

KEEPING YOUR FEET DRY

Local adaptation strategies to bring about flood resilience in Chennai Metropolitan Area, India

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COLOPHON

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Rethinking urban planning and flood resilience in Chennai Metropolitan Area, India.

P4 Reflections:

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https://commons.wikimedia.org/wiki/File%3AAerial_view_of_Chennai_during_floods_-_2.jpg

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The main research question of this project was to explore the ways of integrating local adaptation strategies for bringing about flood resilience in the Chennai Metropolitan Area. The project carves a strong case for the relevance of the social dimension to approaching urban planning and resilience. The process which spanned across 10 months was a highly lateral and iterative one, in which the project approach was first moulded by research and then further applied through design proposals.

CHOICE OF STUDIO: COMPLEX CITIES

The Complex Cities research studio places immense focus on the relationship between spatial planning, spatial design and policy recommendations while reflecting on the various socio-economic conditions of urban settings. This project although dealing with the core aspect of flood resilience, recognised flood vulnerability was fundamentally an implication of a gap between urban growth and environmental performance. This gap resulted in the adoption of a spatial planning approach to the project and being placed in the context of India, the sub group 'Inclusive cities in the Global South' was an obvious choice.

REFLECTIONS ON PROJECT APPROACH AND METHODOLOGY

Flood management from a socio-cultural perspective:

In the initial phase of the project, the problem analysis was carried out in order to understand the multiple aspects that contribute to increased risk in the region. This study was carried out from a flood management and infrastructural point of view. However further into the process, upon the analysis of the social and economic layers, a strong case was made for the social aspect of resilience. At this point, the project approach shifted towards making a strong case for building social capital and its influence over how cities urbanise and cope with risk. The project hence pursued civic engagement and placemaking strategies to address bottom-up solution that over time will make the region more adaptive.

Relationship between research and design:

The project initially looked at the main problem of flooding through a larger lens which investigated the contributing factors and trends influencing the increased flood risk in the region. The main problem was that urban planning and growth had taken place in complete conflict of climate adaptation and resilience. This conflict between human and nature paved the way for the initial project approach which was derived from Davoudi's (2012) concept of Evolutionary Resilience. In order to further understand this conflict, a socio-spatial analysis that investigated urban development processes was conducted. The findings from this study pointed towards an exclusive and fragmented institution, strong economic and infrastructural trends influencing urban form and a ruptured hydrological system influencing flood risk. These findings were then plugged into the theoretical framework which argued in favour of socio-ecological resilience in this case, where conflict is prevalent and risk is inevitable. These elements shaped the final project approach such that social infrastructure was the link between economic aspirations and environmental restoration.

In the phase of translating research findings into design, fieldwork was an important turning point in the process. This fieldwork was strategically placed between the research and design phase in order to first build a strong theoretical framework and then use observations, stakeholder interviews and site visits as a means to not only verify and corroborate the research but to also investigate the feasibility of the approach. As planned, the fieldwork yielded fruitful results and one of the key findings was that of the concept of the 'edge' which became the spatial medium in which the research was made tangible into a design proposal. In addition to this, the edge became the spatial link across the various scales that the project was working across. The design intention proposal hence was formulated as the 'reconfiguring of the edge' such that by retrofitting social and cultural networks, it acts as a leverage for environmental restoration leading to the design of a new type of green-blue infrastructure.

RELEVANCE OF THE PROJECT:

The issue addressed through this thesis, which involves the disaster of flooding immediately has implication of the societal aspects of the region. The project recognised, early on in the process, the need for social and climate justice which was an important part of the theoretical framework. Arguments were made in favour of inclusive approach to

planning and hence the concepts of community resilience, participatory design and civic engagement were given focus. This gave new insights into how flood management strategies may be planned and contributed to the sub-research group being 'Inclusive Cities of the Global South'. The research also attempted to make tangible, the concepts of social, economic and environmental capital and by testing these in the context of Chennai in India, new insights were given into working across scales in a developing context. Reflecting on the nature of the approach adopted, the public-private-community partnership is highly relevant in this case and the project has responded to this normative framework through its research and design proposals.

The project further was placed in a time when awareness about the risk of flooding was highest in Chennai, especially in the aftermath of the 2015 floods making it highly relevant. The project benefitted immensely from the ongoing discussion and proactive participation of the various stakeholders making it well informed. This research also contributed to the on-ground discussion by the means of a community co-evaluation workshop which was organised by the author as part of fieldwork. Having used diverse methods of research, analysis, spatial design and planning, this research can now go on to contribute to further discussions which not only looks at flood management but also the development of social capital which is yet to be explored from a planning perspective in Chennai.

CHALLENGES:

In this graduation project set in the context of India, the biggest limitation was that of availability of data and documentation of the region. While in most cases the masterplan documents did contain the elemental information on the infrastructure at the regional level, data on water networks, services and neighbourhood functionality was scarce. In addition to this, different departments engaging in the same field of research presented varied findings which in some cases corroborated each other while in some, did not. Hence, this resulted in an additional process of verification which in turn was a laborious process. As a result of this limitation, it was difficult to represent completely, the Chennai Metropolitan Area. This project has however attempted to overcome these limitations by carrying out a sincere system of check and balance where each data was first sourced from various sources, tabulated against each other and used for the research and design applications.

RECOMMENDATIONS FOR FUTURE RESEARCH:

- Considering the limitations mentioned above, a conscious decision was made in the process early on, to limit the design proposals at the Nano scale to only two neighbourhoods. This ensured in depth analysis and design applications for the selected neighbourhoods. For this purpose, place specific data was produced to yield tailor-made solutions which following a step-by-step methodological approach which was established as the benchmark for the design of neighbourhoods in this project. Hence, this approach can be further applied to other neighbourhoods in the region, while responding to their place specificity.

- While on one hand the project systematically designs the particularities and details of the social aspects of addressing water resilience through event programming, civic engagement strategies and stakeholder involvement strategies, on the other hand, the technical aspects of the project which have been less focused on, could be a future research that could be pursued. Through an interdisciplinary design process consisting of fields such as architecture, civil engineering and water management, the technical performance can be further designed in detail. To already build a framework for this research and facilitate a sophisticated structural design of the storm water infrastructure, the peak run-of rate using the rational method has been determined as part of the project.

- During the research and fieldwork, a fragmented institutional structure was identified. As a result there were several gaps in the functioning of the different departments engaged in urban development and water management process. In response to this, the project proposed an autonomous body that oversees the realisation of flood resilience by facilitating a common forum where there is representation from all departments influencing urban growth and services. Future research can explore the other potentials for the design of the institutional structure and its feasibility in the context of Chennai.

