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DESIGN APPROACHES TO REVITALIZE A CANAL FRONT: A CASE STUDY ALONG CHAKTAI COMMERCIAL AREA OF CHITTAGONG, BANGLADESH

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Abstract

Chaktai is one of the oldest commercial areas of Chittagong, the 'Business Capital' of Bangladesh. This site is adorned by the historic Chaktai canal which flows through the commercial area, contributing to the transportation network of commercial activities of this site. Chaktai canal front has also been served to the nearby residents as a waterfront public activity space. Unfortunately Chaktai is losing its past glory as a central business district (CBD) controlling food business all around Bangladesh. In recent years, the dilapidated condition of the canal has interrupted frequent commercial activities. Moreover, the canal front has become more inaccessible, unhealthy and uncomfortable public space because of the unexecuted planning proposals & mismanagement. Considering the local context, Chaktai canal front can be transformed into an enjoyable breathing space by redeveloping the canal front through proper planning solutions with surrounding community participation. The aim of this research paper is to identify the current state of Chaktai canal front to provide some sustainable approaches for its revitalization from an in-depth empirical research and survey. Both quantitative and qualitative methods are employed to generate primary data. Field visits and reconnaissance surveys have been conducted to assess the present status of the canal front. 30 respondents have been interviewed including local businessmen, commercial workers & surrounding area's residents to understand their perspective on public activity space. Findings from the survey show that the revitalization of the canal front will facilitate mobility, convenience for commercial activities and accommodate a vibrant social interaction space in future. This paper will propose some design guidelines for the improvement of present condition of the canal front which will in return help into the uplifting city's economic, heritage and cultural value.

Keywords: *Chaktai canal & canal front, Canal front revitalization, Commercial area, Social interaction space, Community participation*

1. Introduction

The pride of Bangladesh is its rivers with one of the largest networks in the world with a total number of about 700 rivers including tributaries, which have a total length of about 24,140 km. They consist of tiny hilly streams, winding seasonal creeks, muddy swamp and mostly Canals (*khals*) (BWDB, 2012). Canals are natural channels or artificial waterways, for water conveyance, or to service water transport vehicles, thus being an inseparable part of the development of any commercial area. 'Chaktai Commercial Area' is a traditional business hub in Chittagong. Most of the import-export business go on under the control of this business zone. Many types and genres of business system and activities are found here. The morphological development of the Chaktai commercial area of Chittagong city is based upon the Chaktai canal, where it functioned as the main transportation system. Once Chaktai canal front has also been served as a waterfront public space. General people living and working in the nearby areas such as Chaktai, Khatungonj and Asadgonj use the canal front spaces for easy circulation towards city, social interaction space provided with sitting or strolling purpose/elements as well as used for commercial activities. Pedestrian walkways with some adjacent green open spaces was a source of meeting, gathering or interaction for the surrounding areas' residents. But the situation is changed now. This canal is being encroached through decades and in recent time faces very poor condition near to its extinction. It serves only as a large drain for the city now. The unregulated establishments on the canal front areas have considerably reduced the spontaneous mobility of commercial activities and social interaction spaces. Illegal structures have blocked the canal front areas causing inconvenience to the loading-unloading of goods. It has also failed to serve as an interactive social space both for the

inhabitants of the surrounding areas and whole city. All these problems make this business district to become a subject to proper planning and design overlay. The issue of the waterfront became more prominent when this canal is ceased to be the major lifeline of the commercial area as well as its most important transportation mode. Some attempts to reviving the desired functionality of the business district had been taken so far, but those actually failed because these improper and unorganized attempts can't really solve the total problem. Except for a few (Hoyle, 2002, Latip et al., 2012, McCarthy, 2004, Nagpal & Sinha, 2009), little research has been done on canal front revitalization in the developing countries. This paper is going to discuss the current scenario of canal front development along the Chaktai commercial area and its potential as one of the elements that can contribute to the sustainable approach to city's ultimate development in the future. Pickett and Cadenasso (2008) showed that nature in cities contributes to better quality of life. Also the physical and psychological wellbeing of the residents is related to the quality of a physical environment (Berke et al., 2007, Van den Berg et al., 2007). By bringing people back to the canal's revitalized waterfront, a tangible sign of the continuing vitality may be provided. In doing so, the study aims at examining the existing situation, assessing causes behind the problems, inquiring about the liking and disliking of the stakeholders, and identifying possible solutions as an essential input towards arriving at appropriate planning decisions.

2. Issues facing the canal front of Chaktai commercial area

Chaktai canal is one of the partially man-made Main Drainage Channels & Waterway Transportation Hub of Chittagong city, which is about 6.9KM long. The width of the canal- starting from Bahaddarhat area of the city and falling into the Karnaphuli River at Chaktai - Chamrar Gudam (Tannery) Area was about 65 feet on an average, as per the RS (Revisional Survey) and 61 feet according to the BS (Bangladesh Survey) surveys conducted in Bangladesh. But now the width is barely about 45~50 feet, said sources at the Chittagong City Corporation (CCC).

Once regarded as the "Lifeline" for Trade and Commerce at the traditional business centres of Khatunganj and Chaktai areas in Chittagong, Chaktai canal has shrunk alarmingly due to encroachment over the years under the clutches of influential encroachers (Ashraf & Chowdhury, 2009). Chaktai - backbone of the sewerage system of the port city has now emerged as "sorrow of Chittagong", causing severe waterlogging not only in the rainy season but also during high tide in the Karnaphuli river as it cannot hold enough water and overflows its banks.

Also, this nearly seven-kilometre canal, stretching from Bahaddarhat to Chaktai, once helped navigating large ships & vessels laden with agriculture based perishable commodities (onions, garlic, rice, lentils, sugar, tea and spices), poultry feeds, hardware etc. has been clogged and choked by garbage, in addition to rampant encroachment. Due to sediment load from natural process of soil erosion, dumping of municipal & house hold solid waste, illegal encroachment of the bank side Chaktai has lost its original form & natural function of draining water. At present time Chittagong city faced more waterlogging situations in the rainy season than the previous times because of the bad condition of the major canals like- Chaktai, Mohesh, Rajakhali etc. These scenarios have created a massive effect on the open space beside the Chaktai canal. The waterfront has lost its significance and appeal to the eyes of general people and its vitality to the city life. The place that the public had cherished became a place that the public avoided and it was a great loss to one of the main assets of the city.

3. Canal front as public space- Literature survey

According to Gehl (2000), the quality of a public space is determined by whether all the three features (function, operation and spatial arrangement) are present in the location and whether they can satisfy the demands of the inhabitants. Public spaces in developing cities have different characteristics compared to public spaces in developed cities. When developed cities have started to pay attention on the qualities of their public spaces, most developing cities are still struggling with problems caused by the rapid rise of urban populations such as informal housing, poverty, health, and education problems which are reflected in the structures of the cities and the conditions of their urban spaces, including their public spaces (Miao, 2001, Gehl, 2010). Miao (2001) also highlights the unavailability of green spaces in developing cities. Green open spaces have become rare to find in the city center; people should go further away to enjoy green open spaces. In a developing city like Chittagong, the canal front along Chaktai commercial area can serve as a public interaction space to the surrounding area's inhabitants as well as functioning commercial activities. Typology and use of urban waterfronts are the topics of

the work by Maxmilian Wittmann (2008), who defined the basic functional uses of waterfront areas into the following categories:

Transport (road transport, rail transport, walking and cycling), social (linked with public facilities), function additional to housing and housing itself, recreation, industrial use and as complementary functions there are-junction specific social function.

From the perspective of urban design this functional division ensures the possibility of canal front of Chaktai canal for being used by general people. Gehl (2010) describes that the conditions of urban public spaces in developing cities are mostly under dimensioned and poor in quality. He suggests that it is necessary for developing cities to provide enough well-functioning free spaces for public activities. The revitalization of the canal front along Chaktai commercial area of Chittagong will thus encourage creating open and social space with a unique view of the city.

4. Study Area

The selected site of Chaktai Commercial Area is located in the South-East corner of the Chittagong City in Kotwali Thana & partially in Bakalia Thana. The historic Chaktai canal pierced through the site separating it into two separate zones- Asadganj and Chaktai-Rajakhali commercial zones. This site is surrounded by two canals on east and west, they are- Fishery Ghat canal (west) and Rajakhali canal (east). Chaktai canal stretches from Bahaddarhat area of the city and fall into the Karnaphuli River at Chaktai - Chamrar Gudam (Tannery) Area. It is situated just beside the Shah Amanat Bridge that connects the Northern and Southern parts of Chittagong on the bank of Karnaphuli River. The area is under city Corporation (Ward no.34 & 35). In Detail Area Plan (DAP) of Chittagong, the site is situated on DPZ-3 (Sadarghat-Chawkbazar). Chaktai commercial area is one of the oldest commodity hubs of Bangladesh. As the canal is about 6.9 Km long, only a portion (0.512 Km) has been taken for study ranging from the end of Khatunganj commercial district to the opening of Karnaphuli River. This zone houses about 3000 businesses and about 5000 warehouses along canal front and throughout the area.

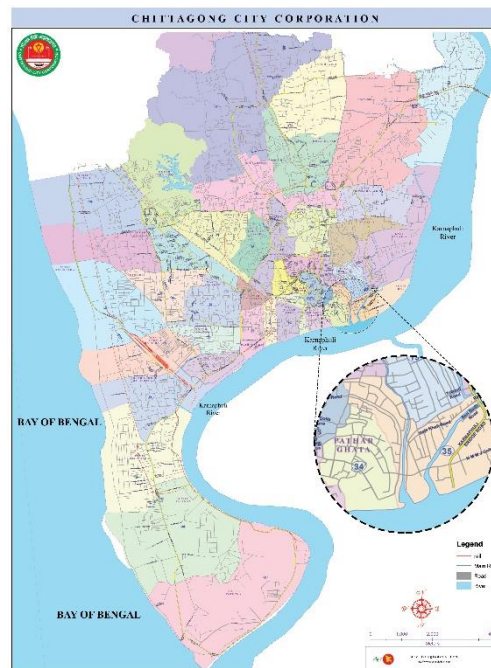


Figure 1, Ward Map of Chittagong City Corporation (Source: CCC)

The site is connected by both roads and waterways. Asadganj and Khatunganj road directly enter this site and are extended through south joining with the newly developed Marine drive road. Our study site is a commercial area that serves the needs of agricultural commodities including onions, garlic, rice, lentils, sugar, tea, spices and herbs etc. for the Chittagong city and also the country. In the past, large amount of business activities were accomplished by boats/vessels. This tradition still continues today but due to the increasing road network, waterway transport has been reduced. But that doesn't decrease the importance the canals at all. In a port-based city like Chittagong, Chaktai plays a vital role in mobilizing the trade and commerce.

5. Methodology

To understand the present situation of Canal front along the Chaktai Commercial area and to arrive at a planning and some design solutions to alleviate the problem the following methods were mainly utilized in completing the study:

- a) **Reconnaissance Survey:** Reconnaissance Survey is a preliminary survey, usually executed rapidly and at relatively low cost, prior to mapping in detail and with greater precision. Here, reconnaissance survey will conduct for gathering general information of the Chaktai Canal. Photo documentation and field-notes have aided this step of data collection. The main objective of the reconnaissance survey is to find out the actual condition of the canal front, management system in that area and preparing a graphical report of that identifies problem sources.
- b) **Questionnaire Survey:** Questionnaire survey will be conducted with the local residents of nearby area, business men and workers through a semi-structured Questionnaire. The aim is to collect their opinion about the importance of having a public activity space along the canal front.
- c) **Interview:** Interview will conduct with the stakeholder that includes permanent businessmen, ward commissioners as local governing body, workers and residents from surrounding area. A key Informant Interview(KII) also conduct with CCC, CWASA, CDA, BWDB's responsible body to know about the legal & management problem of the reclamation of the Chaktai canal.
- d) **Literature Survey:** A literature review helped to formulate and refine the concept of canal front development and further in-depth literature survey has been carried out thoroughly by going through Case studies from different countries, thesis reports, journal articles, conference proceedings, Government reports, books etc. in order to acquire knowledge on the past and present work done on the rivers and their banks in our country. This helped to reveal any planning approaches in formulating guidelines.

6. Discussion

Findings from the survey show the current condition of the canal front along the Chaktai commercial area as an alarming situation such as_

6.1. DETRIMENTAL CONDITION OF CHAKTAI CANAL

Boats carrying Goods get stuck in Chaktai canal during low tide. This Canal is losing Navigability due to Silt Deposition and Permanent Bottom at the Canal (which affects water flow), which is hampering frequent movement of Boats and incurring heavy loss in time and economy of this once busy commercial area. Thus, sedimentation on canal make it quite impossible for boats to function properly, thus hampering loading-unloading activities



Figure 2, Condition of Boats during low-tide time (Source: Author)

Furthermore, dump of Dirt, Domestic Waste, Toxic Waste from Commercial area on the Canal side roads and no proper Waste disposal system resulted in detrimental working environment for workers and businessmen.



Figure 3, Garbage Disposal along canal front blocks canal (Source: Author)

The consequence is detrimental. Chaktai canal, once considered to be the life-line of the city as the main drainage system for removing rainwater along with usual sewage outlet, has been choked with solid waste and filth along with encroachments causing overflow of rainwater flooding both sides from Bahadderhat to Chaktai Commercial Areas. The wholesalers in the Commercial space that house at least 3,000 businesses and more than 5,000 warehouses have to pass dull days over the monsoon period. They were claiming to be facing growing losses as many areas of Chaktai and their neighbouring Korbaniganj and Rajakhali areas have remained inundated for weeks. During every year monsoon, rainwater from the Karnaphuli River floods the shops and warehouses in the area through the various canals.



Figure 4, Water logging situation at rainy season (Source: Author)

6.2. EXISTING CANAL FRONT SITUATION

Unauthorized Building construction at canal front resulting in Canal width Reduction and lack of both Pedestrian Walkway & Vehicular Circulation. Walking through canal front has become difficult and Goods loading unloading from boats to truck is extremely complicated.

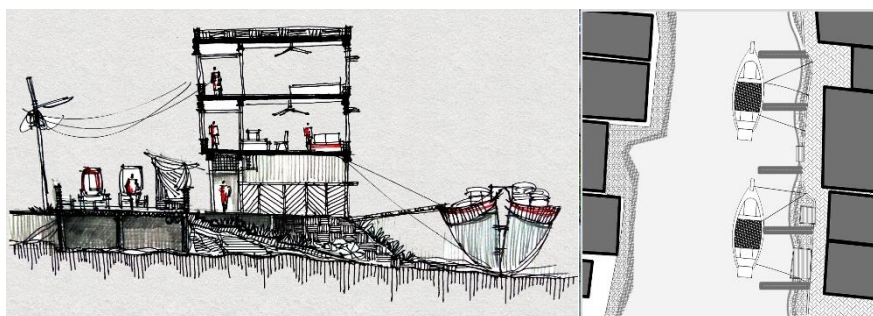


Figure 5, Illegal structures limiting pedestrian circulation (Source: Author)

Moreover, this situation is making it impossible for providing any kind of social interaction space along canal front. Lack of Harmony is seen between Commercial Activities along canal and Social Interaction between the people living in Chaktai Commercial Area. Once, the canal front used to serve as the hub of social interaction for the people of Chaktai. But over time it has lost its appeal as an Urban Open Space because of illegal and unplanned developments, no concern for Human comfort and no responsibility to environmental preservation.

Again, canal front has become the backside of the main commercial area as most of the buildings overlook the view of Chaktai canal. Thus the visual connection to canal front with the building structures is lost. The historical building fabric of Chaktai commercial area is also losing its significance.



Figure 6, Unplanned establishment destroying open spaces (Source: Author)



Figure 7, Chaktai commercial area overlooking canal front (Source: Author)

6.3. CHAKTAI CANAL RECLAMATION

The canal should be restored by widening the width and excavating waste sludge from the bottom, breaking the permanent R.C.C. bottom of the canal and increasing depth (which will help in flowing canal water simultaneously), so that it may function properly, ensuring relentless waterway traffic.

In addition, the warehouses and shops beside the canal get the direct advantage of loading and unloading materials/goods. But traders on the other side can't get direct access from the canal. Special design considerations are required for transporting good in such case from the canal front. For instance, Illegal and Unplanned buildings constructed on canal edge should be evicted thus restoring the open spaces along the canal, making rooms for an urban passage along the canal front. In that place, permanent loading docks/jetties should be constructed on the canal for ease of access from boats/vessels. Also Truck landing spaces must have to be provided for smooth transportation.

6.4. CANAL FRONT SPACE REVITALIZATION

The canal front walkway should be widened and be visually connected with the main road, so that it will be used for circulation and commercial activities. The buildings beside the walkway should be constructed/converted as canal facing warehouses/shops, same as the main road's frontage. It will also create sufficient environment for the canal front to be suitable for both functional commercial activities and Social Interaction between the residents and business houses and workers. Provision of Pocket Urban Parks, Fruit/Newspaper/Grocery shops, Food shops at certain intervals, shaded walking spaces, resting spaces for labours and amenities (public toilet, small community centre) will increase the living standards of the commercial space. Also provision of green spaces will help a

great deal to make this canal front more livable, once again. Moreover, the side streets/alleys connecting the canal access road and vehicular main road will be used as the access road for buildings in between them. They should have the minimum requirement of accessibility.

6.5. PEOPLE’S PERCEPTION

Nowadays this canal has become a mere drain for sewage. There is no canal based activities seen, no public open space/ community gathering space, no resting space for local labors, no community green spaces are located. It is making the canal front unusable day by day.

Respondents from the interview have mentioned various reasons for not using the canal front as previous time. Though they reminisced the past glory of this canal front as an active social space, now they tend to avoid the route. These reasons have been mentioned by respondents randomly chosen including residents of nearby area, workers and local business men.

Table 1, Causes behind the unused canal front (Source: Field survey 2017)

S/N	Causes	Frequency	Percent
1	Unhealthy Environment	28	93%
2	Lack of safety	14	47%
3	Absence of public amenities	27	90%
4	No sitting/resting space	15	50%
5	Unorganized loading-unloading	24	80%
6	Unusable pedestrian walkway	20	67%
7	Water logging	10	34%

6.6. COMMUNITY PARTICIPATION

Any revitalization project in a living city has to involve the local people to protect the heritage, especially when “problem defined by the political actors were misaligned with the community’s needs” (Morgia & Vicino, 2013). Therefore, participatory planning approach i.e people and private voluntary and community based organizations must be empowered and facilitated to participate. For example, waste collection network and disposal system has to be arranged in a community participation approach, where all the residents and business houses enable in keeping the place clean.



Figure 8, Proposals for revitalization of Chaktai canal front (Source: Author)

7. Conclusion

This paper discusses the issue of the canal front revitalization along Chittagong city’s most significant commercial area of Chaktai in the light of the current thinking about the potential of this waterfront. As Chittagong has a traditional development with a generic pattern in its growth, and not totally

planned, Chaktai-Khatunganj area is not designed properly as well. Most of the structures are temporary and some appear to be permanent being built in an undersigned and inappropriate manner along the Chaktai canal side. The problems of the area – regular clogging up of vehicular traffic, the unwanted distribution and chaos in pedestrian traffic make the situation worse. The canal is being failed to become a possible mean of transport for goods and people. In the past, the canal and canal front space was not given due considerations in the planning and design of the canal front of Chittagong. Over the course of time this canal front has lost its viability as a public waterfront to be enjoyed by general people. With little public space left in the highly dense Chaktai commercial area, the canal front can cater for social interaction and recreation space for the people working there. Most importantly increased and enhanced scope for social interaction and recreation helps improve the quality of life experience of the residents living nearby this area. In view of the significant contribution of the water front of Chaktai canal along the Chaktai commercial area, both in the morphological development of the area as well as its role in creating the scope of a social interaction place, it is of utmost important that the Canal front be given due considerations in the future development planning of the city. The convenience for commercial activities, proper drainage and canal front circulation must be ensured for the betterment of the whole city.

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9. References

- Ashraf M.A. & Chowdhury S.A., 2009, *Drainage Planning in the Cities Bangladesh: Case Study of Drainage and Water Logging in Chaktai Commercial area, Chittagong*, Journal of Bangladesh institute of planners, vol.2, pp 49-60.
- Berke, E. M., Koepsell, T. D., Moudon, A.V., Hoskins, R. E., & Larson, E.B. 2007, *Association of the Built Environment with Physical Activity and Obesity in Older Persons*. American Journal of Public Health, 97(3), 486-492
- GEHL, J. 2000 *Life between buildings: the use of public spaces* 1st.ed.Brno: Partnership Foundation p. 202, ISBN 80-858-3479-0
- Hoyle, B. 2000 *Global and Local Change on the Port-city Waterfront*. *Geographical Review*, 90(3), 395-417.
- Latip, N. S. A., Shamsudin, S., & Liew, M. S. 2012 *Functional Dimension at 'Kuala Lumpur Waterfront'*, *Procedia - Social and Behavioral Sciences*, 49(0), 147-155
- Nagpal, S., Sinha, A. 2009 *The Gomti Riverfront in Lucknow, India: Revitalization of a Cultural Heritage Landscape*. *Journal of Urban Design*, 14(4), 489 – 506.
- McCarthy, J. 2004 *Tourism-related waterfront development in historic cities: Malta's Cottonera Project*. *International Planning Studies*, p 43-64
- Miao, P. 2001 *Public places in Asia Pacific cities: current issues and strategies*. Dordrecht: Kluwer Academic Publishers, pp. 1-47.
- Morgia, L., & Vicino, T. J. (2013). Waterfront politics: revisiting the case of Camden, New Jersey's redevelopment. *Urban Research & Practice*, 6(3), 329-345.
- Pickett, S. T. A., & Cadenasso, M. L. 2008 *Linking ecological and built components of urban mosaics: an open cycle of ecological design*. *Journal of Ecology*, 96(1), 8-12
- Van den Berg, A. E., Hartig, T., & Staats, H. 2007 *Preference for Nature in Urbanized Societies: Stress, Restoration, and the Pursuit of Sustainability*. *Journal of Social Issues*, 63(1), 79-96.
- WITTMANN, M. 2008 *The phenomenon of the water element in the context of the development of contemporary cities* Shortened habilitation thesis. Brno University of Technology, p. 31, ISBN 978-80-214-3799-9.