

A Sustainable Framework for
Resilient Communities

reflection paper

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Global Housing

The Project

In 2008, for the first time, the urban population surpassed the rural population worldwide. By 2025, estimations show that the global affordable housing gap will affect one in three urban dwellers, about 1.6 billion people. India is on its way of becoming the world's most populous country and is expected to have around 1.5 billion inhabitants, by 2030 (Woetzel et. al, 2014). The studio of Global Housing deals with the question of affordable housing in the Urban Global South and invites you to rethink the current systems of affordable housing production in developing countries, through designing an affordable housing scheme in Nalasopara, a Mumbai suburb. Being one of the top dense cities in the world, Mumbai represents some of the most complex conditions within the global affordable housing issue, which the studio aims to address.

In the 1990s, India experienced an economic liberalization which marked the start of the country's market-driven housing development. In practice, these developmental trends have led to problems, as the main focus has been on efficiency, building quickly and cheap. Today, cities in both developing and advanced economies around the world, struggle to meet the demand for affordable housing and the amount of people living in slums is increasing. At the same time, the statistics show a growing number of vacant properties in India and Mumbai. How can there be a growing vacancy, when India is experiencing a housing shortage and an increasing number of people living in slums?

Since the start of the market-driven housing development, developers have been taking advantage of the housing shortage crisis in order to gain profit targeting middle to higher income groups. As land prices have increased these houses have become unaffordable even to these income groups,

leaving them vacant. Furthermore, policy making in India has mainly concerned itself with numbers trying to feed the demand. The main purpose has been to house as many dwellers as possible, with the lowest possible investment. The urban living spaces developed as a result of this, can in many regards be associated with "storage boxes" instead of being part of living and vibrating communities in the best interest of its residents. Some of the dwellers I encountered on the study trip to Mumbai, were unhappy with the conditions these developments offered and had either planned to move out as soon as the opportunity arose or had already moved back into informal settlements. *"In spite of the continuous efforts by the government, slum dwellers are hesitant to move to the offered affordable houses, due to lack of proper infrastructure and means of livelihood (Bhattacharyya, 2016)."*

If the current affordable housing developments fail to adapt to the different needs and livelihoods of the dwellers today, how can we expect them to be suitable for future user needs? When the migration flow to the city is increasing.

Housing projects being developed in the future, must therefore challenge the previous problematic development trends built on efficiency in the past. In order to do so, Jan Bredenoord, Paul Van Lindert and Peer Smets state, within their book 'Affordable Housing in the Global Urban South: Seeking Sustainable Solutions', that new communities being developed for the future must foster resilience. Resilience is a systems ability to adapt to change. Cities and urban spaces make up, as Charles Correa once said, *"a whole system of spaces that people need (Correa, 1989)."*

"Urban living involves... a whole system of spaces that people need."

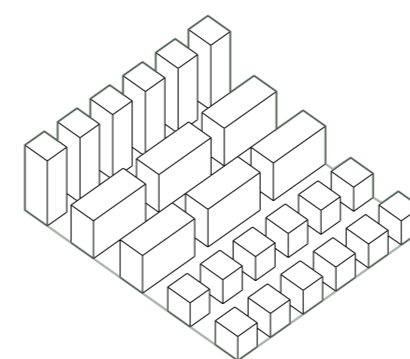
Charles Correa

In nature, Bredenoord and his colleagues explain, *"ecosystems have survived over time by adjusting to changing circumstances resulting in a search for equilibrium between two opposing poles, of efficiency and resilience. The healthiest systems have an optimum balance between the two extremes, which may be described by the term sustainability (Bredenoord et.al, 2014)."* Furthermore, cities and urban spaces can be seen as patchworks of green

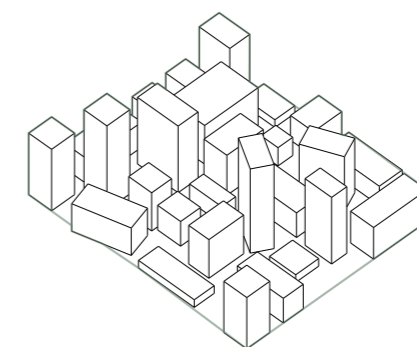
space, biodiversity (including people), non-biological structures (buildings), biophysical processes and energy flows, and are in that way comparable to natural ecosystems (Maddox, 2012)."

The balance between the two extremes, sustainability, can be defined as a trade-off between efficiency and resilience. On the one hand, too much efficiency will lead to little diversity and stagnation in the system, while too much resilience will lead to too much diversity and a lack of coherence and purpose to grow. The goal for future housing developments should therefore be at aiming for an optimum balance between the two. It is upon this background that the graduation project's topic of 'Resilience' and the research question of my project was defined.

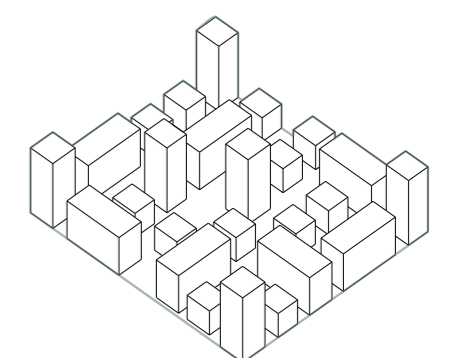
In the following sections of this paper, I will reflect upon the research and design development of this graduation project. Finally, the paper will elaborate on the graduation project's relevance in a wider social context and ethical issues and challenges encountered when designing a housing scheme in foreign contexts.



Too much efficiency



Too much diversity



Trade-off

Method and Approach

The main research of this graduation project can be divided into two phases. The first phase, prior to our visit to India and the second phase, during our site visit to Nalasopara. Due to the complexity of the issues and context addressed within the studio, and the limited time at hand, the studio focuses its research on collective group work. The following section of this essay describes what methodologies were used during each of these phases and why I believe these methodologies were important in the research of this graduation project.

Quantitative Research

For the first phase of the project a quantitative research was done in groups, building up a collective knowledge base about India and Mumbai through different historical periods of time. During this phase of the project, I studied aspects and statistics relating to history, religion, economics, demography, climate and politics. When reflecting back, I realize that starting the project with a quantitative research was important as it defined the intellectual background to my project and formed the basis for further research and development.

Spatial and Typological Analysis

A qualitative method was also used to analyze the urban fabric and growth of Mumbai, in order to understand how the city has developed through time. Finally, the first phase of the project concluded with an analysis of morphological and typological characteristics of different case studies, looking into the urban layout, program, access and circulation, building typology and unit types of housing projects developed around the Mumbai Metropolitan Region.

The housing projects studied, represented a wide range of different types of housing developments and housing typologies, from low-rise incremental housing to high-rise towers. This study was important as it defined and illustrated the previous affordable housing developments and gave references for the development of an alternative.

Ethnography

The second phase of the project was based on a qualitative research during our site visit to Nalasopara. Participant observation and the methods of Visual 'Micro' Ethnography was used to investigate the relation between space, place and people, by studying the practices and activities of the people and the spaces they inhabit in a place, in Nalasopara East. As designers, we have no control over the people who inhabit the spaces we create and their changing needs, however we can make a difference by the way we create the spaces they inhabit and use in a place. To be able to explore possible strategies for a housing scheme in Nalasopara, the graduation studio of Global Housing therefore recognizes the importance of understanding the existing activities and patterns of inhabitation of the people. The knowledge gained through the study of the different patterns enabled me to understand what architectural and urban spaces were needed to cater for the various needs and uses of the people in Nalasopara today. This part of the research was crucial to the development of the graduation project, as it helped me understand the practices and activities within a context and culture significantly different to my own.



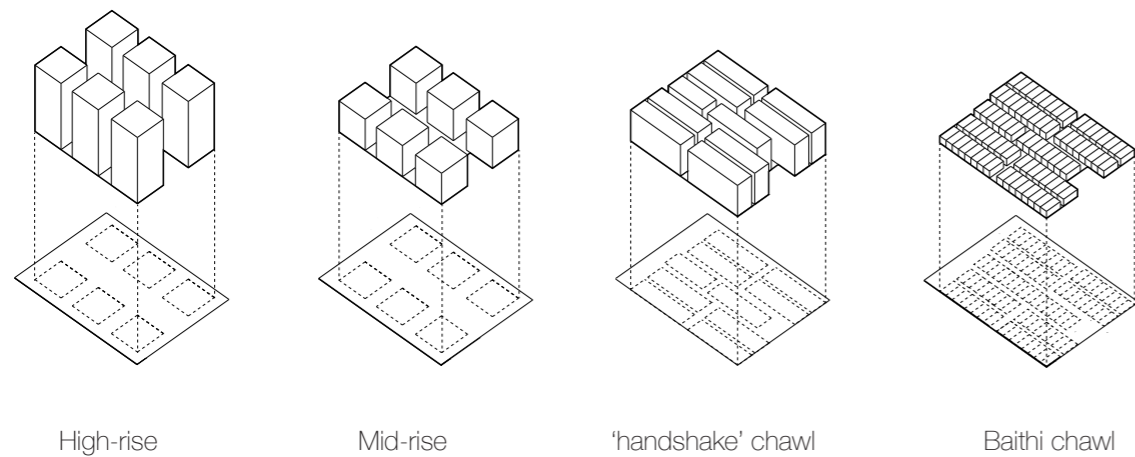
Research and Design

When having to design a housing scheme in a foreign context and for a culture that you know little about, research becomes a very important part of the design process and has therefore influenced both the development and design outcome of this graduation project. In the following section I will try to explain the different parts of the design development in the graduation project, reflecting on how research has influenced the development and the final design outcome.

Problem Statement

When arriving back from the study trip to Mumbai, we were given a few weeks to develop a problem statement. With little prior knowledge about India and Mumbai, the first phase of the project's research really helped form the intellectual background of my project. Using the research collected within our research book, combined with the experiences I had during my visit to the city and some additional individual investigation, I developed an understanding of and awareness to the problems related to affordable housing in Nalasopara and began drawing parallels between the data collected within the group research (politics, economy, housing developments) and the conditions I observed on the study trip.

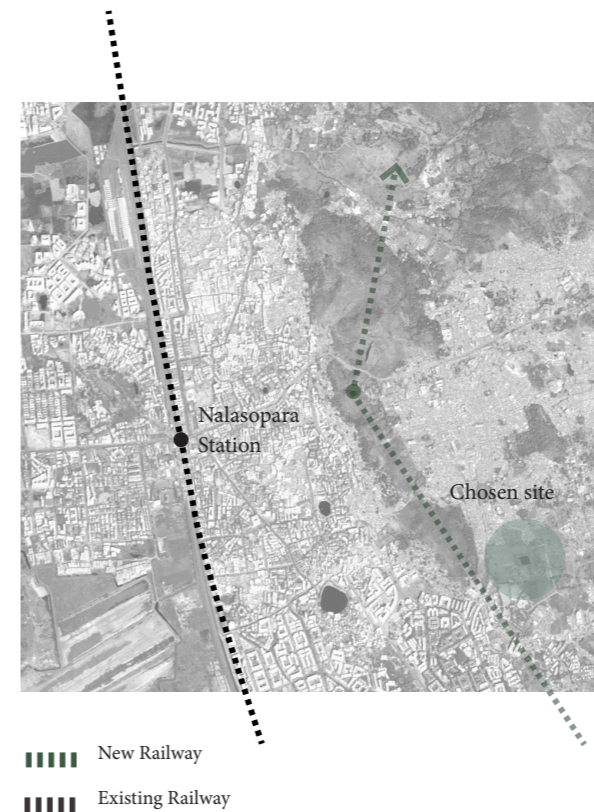
The analysis of case studies and my observations during the study trip, exposed the current trends of affordable housing development in Nalasopara and the commonly 'copy pasting' of a single and standardized housing typology and unit type to create new communities. Following the trip, I found that the problems I had observed in the current development could be linked back to the developers focus on efficiency and the market-driven housing development. Which again had become a result of India's transition into economic liberalization in the 1990s. I also formed an understanding of the current affordable housing developments lack of adaptability, when observing how these developments fail to cater for the diverse religions, cultures and livelihoods of the people in Nalasopara today. By drawing parallels to the migration and population data collected within the group research, I began to understand the increasing need for the city to be able to adapt to changing user needs and practices in the future. This led to my research on resilience and my understanding of its relation to efficiency and sustainability. The reflection on the first two phases of the project, as well as the additional investigation I did after the trip, helped from the problem statement of the graduation project.



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Site Selection

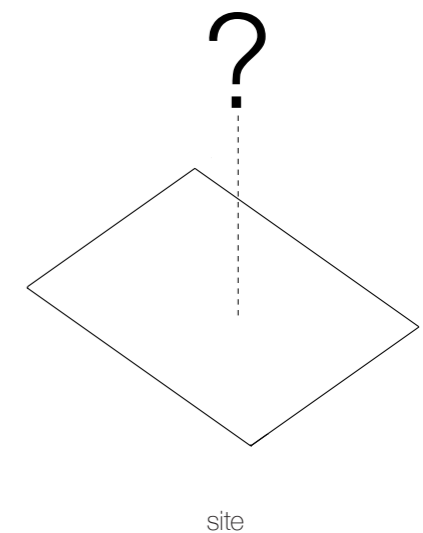
The study of urban growth in Mumbai and the spatial analysis, during the first phase of the research, allowed me to understand the city's growth pattern and how the city had grown and expanded along the railway corridors towards Nalasopara and the northern parts of the Mumbai Metropolitan Region. The knowledge I gained from this research helped me later on in the project when making an assumption for the city's future growth. Furthermore, the historical growth of Nalasopara showed larger areas of green being encroached upon by informal and unplanned settlements during the past two decades. My spatial analysis of the city's growth and assumption for the future, led to the selection of the graduation projects site, in Nalasopara East, on a greenfield near the planned development of a new high-speed railway track.



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Research Question

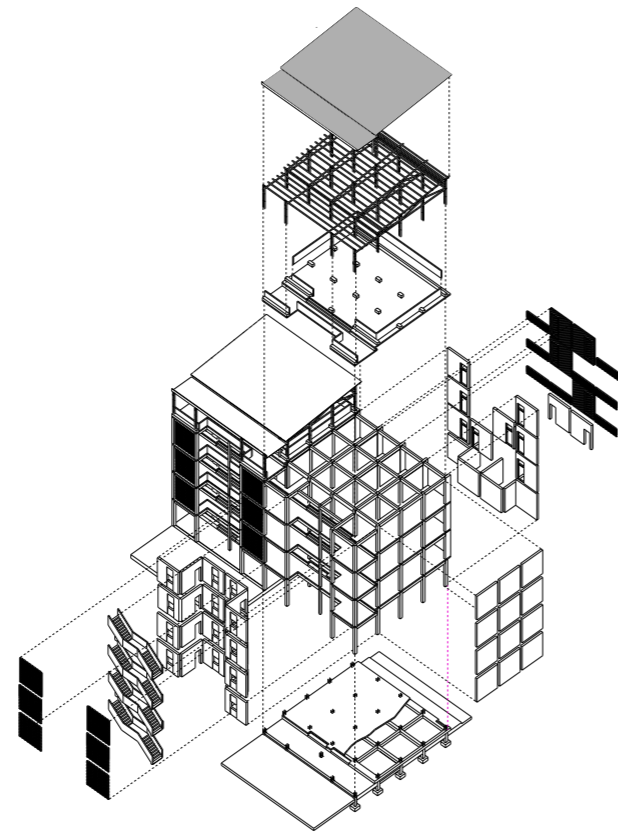
Through the research within the three different phases of the project, I developed an understanding of the current situation and problems in Nalasopara today, the different practices and activities of the people, the meaning of efficiency and resilience and the importance of achieving a balance between the two. This led me further on to the question of 'how' all of this could be implemented into an affordable housing project for the urban poor in Nalasopara. How could this project propose an alternative strategy, to the current development trends of affordable housing, on the chosen site and achieve an optimum balance between Efficiency and Resilience? I had learned to understand the concept of resilience and the need for diversity, but how could this be translated into an affordable housing project and how would efficiency still play a role in this trade-off? These questions later formed the main research question of the graduation project.



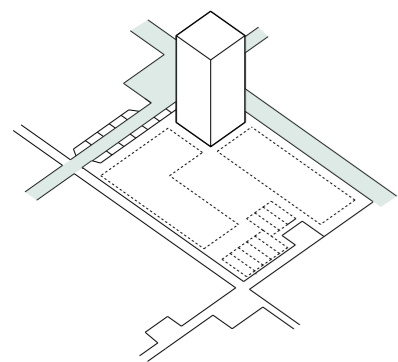
Design Outcome

Using the knowledge, I gained during the different research phases and the feedback I got from the tutoring sessions, I developed a design hypothesis in form of a framework. The framework has been refined throughout the design development and is today formed on my understanding of the different aspects necessary to create an optimum balance between efficiency and resilience in an affordable housing scheme in Nalasopara, and thereby aiming to achieve a sustainable alternative to the current housing developments built only on efficiency.

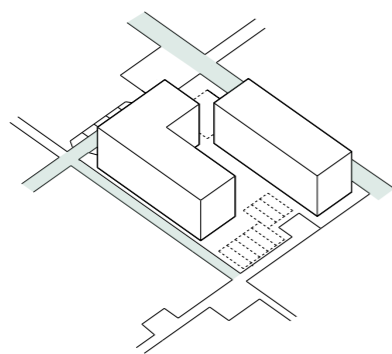
The framework is based on a simple module of 3.1 x 3.1, it uses a relatively reduced palette of materials and a local construction method to achieve efficiency in the new housing scheme. Furthermore, resilience, and the optimum balance, is achieved by the way in which these can be combined to create diversity of three different housing typologies, the tower, the slab and row-housing. Each typology provides the housing scheme with different characteristics and opportunities, aimed to cater for diverse livelihoods and income groups in Nalasopara today and their changing needs for the future. The framework, and the research and feedback it is built on, has been the main driver for the development of the graduation project and will continue to influence it until the final design outcome at P5.



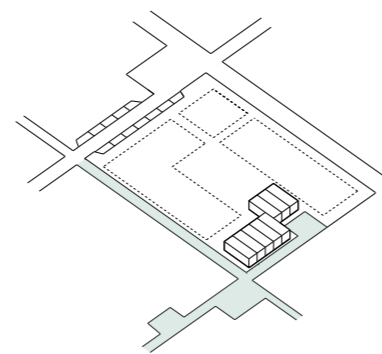
Exploded axo of the slab typology, exposing the module, materiality and construction method.



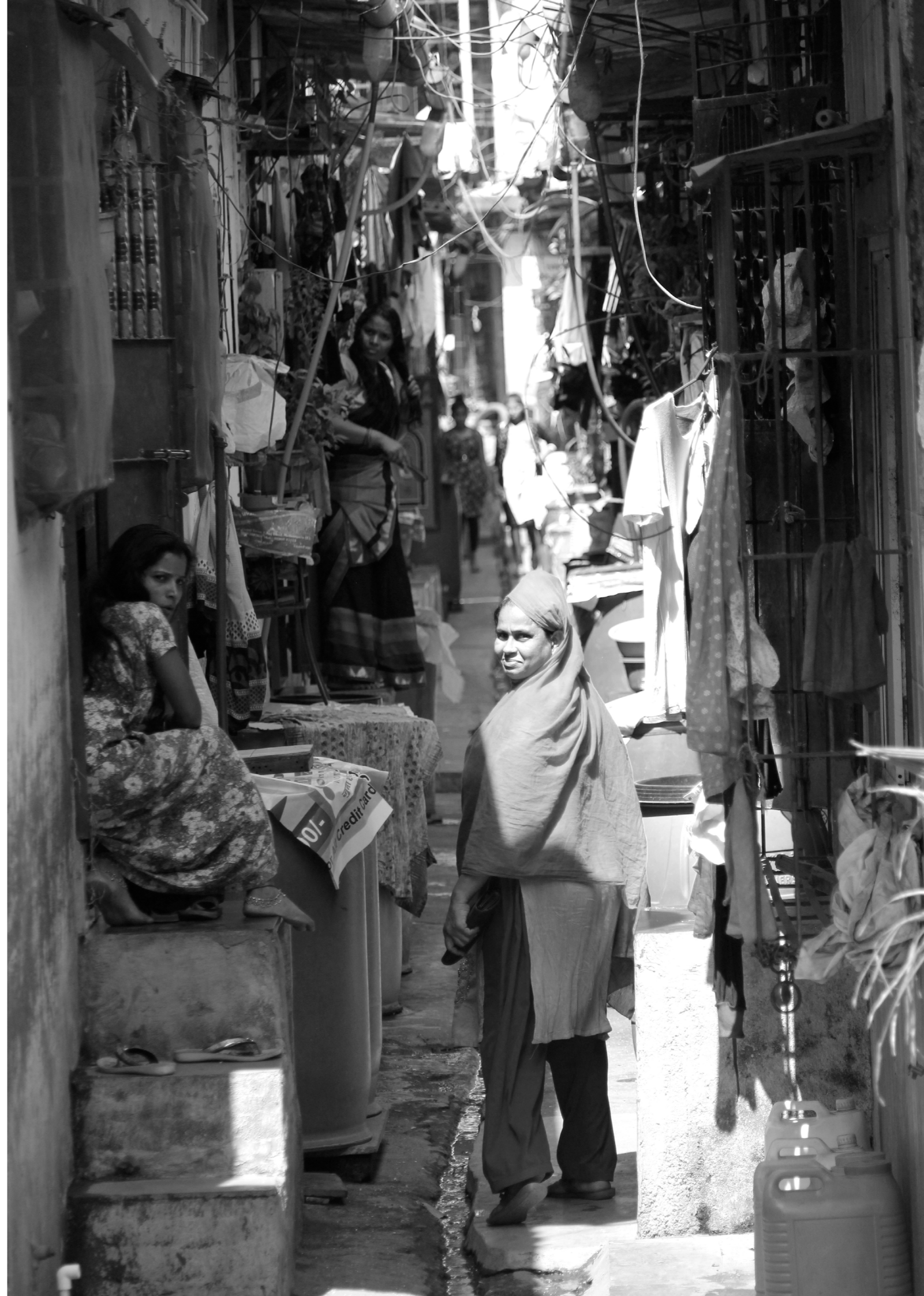
The Tower



The Slab



Row-Housing

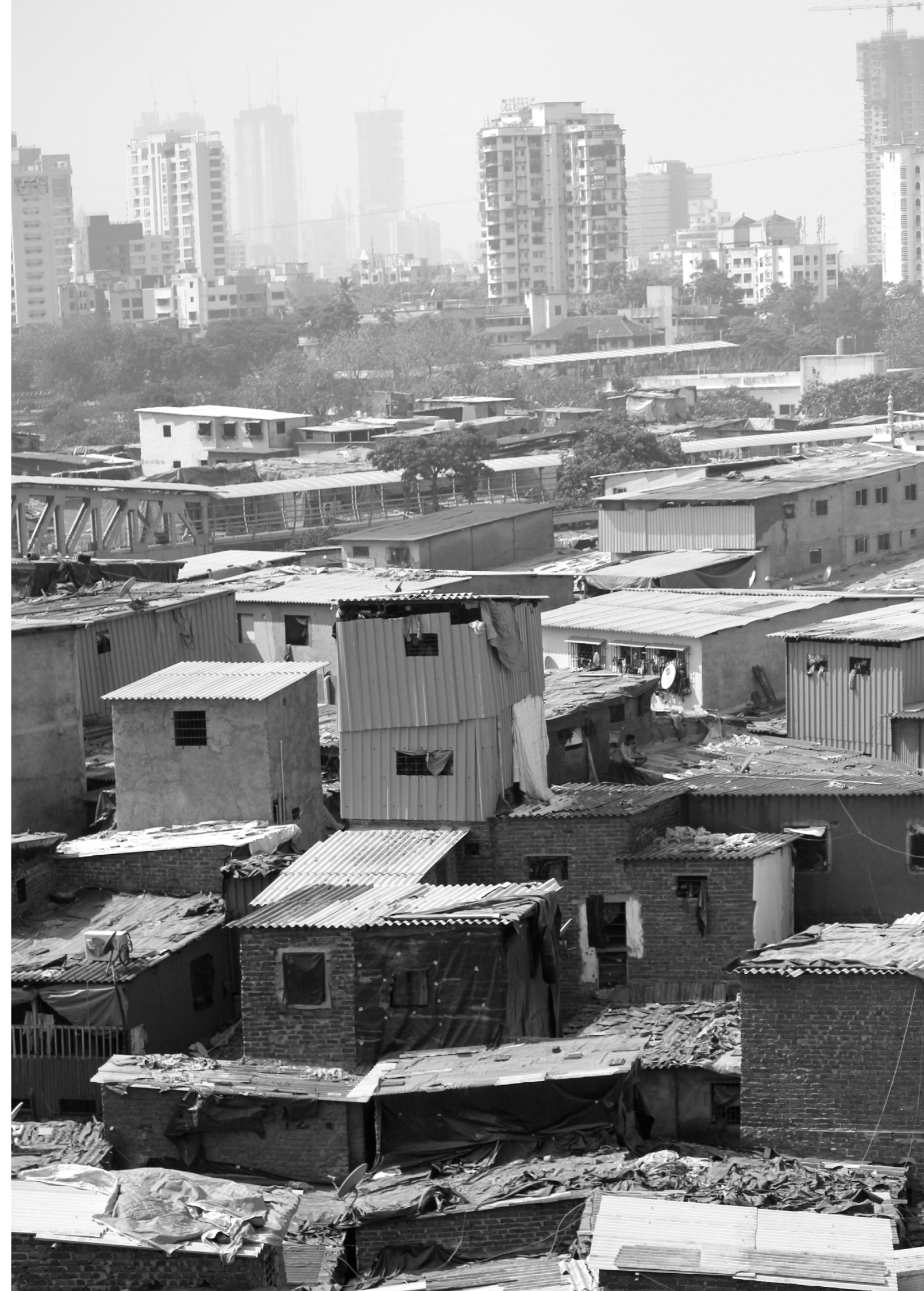


Relevance

The problems caused by a focus on efficiency in the current affordable housing development in Nalasopara, is an example of a problem we today face globally. Not only the developing third world countries, but also advanced economies, struggle to meet the demand for affordable housing to be available, adequate and affordable. By 2025, estimations show that the global affordable housing gap will affect one in three urban dwellers, about 1.6 billion people. As a consequence, the United Nations has defined seventeen sustainability goals.

that are inclusive, safe, resilient and sustainable. Furthermore, the graduation project also deals with UNs Sustainability Goal 9, which stresses the need for a resilient infrastructure that supports economic development and human well-being. Finally, by developing a sustainable framework that deals with both efficiency and resilience, the graduation project can contribute to achieving the United Nations Sustainable Development Goal 11: Sustainable 'Cities and Communities' and Goal 9: Industries, Innovation and Infrastructure.

Most relevant to the topic of the graduation project is the UNs Sustainability Goal 11. As the goal shows, it is important to make cities



Ethical Issues and Challenges

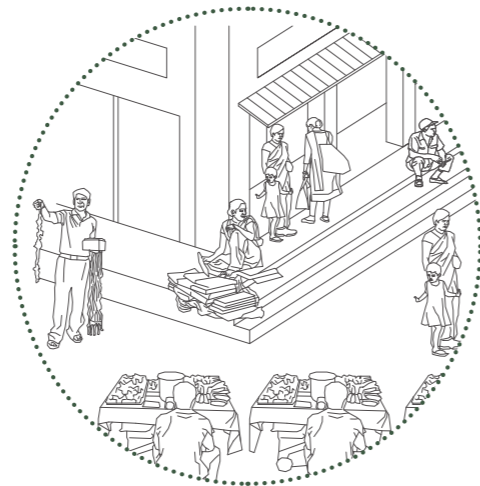
A place, an urban environment can be defined by its architectural and urban spaces and the people that inhabit and use them and how these coexist and form the place. I learned this through the Global Housing studio's ethnographic approach. Having the knowledge about people and their practices and needs, is therefore essential before trying to design the architectural and urban spaces that coexist with them. In affordable housing in the Urban Global South, this is especially important as it is within these spaces that people spend most of their time often living and working.

As the graduation project is placed in India, I realized early in the process that my knowledge of the culture, the people and their patterns of inhabitation

was limited. Coming from Norway, a country of 5 million people, it was challenging when trying to understand the complexities of India's growing population of 1.5 billion. The study of different patterns of Inhabitation, was therefore crucial to develop an understanding of the context and the people. However, the study also brought forward an ethical dilemma. Is what we observe, really the way people prefer to live? Or is it a forced way of living? As architects we tend to romanticize everything that brings life into a space. But is the image of laundry drying on a clothes line as 'romantic' as we think or is it just a consequence of the lack of private space? Research by observation, should therefore always take into account the background for 'how' and 'why' what we observe is taking place.



The Ota as a social space and an extension of the dwelling.



The street corner forms an informal and ambiguous urban spaces for synchronous activity.





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