

Graduation Plan

Master of Science Architecture, Urbanism and Building Sciences



1. Personal Information

Student Name: Lisa Wassink

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2. Studio

Name/theme: AR3AD105 Global Housing / Architecture of Transition in the Bangladesh Delta

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Architectural Design for Climate Adaptation

a) *Argumentation of choice of studio*

As a master's student at the Faculty of Architecture, my previous projects predominantly focused on the Netherlands. In my MSC 1 track, I engaged in the Extreme Architecture track, focusing on Sint Maarten. This experience exposed me to diverse challenges, including designing for resilience against earthquakes and hurricanes due to the unique climate characteristics, and the understanding of the local culture to create architecture that resonates meaningfully with the community.

The positive experience in the Extreme Architecture track sparked my interest in exploring new locations. Bangladesh, with its distinctive climate and social dynamics, captivated my attention. It is a country that is growing at an unprecedented rate, due to migrants moving from the rural to the urban area because of the consequences of climate change. Rapid urbanization is a global phenomenon, and it poses one of the most significant challenges of the 21st century. The majority of this urbanization is occurring in the Global South, which underscores the urgent need for comprehensive strategies to address the associated challenges and foster sustainable development in countries like Bangladesh.

Furthermore, the lack of social housing exacerbates living conditions for the urban poor, as developers prioritize middle and high-income housing. This inequality became apparent during our field trip, prompting me to focus on creating an inclusive environment where different social classes coexist, ensuring an equal opportunity for the urban poor. Bangladesh's religious diversity adds another layer to the cultural context, emphasizing the importance of understanding and incorporating various cultural perspectives into design principles.

My goal in this studio is not only to provide basic shelters, but to integrate meaningful architecture that respects and reflects the diverse cultural identities of the people. By combining culture-defined design principles, I aim to contribute

to the creation of an inclusive environment in Bangladesh where different cultures harmoniously coexist, addressing both the housing needs and cultural nuances of the community, and at the same time design sustainable architecture that will consider the climate conditions on the location.

3. Graduation Project

Title of graduation project: Inclusive waters

[Investigating the Catalyst Role of Urban Ponds in Mitigating Housing Challenges Amidst Rapid Urbanization in Sylhet]

Location: Laladighir Par, Sylhet, Bangladesh

a) *The posed problem*

The effects of urbanization in Bangladesh also effects Sylhet city in specific, as this is one of the most prominent cities in Bangladesh (Das & Das, 2022). Sylhet, situated in the northeastern part of Bangladesh, is a swiftly growing urban center and ranks among the largest business hubs in the nation. The Sylhet City Corporation was founded in 2001, covering an area of 26.50 square kilometers and hosting a population of nearly 3 million. (Population & Housing Census, 2011).

The city is expanding at an unprecedented rate which causes the raise of pressure on building density. The effects are threatening the lives of city dwellers, particularly urban poorest dwellers, who receive only basic shelter without considerations for landscape elements. Sylhet city residents grapple with significant environmental issues such as the improper disposal of waste in nearby drains and low-lying areas, the discharge of wastewater into open roadside drains, the prevalence of pit latrines in low-income neighborhoods, annual flooding, noise pollution, and the keeping of livestock and poultry (Ahmed & Islam, 2014). Social crimes like ransacking, robbery, and toll evasion are also prevalent in the city due unplanned urbanization.

In the low income settlements, many areas lack community garbage containers, and municipal waste disposal is not effectively managed. Additionally, the high population density, along with the use of wooden-bamboo housing structures and inadequate electrical wiring, increases the risk of fire hazards. Moreover, housing in the urban poor settlements have not adequate public space for recreational activities and walking, which is essential for a healthy public environment (Arefin, 2021).

According to Cornea et al (2016), urban ponds play a diverse and pivotal role in the urban areas of Bangladesh. These ponds are not just sources of water; they also provide urban land and communal spaces. They serve as cultural and small-scale aquaculture sites for the middle class and are essential for daily tasks, livelihoods, and social interactions for the less privileged (Cornea et al, 2016). However, the relentless expansion of urban areas, coupled with limited available space, has placed these urban ponds in jeopardy. Nowadays, they are at risk of being filled in to make way for new housing developments (Das & Das, 2022).

Public spaces are essential for building community, connecting diverse individuals, and promoting shared identity, which enhances social cohesion and

residents' well-being (Francis et al., 2012). Additionally, Sepe (2017) highlights that well-designed public spaces contribute to urban happiness and sustainable development, emphasizing the importance of urban planning that prioritizes public spaces to enhance the overall quality of life in cities. According to non-formal research conducted by ECDO, around 30 diverse indigenous communities reside in the Sylhet region. The Manipuri and Khasi communities stand out as the most populous, with each group having unique linguistic and cultural traditions (Pal et al, 2017). The selected site is situated around an urban pond, featuring a diverse environment. Various communities inhabit the area, such as the Muslim group residing in informal settlements and the Hindu population. Additionally, there is a notable diversity in building structures, ranging from single-story residences to newly constructed 4 to 5-story buildings established within the past 2-5 years. The site is distinguished by its diverse characteristics, making it a compelling location to promote inclusivity and adapt to the varied surroundings.

Since rapid urbanization is threatening the urban lives of residents in the city due to the raising pressure on the building density, the lack of attention to public space in Sylhet is a growing concern, which causes increased segregation. Given the abundance of urban ponds in Sylhet that serve as communal spaces for residents, there is potential for these environments to offer solutions for designing a more inclusive urban setting. This research aims to investigate the qualities of the urban ponds as a catalyst for an inclusive urban environment, and what lessons can be learned to design a new inclusive housing project, including adequate public space.

b) *Research questions*

The urgent concern of rapid urbanization in Sylhet and thereby the increasing pressure on housing, combined with the environmental consequences in the future due to climate change, prompts the question:

What lessons can be learned from the urban ponds in Sylhet, serving as a catalyst for inclusivity, to address the inadequacies in housing and increased segregation due to rapid urbanization in a growing second-tier city like Sylhet?

To tackle this research question, it has been sub divided into two main aspects; the social aspect and the environmental aspect.

The social aspect delves into the various demographic groups present at the chosen design site, exploring the current activities and uses surrounding the urban ponds and their impact on fostering or impeding social cohesion among residents. This raises the following sub questions regarding the social aspects:

How do the current uses and activities around urban ponds contribute to or hinder social cohesion among residents with diverse demographic backgrounds in Sylhet?

What valuable lessons can be learned from case studies on urban ponds regarding the significance of urban ponds in fostering inclusivity among diverse communities?

The environmental aspect explores the ramifications of climate change on the future environment and its impact on Sylhet. It is crucial to examine whether urban ponds mitigate the effects of climate change and why preserving them

is essential for environmental sustainability. Therefore the subsequent sub-questions related to the environmental aspects are formulated as follows:

How does the presence of urban ponds in Sylhet contribute to the environmental sustainability and resilience of the urban ecosystem?

How can lessons from case studies, such as ‘the City of 1,000 Tanks’ project in Chennai, with its focus on decentralized Nature-Based Solutions for water balance and resilience, inform the environmental aspects of preserving urban ponds in Sylhet to address climate change impacts and potential flood risks?

c) *Design assignment in which these result*

This design task aims to explore a novel approach to creating an inclusive living environment within a densely populated urban area, seeking to address the prevalent issue of marginalization faced by the poorest urban dwellers in the current context. The design will specifically investigate how the urban pond’s location can be utilized as a focal point to foster inclusivity, promoting harmonious coexistence among diverse income and cultural groups. At the same time, the design should take into account the consequences of climate change for the future. Sustainable considerations, including incrementality, clustering, and typology mix, will be integral to the design approach.

Thorough research into the demographics of the location, as well as an exploration of climate-related challenges and potential design solutions, is essential for developing a practical and meaningful design concept. A crucial aspect of this process involves understanding the unique needs and concerns of various income groups and cultures, translating these insights into well-considered floorplans and masterplan designs.

4. Proces

a) *Method description*

This research employs a combination of qualitative and quantitative research methods to comprehensively address the issue of urban pond preservation and revitalization in Sylhet, Bangladesh, within the context of rapid urbanization and climate change.

Literature review

A thorough literature encompasses an extensive exploration of global and local academic discussions and research concerning urbanization, public spaces, demographic groups and climate change. By critically reviewing existing scholarly works, this research gains a comprehensive understanding of the current state of urbanization, public space, social classes and climate change consequences on global and local level.

Case study analysis

Incorporating a case study approach, this research conducts in-depth investigations of urban ponds in different locations, such as Chongqing and the small city of Bardhaman, but also in Sylhet, and project initiatives in cities facing the same challenges to create a water resilient city, such as Chennai in India. These case studies are instrumental in gaining practical insights into the

urban qualities but also the challenges of designing within an environment facing pressing environmental issues, including the heightened risk of annual flooding due to climate change. The case studies offer valuable empirical data and real-world examples of architectural interventions, both within the specific context of Sylhet and globally.

Field research

Field research constitutes a critical aspect of this methodology, contributing unique and context-specific knowledge that cannot be derived from literature alone. This approach involves a multi-faceted strategy, including:

Ethnographical Observation

By immersing in the research area, ethnographical observations are conducted to understand the social and cultural practices of residents within the chosen site. This immersive approach allows for a more profound comprehension of how urban ponds are embedded in the daily lives and rituals of the local community.

Interviews

Interviews with local residents and the councilor within the chosen site are conducted to gather first-hand insights into daily life activities and the community's perspective on the built environment. These interviews serve as valuable sources of qualitative data and provide a genuine representation of the aspirations of the local community.

Context analysis

Physical exploration has been done by on-site investigations, which includes walking, documenting, and making visual records such as photographs, videos and sketches. This method offers a tangible understanding of the immediate environment of the chosen site.

b) Literature and general practical references

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5. Reflection

a) *What is the relation between your graduation (project) topic, the studio topic (if applicable), your master track, and your master programme?*

In my MSc AUBS program, which focuses on sustainable development through innovative architecture, the concept of sustainable architecture involves intelligent design principles that minimize harmful effects on ecosystems and communities, contributing to the durability of structures. The Architecture master track within this program emphasizes this sustainable approach, encouraging students to tackle technical, social, and spatial challenges in the built environment through creative and innovative building projects.

The studio topic closely aligns with both the master track and program objectives, as it delves into ways architecture can contribute to a society transitioning to a new ecological paradigm. The emphasis on designing meaningful spaces for populations in transition, considering typology, materials, and technology, mirrors the principles embedded in the master track program.

My graduation topic seamlessly integrates with these aspects by investigating the technical, social, and spatial challenges specific to the assigned location in Bangladesh. Through in-depth research into different demographic groups and their lifestyles, I aim to incorporate contemporary social challenges into my design concept. Furthermore, understanding the climate characteristics and the consequences of climate change in Bangladesh allows me to explore innovative design concepts with a technological focus. By leveraging this knowledge gained through research, my goal is to propose a new approach that fosters an inclusive environment, where diverse groups coexist within a well-developed spatial design.

b) *What is the relevance of your graduation work in the larger social, professional and scientific framework?*

Beyond its local importance, the research carries global relevance in the face of widespread urbanization and climate change challenges. The issues faced by Sylhet are emblematic of the struggles many urban areas encounter worldwide. Rapid urbanization and climate change are universal phenomena that demand innovative and sustainable solutions. The neglect of adequate public space, a common consequence of rapid urban expansion, is a shared concern among cities globally.

Rapid urbanization is a global phenomenon, and it poses one of the most significant challenges of the 21st century. According to the United Nations estimates, the proportion of the world's population residing in urban areas increased from about 20% in 1910 to 51.7 % in 2010, with a projected further increase to 68.4% by 2050 (UNDESA, 2019). The majority of this urbanization is occurring in the

Global South. Looking ahead, the global urban population is anticipated to grow by approximately 793 million people from 2015 to 2025, with an overwhelming 93.9% of this increase concentrated in the Global South (UNDESA, 2019). This rapid urbanization underscores the urgent need for comprehensive strategies to address the associated challenges and foster sustainable development (Smit, 2021). As urban areas grow and populations increase, the pressure on urban resources, public spaces, and community well-being intensifies.

Furthermore, the escalating concern of climate change is evident as the world witnesses more frequent extreme climatic events, including storms, flooding, and extreme temperatures. The global South, with its low-lying geography, high population density, limited resource access, lack of preparedness, and insufficient infrastructure for coping strategies, faces heightened vulnerability to climate change impacts (Roy, 2018).

Additionally, with the rising threat of floods attributed to climate change, the conservation of urban water bodies becomes imperative to withstand such floods. Therefore, the neglect of urban ponds due to rapid urbanization is a growing concern not only in Sylhet, but in many urban areas across the globe, such as Chennai in India. As urbanization intensifies, cities worldwide are confronted with the complexities of safeguarding vital public spaces, fostering community well-being, and fortifying resilience to climate impacts.

The challenges faced by Sylhet are not isolated; they mirror the difficulties cities worldwide encounter. Therefore, the findings and solutions derived from this research can serve as a blueprint for other urban areas confronting similar issues, fostering a global dialogue on sustainable urban development, climate resilience, and the importance of preserving communal spaces within cities.