches such as nature-based solutions, adaptive urban planning, blue-green masterplans, multifunctional urban spaces and large-scale retrofitting of infrastructure. In most cases, these are run as small to medium scale pilot projects or unique monumental projects with little to no integration with the longer development agendas of the city. Planning decisions that are unmindful of long-term hazards and economic reforms challenge the sustainability of the city and create path-dependencies that have long-term implications on urban growth. However, in dense metropolises, integrated planning is easier said than done. Conventional linear urban planning processes and master plans are not backed with sufficient evidence or the capacities to account for long-term resilience objectives. Hence, the focus remains on well-defined, short-sighted risks as opposed to evolving uncertainties that plague planning decisions of the future.

To plan for evolving uncertainties, urban planning must adapt. In this exploratory Ph.D. research, we will develop and test a methodology for urban planning under long-term climate uncertainties. More specifically, we explore the potential of existing urban development plans (or master plans) to accommodate decisions in anticipation of long-term climate uncertainties (see Fig. 1). In doing so, we approach climate resilience as a spatial challenge to explore how planners can enable the long-term transformation of the urban environment. The research will use Mumbai as its case study to develop, test and refine the methodology.

Knowledge impact

The intended outcome of this research is **a methodology that allows setting long-term planning strategies while accounting for short-term development needs.** There are two important steps:

1. Step 1: We analyse existing discourses and frameworks around urban planning, climate resilience and uncertainties to establish the requirements and constraints city planners face in the path of long-term decision making. This involves extensive interviews with planning and development experts.
2. Step 2: We use the results from Step 1 to develop a resilient **site suitability plan** for Mumbai that can form the basis for short term (5-20 years) and long-term planning decisions (40+ years). This will combine a quantitative land-use modelling framework with the *climate adaptation pathways approach* (which was applied successfully for the Netherlands

National Flood Risk Management Programme) for 2100[1]. This will be its first application to urban planning.
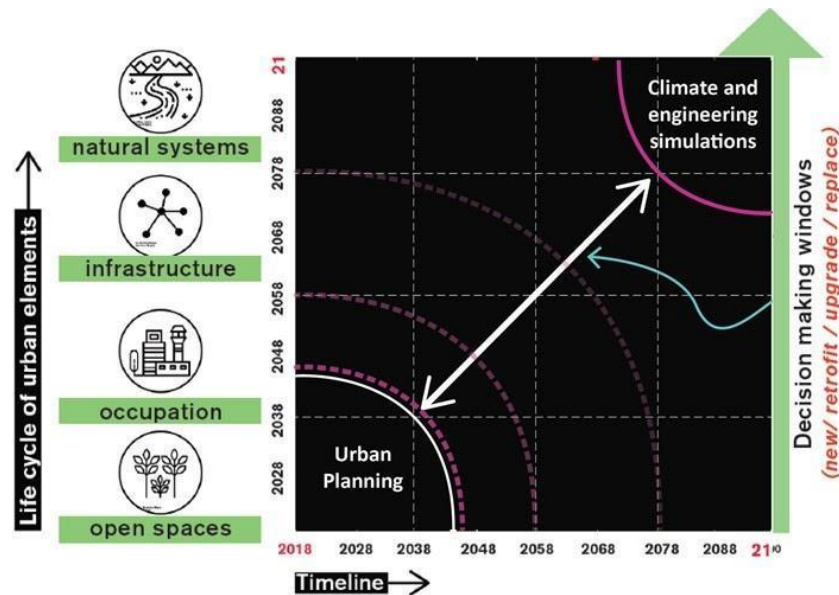

Fig. 1: A schematic representation of the timelines of: (a) the urban planning process; (b) climate projections; and (c) life cycles of elements in the built environment. [Adapted from Roggema, R. ed., 2012. Swarming landscapes: the art of designing for climate adaptation (Vol. 48). Springer Science & Business Media]

Interview agenda [60']

Introduction [10']
- Introductions and overview of the research.
- Adopting an uncertainty perspective in urban planning for Indian metropolises.

Climate-resilient urban planning for Mumbai [30']
- How to spur urban reforms in Mumbai that are climate resilient?
- At what spatial scale can these be translated as projects?
- Issues with the current master planning process.
- Big knowledge gaps in being able to make long-term planning decisions for land-use and infrastructure.
- Regulatory and policy challenges.

Reflections on the future of urban growth for Mumbai [15']
- Future visions and hypothetical scenarios of growth and densification for Mumbai.

Wrapping up [5']
- Room for additional questions and comments.
- Other experts to connect with.

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[1] https://english.deltacommissaris.nl/delta-programme/regions-and-generic-topics/spatial-adaptation

Note: This interview will follow the Ethics regulations set out by the TU Delft. All your responses will be anonymized unless explicit permission has been taken. Recordings if any made with permission, will be deleted once the interview has been transcribed. This is a voluntary research exercise and you may withdraw your consent or responses from the interview at any point.

Bio: I am a doctoral researcher at TU Delft's Resilience Lab in The Netherlands. I studied architecture at Sir J J College of Architecture followed by a Masters in Urbanism (Hons. in Infrastructure and Environment) at TU Delft, Netherlands. Most recently, I was on the team developing the Coalition for Disaster Resilient Infrastructure (CDRI) in collaboration with the United Nations Office for Disaster Risk Reduction and National Disaster Management Authority, India. I am a licensed architect and have previously worked with prominent design offices in India.

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