Reforming Public and Semi-public spaces in Shelter Design

A Study for upholding an Informal Shelter Situation

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In Dhaka 37% of the mega city people live in slum and squatter as well as below living standard. It is however shelter is associated with socio-cultural aspect and the environment of living condition which includes 'interaction'. A shelter becomes livable and vibrant for its community spaces. The paper tries to analyze deeply on identification, analysis and swelling of socio-cultural spaces as well as open space for vibrant gathering in informally grown area and for uplifting the existing community space. The study will also identify the relationship between the shelter and the public space, also will provide guidelines for shelter problems due to absence of community spaces including climatic responsiveness.

Analysis and identification of a Shelter Problem

Every year our country faces unprecedented flood. 20% of the total area becomes inundated during the rainy season. Affected people got homeless cause of the flood. Some homeless people migrate to the city for job and some start living on the delta. In-Migration rate[1] is 37.1% in 2007 and rural to urban the migration rate is 23% in the year 2007. Those people who come to the Mega city are unskilled with industrial habits and practice. So they become saddle for the city, and start living in slum to find source for earning. Bangladesh faces many challenges due to

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[1] Bangladesh Bureau of Statistics. Planning Division, Ministry of Planning.Government of the People's Republic of Bangladesh

its huge population figuring 147,365,352 (July 2006 est.). Urban density in Dhaka mega city is 8573 persons/sq.km. This has subsequently excerted (Zaman, 2006) pressure on limited buildable land. Moreover inhabitants of the slum and sqartter are away from having the 'public and semi-public space' which may sheltere better living for them, the average community spces in a slum, about 15% for public and 10% left in for private open space.

1 Shelter Situation Analysis

Slum areas people generally live with their families (Hossain, 2007). The total number of slum households in the slum of Dhaka city is 673,883. 80.6% slum clusters with households only 31% with mess[2] units only and 16.3% with mixed of the two.70.3% of the slums were located on private land, while 25.7% were on government land and the rest on land owned by various other agencies[3].

Table 1: Number of wards, area, total population and slum population in Bangladesh

Wards no (1)	Total (1) area km2	Total City (1) Population 2001	Total City (2) Population 2005	Slum (3) Population 2005	Slum Pop % of City Population (2005)
90 wards 12 unions	306.00	6,550.209	9,136.182	3,420.521	37.4

Source: CUS, Slums of Urban Bangladesh, Mapping and Census. 2005

Table 2: Population by Household and Mess Units in Slums of Dhaka

Slum household population		Slum mess population		Total slum population	
3.286,770 no	96.1%	133,751 no	3.9%	3,420,521 no	100%

Source: CUS. Slums of Urban Bangladesh, Mapping and Census, 2005

1.1 Basic General Data

Geography and Administration

Dhaka is located in central Bangladesh at $23^0 42'0''$N, $90^0 22'30''$E, on the eastern bank of the Buriganga river. The city lies on the lower reaches of the Ganges delta and a total area of 815.85 km^2(315 mi^2). In total tha city has 130 wards and 725 mohallahs (community hood). Dhaka experience a hot, wet and humid tropical

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[2] Mess is a development of informal housing, where individual person lives in a single room, 1:4, here 1=room and 4= persons in separated bed.

[3] CUS. MEASURE Evaluation Carolina Population Center, 2006. Slums of Urban Bangladesh. Mapping and Census, 2005.

climate. The city is within climate zone, with an annual average temperature of 25^0C (77^0 F). The Dhaka municipality was founded on August 1, 1864 and upgraded to "corporation" status in 1978.

Demography and Health

Bangladesh has an urban population of about 35 million, or just over 25 percent of its total population. Moreover, the urban population has been growing very rapidly since liberation in 1971 and continues to do so at over 3.5 percent annually. The country will likely have an urban population approaching 50 million by 2015.This rapid growth has been due primarily to migration by the rural poor, particularly to large metropolitan areas. (Islam. N., 2005), specially is Dhaka.

Table 3 : Slum population projection 1990-2020 (based on slum annual growth rate (1990-2001))

Developing regions	1990	2001	2005	2010	2015	2020
Northern Africa	21,719	21,345	21,224	21,062	20,901	20,741
Sub-Saharan Africa	100,973	166,126	199,231	249,885	313,418	393,104
Latin America and the Caribbean	110,837	127,404	134,257	143,116	152,560	162,626
Eastern Asia	150,761	194,078	212,368	238,061	266,863	299,150
South-central Asia	207,501	262,441	285,713	317,858	353,620	393,405
South-eastern Asia	48,986	56,799	59,913	64,073	68,521	73,279
Western Asia	29,524	41,356	46,709	54,426	63,418	73,896
Oceania	350	499	568	668	786	924

Source: world bank

Table 4 : population in Bangladesh

Population	Year	Latest Data
Mortality rate, infant (per 1,000 live births)	2007	47.0
Age dependency ratio (dependents to working-age population)	2007	61.1
Fertility rate, total (births per woman)	2007	3
Life expectancy at birth, total (years)	2007	64
Population density (people per sq. km)	2007	1,218
Population, female	2007	77,455,050
Population, total	2007	158,571,814

Source: Bangladesh data sheet

Estimated 3.4 million people live in some 5000 slums of its capital city, Dhaka. Now 2010, the population of the city of Dhaka has been projected at 17.6 million people, with up to 60% in the slums. Slums, which are heavily populated urban areas characterized by poverty and substandard housing, despite their prevalence and the pervasiveness of poverty worldwide.

Economy

Bangladesh has an agrarian economy, although the share of agriculture to GDP has been decreasing over the last few years. Yet it dominates the economy accommodating major labour force living in the rural areas. From marketing point of view, Bangladesh has been following a mixed economy that operates on free market principles (Bangladesh Bureau of Statistics Statistics Bangladesh 2006). In the FY 06, country's total export was 10.5 billion US$ which is 21.6% higher than previous year. The main item of export is readymade garments, which contributes 75% of the total export earnings. Main markets of export goods are EU, USA and Canada.

1.2 Shelter Related Fact and Figures

Access to Shelter

Slum settlements are single storied and does not allow vertical extension it covers the entire

Fig 1: access to the slum area

land with dense settlement (Hossain. S., 2007). In Dhaka, the number of extremely dense slum clusters (density above 1,500 persons per acre) was 409 (8.4% of the total in Dhaka). Lane or goli/roads arc narrow enough to create poor access and problems during usual movements. Cause hazard for other services to get in to the house, like fire hazard, ambulance, mass gathering and evaquation.

Fig 2: difficult for Rescuing during any hazard

Access to and cost of Basic Services/Infrastructure

One of the major constraints for sustainable livelihood in slum areas is lack of basic urban services. Water supply, sanitation, drainage, solid waste management and accessibility are considered here as the elementary components

Fig 3 : common water collection area is in unhealthy situation

of basic services. Dhaka is a mega-city facing increasing slum population and crisis of land that has created acute problems (Hossain, 2007).

Access to the Community space and semipublic/shared area

Eventully the informal development community space for the neighbour and interaction space for wemen is absent. Inhabitant of the area works just at the front of the alley. It interupet the whole process. So the spaces like tap area, bazaar, school, waterbody could work as a better public space. The slum area people need badly a space as for share.

1.3 Housing Policy

  Effort need be made to enhance affordability of the disadvantaged and low-income groups, through provision for income generation and income enhancement, housing loans especially low interest, access to space for running workshops and business and such other activities.[4] The government housing projects for the urban poor mostly depend upon the foreign donations. There are some micro-finance institutions in Private sector-providing long and short term credit for housing in rural and urban areas.

Fig 4: women are crafting and working in the undesired conditions, engaging the aisle without having a semi-private space

Fig 5: income generation area cum house hold area

1.4 Actors involving in slum and surrounding upgrading process

 Only some private organizations are involved in slum development, public authority does a routine monitoring related sanitation and health, which in inadequate and irregular. BRAC is involved with maternal health, sanitation, child education, micro-financing, urban poor self help guidance, and lastly upgrading women's capacity in employment. The City Corporation is also involved with community clinical facilities. Some other NGOs are also involved in the slum and squatter development. But a physical planning is missing to secure better shelter articulated with community and semi-public space, BRAC University department

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[4] Ibid.

of Architecture is involving with the community to provide better options for open spaces in slum.

1.5 Shelter Design

Physical Planning

Dhaka city requires an integrated urban planning for sustainable development. Though the urban poor are integral part of urban development and provide different services for the city RAJUK[5] in DMDP[6] (1995-2015) emphasized on accessible location at the urban fringe to rehabilitate the slum and squatters (Hossain, 2007). There is yet to address the issues to scale up the existing slum more specifically in the master plan, along with the community space as an the integral part of the masterplan, each masterplan is needed to be executed.

Land Use

According to the survey of land use pattern of DMA, conducted in 1991 by JICA, 19% of the total land area of Dhaka fell under residential use; 8% under category of commercial, industrial and institutional use, roads; and other categories took 11%. Village settlements covered 4%, agriculture 45% and water bodies covered 14%. Overall 39% of the city area was under urban use.[7]

Population Density

High density of population and limited recourses one of the key factor to create a gap between demand and supply. Due to distorted proportion of serve and service area in the dense settlements services and other gathering space become inadequate.

Shelter Quality

Unhygienic life in slums is also a threat to urban environments. Moreover denser populated slums are often noisy, smoky and odorous that causes noise
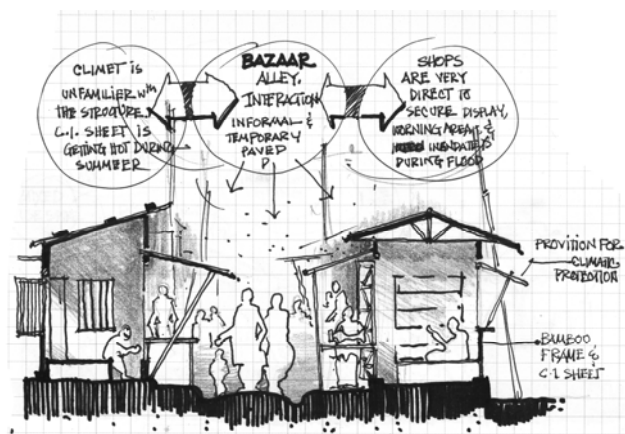
Fig 6: bazaar as the commercial hub, showing the existing setting at the study area

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[5] Rajdhani Unnayan Katripaksha (Dhaka Development Authority)
[6] Detail Master Plan Development Project
[7] Islam, Nazrul (2005). Dhaka Now.

and air pollution. The physical environment of slum and squatter is such that it acts like a cell for diseases and pollution for adjacent localities.

Safety

Slums are vulnerable to fire due to open cooking without the concerning Safety and poor accessibly make those settlements more hazardous (fig 9).

Comfort

Room is shared by four persons, respectively father, mother (fig 7), child 01 and child 02. High density provides slight ventilation and lighting Comfortability in a sense is absent but public and semi-public spaces help to make sense of comfort.
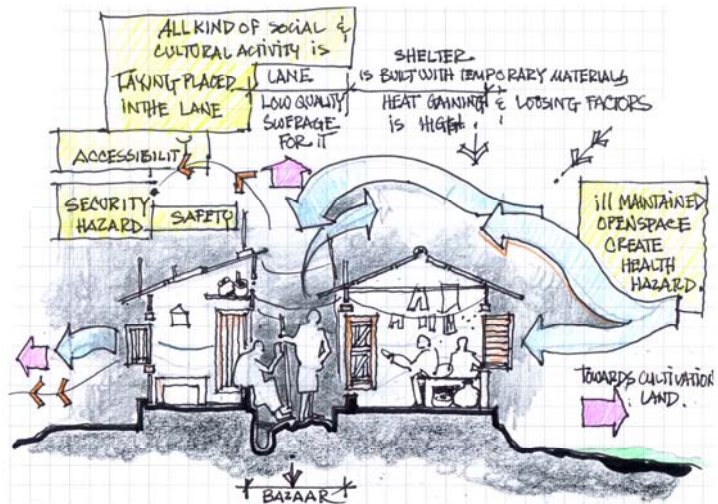
Fig 7: existing situation of slum dwellers

Social Inclusion

Though slum inhabitants are living in the area with illegal permission, but they have a strong community interaction and bonding to resolve any constrains.

Gender Issues in common plafom

Priority should be given to women of the slum community regarding access to loans and training for income generation to facilitate their active participation at the programme. Mobilization of skilled women can play effective role to raise self-reliant community. In that case community space and vocational area needed to be develop.

Sustainable Development for the community space

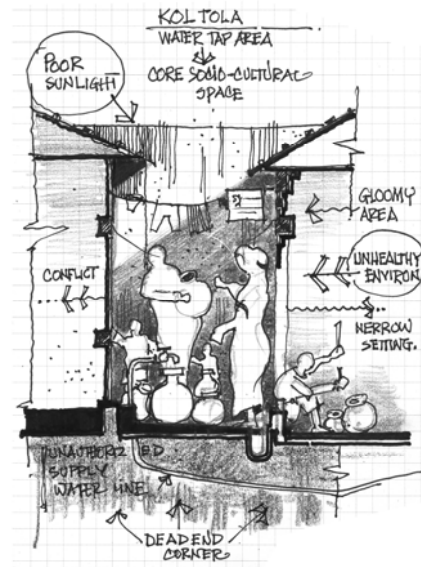Technology needed to be affordable to the poor community, sustainable to the environment and

Fig 8: kol tola, water tap area is some times vibrant with the community gathering, specially women and children are habituated with the space

should cover easy maintenance and easy installation. Considering the sustainability and different needs, the community's choice should be given priority. Flexibility in selection and provision of different options may enable the community to adopt appropriate technology according to their needs.

2 Organisation

BRAC, one of the largest development NGO in the world has been working for the cause of alleviating poverty in Bangladesh since 1972, amongst others, though its health, education and micro-finance programs. In 2002 it embarked on a project called Challenging the Frontiers of Poverty Reduction/Targeting the Ultra Poor (CFPR/TUP) aimed at improving the quality of life of the very poor. Recent estimates suggest that 20–34% of the population of Bangladesh live in extreme poverty and some of them are the participants of this program. The selection is based on a range of socio-economic and demographic indicators. The Department of Architecture, BRAC University is consren with sustainability and the shelter for the slum poor, vernacular architecture remodifying, costal area shelter restructuring and assistance, adaptation to climate change in Dhaka city and lastly the strengthing cyclone shelter for the affected area.

Fig 9: narrow aile is the main interaction space for the slum people

Fig 10: unhealthy workshop area due to scaresity of common or semi-public space in the informal settlement

Fig 11: though the study area contains public toilet but ill illmailtailed

3 Shelter Problem

The statement of the problem of the informal settlement

High urban migration rate in Dhaka city has often resulted in very teeming spontaneous developments referred to as informal settlements. These are in general characterized by lack of infrastructure and other basic amenities. Informal housing is a fade-investment for the Government and till inhabitants of slum and squatter are away from any facilities. The solution to the informal housing problem is left to the survivors themselves using their own wealth. However, the high potential of the slum dwellers to organize themselves to provide for their own shelter and other infrastructure by own means or illegally. (UN-Habitat, 1999, v) indicates that '*their physical and social reality also reflects the capacity …to mobilize resources, devise survival strategies and build social organizations even in the presence of enormous constraints*".

Fig 12: the study area focused section of the alley and the surrounding

Fig 13: unplanned settlement and informal thoroughfare is the barier to secure better common space

This capacity of the residents makes upgrading policies implementable, as community involvement is important. The residents contribute towards the improvement of their shelters and community space through community participation during their own construction. The extent of the slums "In terms of human suffering and its devastating impact on the life of people living in cities, are immeasurable."[8] Many other social vices emanate from the poor living conditions because of tight spaces and congested living that is inhumane. Due also to poor basic facilities the residents are prone to disease outbreaks and epidemics. The socio-political situation and advantages for the policy makers could be one of the factors that contribute to the obvious-liberal approach.
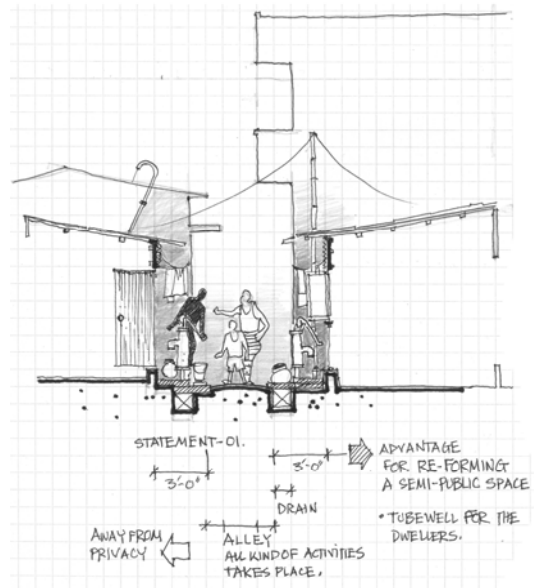
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[8] ibid

Necessity of community space

Lack of community space in the slum area is a vital issue to ease shelter development. The slum area is dense with uncontrolled household. Unplanned and unstructured growths are available in the informal settlement. Open space is necessary to grow a lively participatory community, a vibrant neighborhood gathering territory, space for the multiple uses for all through the day and night. Nevertheless inhabitants of the slum area is facing the nonexistence of urban community space.

Fig 14: door directly opens to the narrow aisle. occupant does not have a semi-public space for self – reliant activities.

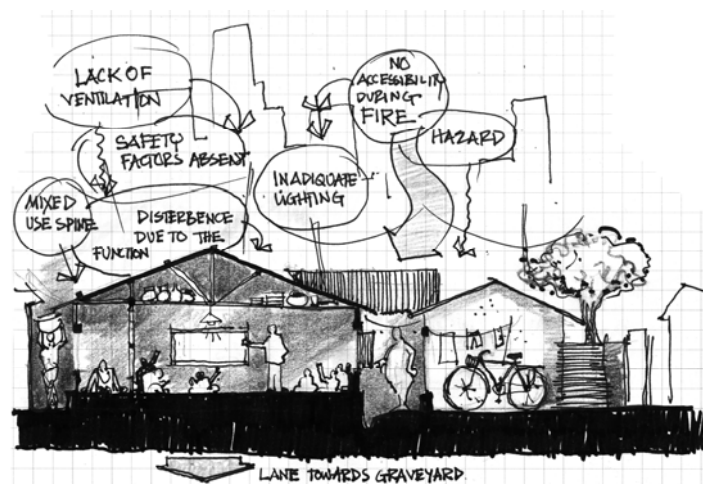**Accessibility to the community space and shelter**

Informal shelters are

Fig 15: section of a school in the cramped setting

cursed with the various difficulties, accessibility is one of the prime cause in the development of the slum settlements. Approaches from the urban area to the informal settlement are haphazard, unidentified, gloomy, muddled, and compelled. Rescuing during fire hazard is challenge for the fire fighting personnel. It is also obvious during any evacuation of any mishap. During the flood accessibility becomes critical problems.

Fig 16: children are engaged with activities on the alley

Lack of Sharing of semi-public space

There is absence of 'semi-public space' in the slum. Spontaneous developments derived form need, some kind of common utility spaces are available in the informal settlement, where inhabitants of slum gather for certain time span. Such as alley sitting on the door frame, portable water tap area where the share their social transaction.
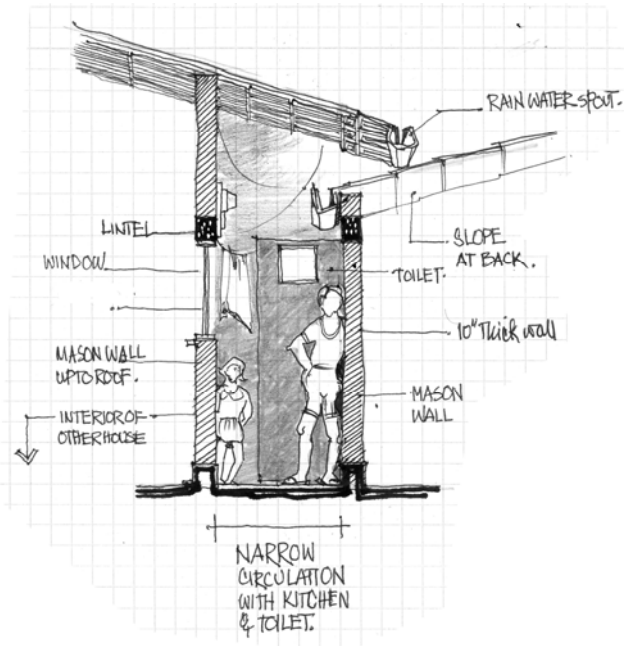

Fig 17: narrow alley with common facilities.

Children do not have playing area in the slum, so they spend most of the time in the winding alleys. Schools do not have any open space for the assembly and other related activities. Personal space of the dwellers are absent in the informal settings.

Lack of 'Self-help scheme' so that women can play effective role to raise self-reliant community

Women are neglected and away from the basic privileges. A few NGOs are conducting them to uplift by self-help scheme, by urban agriculture, vocational training and how to maintain and build low-cost shelter in the slum area. Now a days women are also encouraged to maintain their spaces around the household.

Lack of knowledge in sharing duality of space

People of slum and squatter do not have the knowingness in making split function of spaces. Such as the shades for the richshaw[9] are occupied in the night time to the dawn and remain completely unused till evening, so inhabitants can share the space for their other purposes, such as vocational workshop, lecture area for the health and hygiene matters, or could be the bay care center for the children daily workers. Therefore, a space has the multiple uses round the clock-they do not have orientation regarding this.

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[9] Rickshaw is the traditional three wheeler vehicle in Bangladesh

Lack of awareness in making climatic responsive shelter and open spce

   Slum shelter is exposed to climate. Storm, monsoon rain and water clogging are the usual fact in Dhaka as well as Bangladesh. Slum inhabitants are missing the assistance of appropriate guidelines for constructing a climate friendly shelter.

Nonexistence or Eco-Built Environment in slum

   People of slum are not however oriented with the shelter with eco-energy. To harvest rainwater, hanging gardening, solar power, biogas plants and indigenous building materials could have associated with any of the eco-built environment.
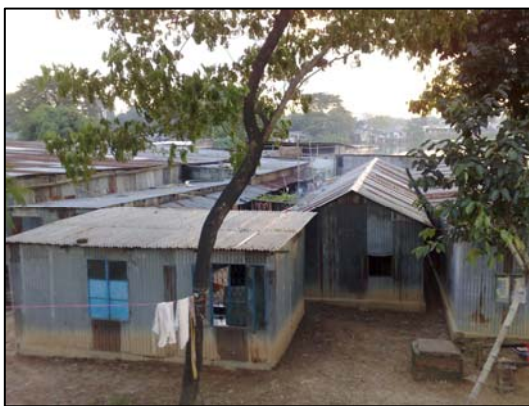
Fig 18: yet not aware about the climate friendly construction materials, even for water clogging

Fig 19: there are rickshaw gerrage in the area could be used as split functions like vocational training

Lack in maintenance and belongingness in public space

   People of the slum are untried with the maintaining and seeking own for the public spaces. People of the area should have the concern to take care of the space for their better livelihood.

Fig 20: tubewell area are contaminated by the inundation and other water clogging

Fig 21: the plaground does not have an impact because it is disintegrated from the alley and other gathering spaces

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4 Proposal for Change and Improvement

To establish and to encourage the shelter situation in better edge the research was required to involve with a study area. The study area was selected based on the particular issues that are few available to meet the public spaces and semi-public spaces in the study area. *Baunia Bandh[10]* area is positioned by the low-income informal housing, though the area was decleared for the rehabilation and resettlement of slum inhabitants of the city, was named and allocated plots for the low income people. Habitants are away from consuming the community space, social interaction, children play area, mosque area or religious space for the commune and lastly suffeing in absence of semi-public or shered space. Water clogging and inundation is another problem for the community. Respecting all these problems proposal for change and improvement has been drawn as followed:
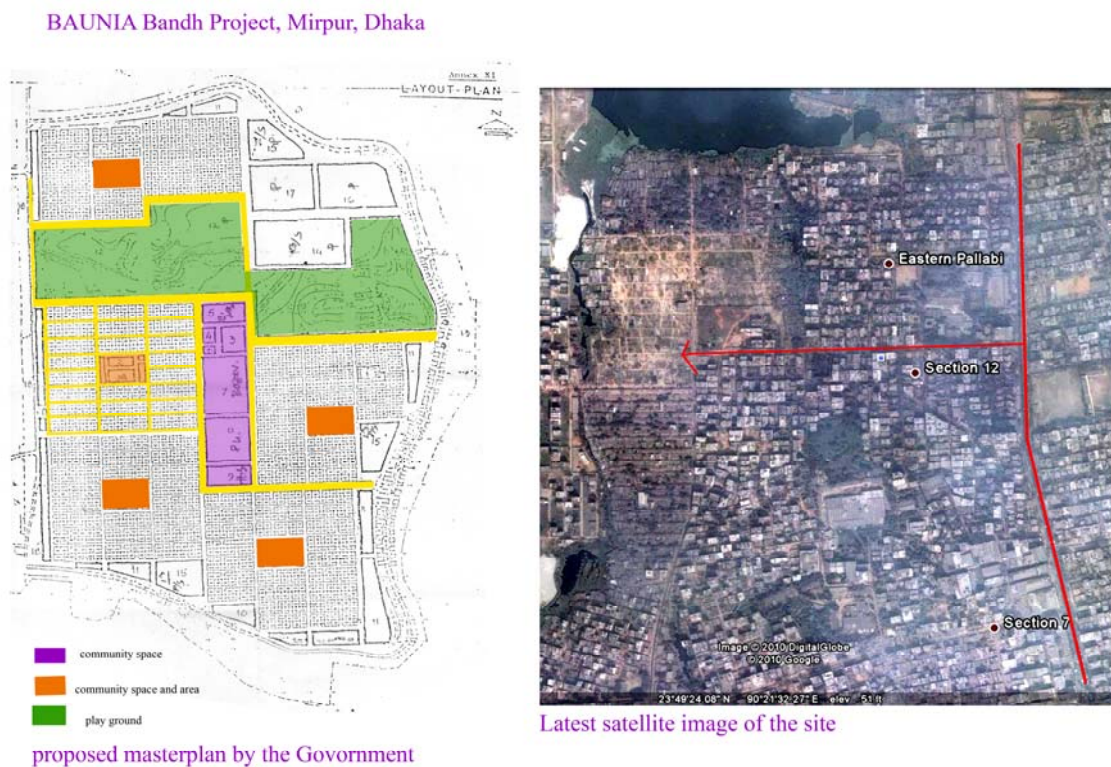

Fig 22: The Study area showing the community and other public space at the Baunia Bandh area

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[10] Baunia Bandh: is the allocated area for the low-income people, by the Government, but the main scheme of the project failed to reach the aim. Political and local muscle power is the constrains for development. The area is located northern and western part of the Dhaka city.

- Basic space requirement, needs for the open area giving the traditional configuration (fig 23).
- Semi-public and neighbourhood sharing spaces required to be addressed.
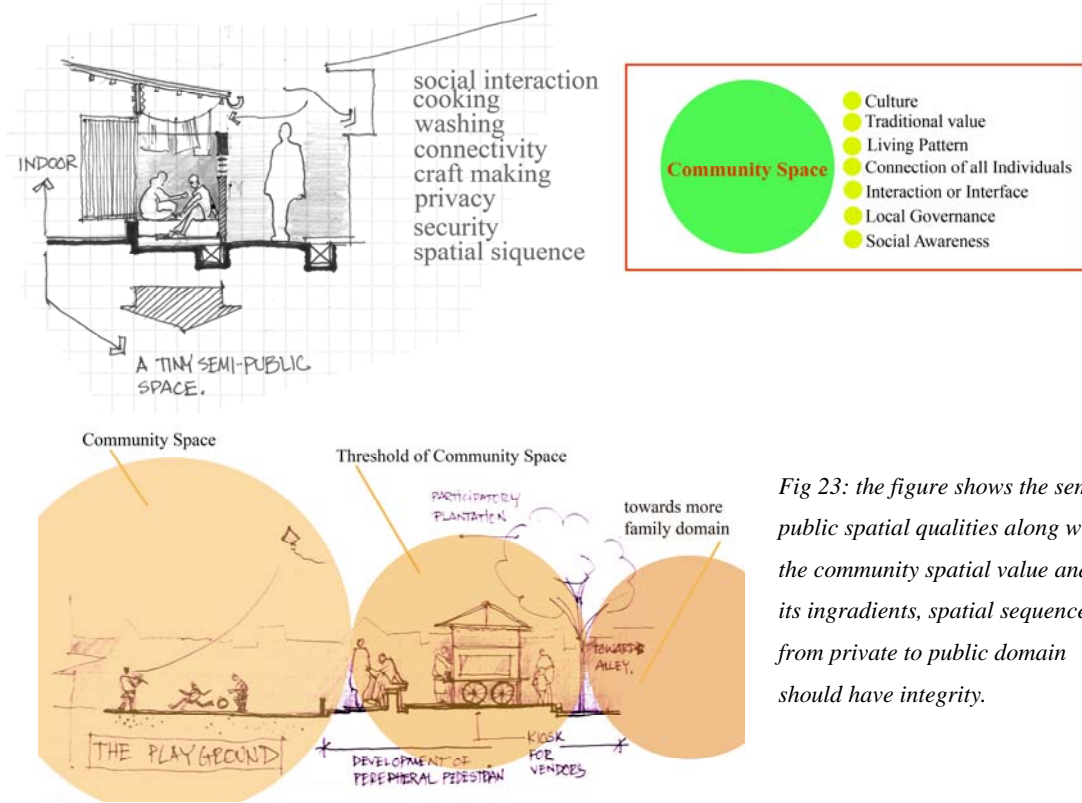
The Quality of Semi-public Space

Fig 23: the figure shows the semi-public spatial qualities along with the community spatial value and its ingradients, spatial sequence from private to public domain should have integrity.

- Government policy and development organization may find policies and a way forward to improve the situation.
- The locality may have the frazil community gathering space, reformulate with by both day-night efficiency in organizing spatial pattern
- round the clock activity spaces needed to ensure vibrant locality

Policies to uplift sharing of space for both commercial and Institute facilities/split function of spaces.

- Security of tenure is important in encouraging self-development of the slum dwelling.
- Role of government and municipal authority needs to be amplified especially in the provision basic infrastructure and access to community space
- Public spaces could be maintained by the inhabitants of the particular area

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- Common Good needed to be attained for the dignity of every individual in society.
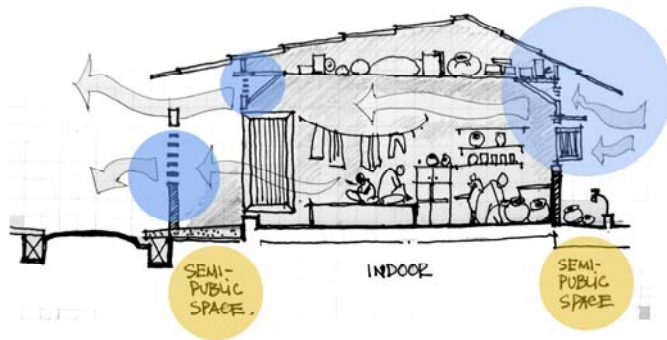- Buildings for digesters guidance is needed to survive in monsoon season.

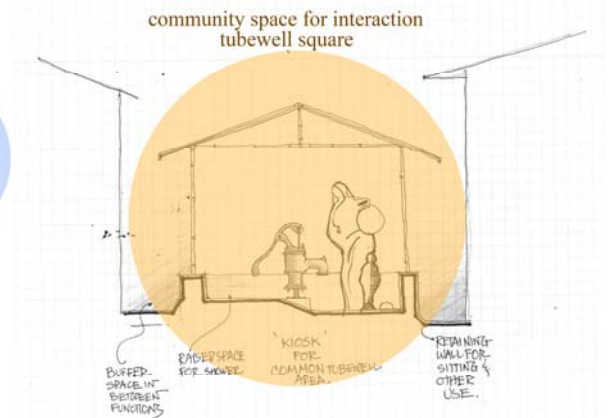*Fig 24: building materials and some simple adaptation can change the climatic condition*

Fig 25: water tap area shoud be raised and should have the see through ness from all side, could be spacious.

- Eco-Building guidelines could be stimulated for micro level strategy (rain water harvesting, biogas plants, plantation etc.)
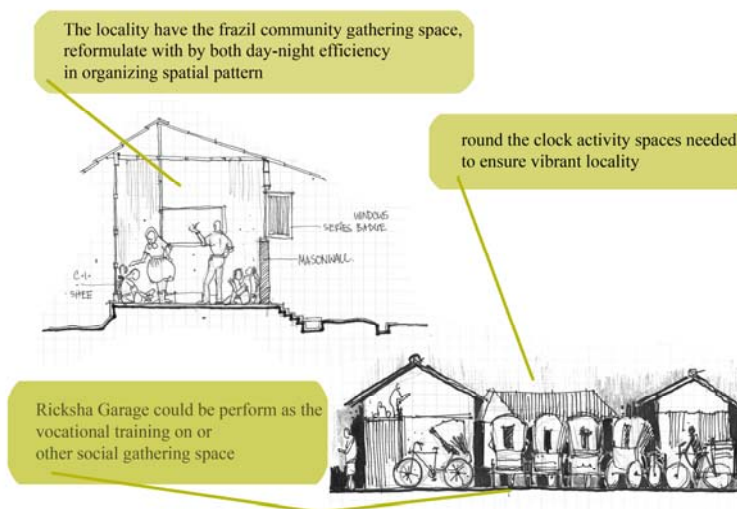

Fig 26: buildings can function round the clock, so by putting different functions (split function) we can make the space alive all the time.

-Water-tap hub with clear visibility

- Schools as well as for night education

- Women's craft center or income generation area and vocational center.

- Health center for women and children

- reformulating bazaar or shopping spaces for the community.

- Daycare center with lawn and open spaces

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- A central hub at the center of the community for gathering and other rituals.
- The kitchen garden area and other open space
- Rickshaw stands and shaded spaces uses during day time with split function
- community library.

Action Plan: A way forward to reform public and semi-public space in informal sector

State Level:

- Local authority and Municipality can enrol a great part concerning the community space and its surrounding.
- Municipality can from a monitoring body for counselling and to guide regarding maintenance of community space and semi-public space.
- A model area could be installed for experience the situation of upholding.
- Training facilities for the uphold and improvement of community space and community empowerment such as the management training, foundation skill training, etc needs to be introduced.

Design Level:

- The shared/semi-public space needs to be well ventilated and lighted.
- This semi-public space should have the nature for social interaction.
- Design should be addressed as the part of the alley's development.
- The public space should have the nature to collect people from all different alleys.
- Other infrastructural and small scaled commercial development could be allowed around the community space.
- Participatory design could be conducted to create more belongingness about the space.

My Organisational Level:

The organisation could be involved to secure the issue in an nationwide scale, through the organisation we can conduct the mission in a sustainable manner as well as to carry out the programme with some different strata for implementation.

Conclusion

It is noticeable that shelter is the term with wide range of phenomenon, community space and the other semi-pubic spaces are the value for the shelter to add comfort and socio-cultural integration. Shelter sometimes creates people's interaction vibrant sometime take away far from the community. So neighbourhood development is another issue in shelter design, to provide better living and livelihood it is essential to have better designed community and semi-public spaces in the slum area. Finally shelter is associated with the community space and the shared/semi-public spaces to enhance better and sustainable living.

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