SUSTAINABLE HOUSING FOR RESILIENT COMMUNITIES: THE CHALLENGES OF AFFORDABILITY

UIA, CA + HR

August 2022
SOCIAL HOUSING IN DHAKA CITY WITH A FOCUS ON BOTH INNOVATIVE PROJECT DESIGN AND STRATEGIC PLANNING WHICH Responds TO LOCAL CHALLENGES

Presented by
Architect Iqbal Habib
FOREGROUND
1. Dhaka is the 8th largest city in the world projected to become 3rd largest by 2030.

2. Annual population growth rate in 2011 of Dhaka was 3.96%.

3. Dhaka’s (DMA) approx. 15 million people live in just 125 square miles (325 square kilometers).

4. At more than 45,000 per sq.km. the capital of Bangladesh is nearly 75% more dense than Hong Kong.

Over 70% urban households do not have land in the city. As a result, 3.5 million people are living in 4000 slums in Dhaka city with another 52,000 homeless people. 

Source: Dhaka Structure plan 2016-2035 & ongoing DAP
More than 40% of urban population are living in slum for non-inclusive policy.
4 Objectives to achieve Housing Need

1. **Affordability**
   - Implement a Comprehensive Government Housing

2. **Production**
   - Increase Housing Production Capacity to sustain 12%

3. **Policy Framework**
   - Improve Regulatory Environment for housing subsidy for targeted segments.

4. **Financing Program**
   - Generate and Mobilize funds for End-user financing
Dwelling Need Assessment Components:

1. Growth of new Households
2. Shortage of existing dwelling units
3. Replacement of old & dilapidated dwelling units

The backlog of dwelling units estimated for 2015 was 0.76 millions.

But according to a Population Census 2030 the total demand of Housing by 2030 will be 1.14 millions.

Thus, only in Dhaka the total need in 2030 will be approx. 1.90 millions.

<table>
<thead>
<tr>
<th>Year</th>
<th>2010</th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2035</th>
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<tbody>
<tr>
<td>Population Demand</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Population</td>
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<td>19.82</td>
<td>22.21</td>
<td>24.22</td>
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<tr>
<td>Household</td>
<td>3.36</td>
<td>3.89</td>
<td>4.55</td>
<td>5.24</td>
<td>5.91</td>
<td>6.52</td>
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<tr>
<td>Demand</td>
<td>0.68</td>
<td>0.76</td>
<td>0.88</td>
<td>0.88</td>
<td>1.14</td>
<td>1.26</td>
</tr>
</tbody>
</table>

Table: Housing Need Estimation for DMR (in millions)
According to RDP Survey 2013, out of the total existing houses 18.38% is pucca, 33.58% semi pucca, and 48.05% is katcha types which accommodate the lower income level of the city dwellers.

Source: Dhaka Structure plan 2016-2035

Figure: Land Occupancy by Different Group of People in Dhaka

(Source: Islam, 1998)
Affordability level of Different Income Groups of People (in %)

<table>
<thead>
<tr>
<th>Affordability level</th>
<th>Lower Middle Income Group (BDT 5000-10,000)</th>
<th>Middle Middle Income Group (BDT 10,000-25,000)</th>
<th>Upper Middle Income Group (BDT 25,000-50,000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affordable</td>
<td>4.88</td>
<td>21.95</td>
<td>47.97</td>
</tr>
<tr>
<td>Unaffordable</td>
<td>92.12</td>
<td>78.05</td>
<td>52.03</td>
</tr>
<tr>
<td>Year</td>
<td>Demand (million)</td>
<td>Supply (million)</td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>------------------</td>
<td>------------------</td>
<td></td>
</tr>
<tr>
<td>2008-2013</td>
<td>0.172</td>
<td>0.172</td>
<td></td>
</tr>
<tr>
<td>2013-2018</td>
<td>3.45</td>
<td>0.067</td>
<td></td>
</tr>
<tr>
<td>2018-2025</td>
<td>4.45</td>
<td>0.145</td>
<td></td>
</tr>
</tbody>
</table>

Source: Islam & Shafi; RAJUK, NHA, REHAB, 2019
Housing Supply Trend (in million)

Source: RAJK, NHA, REHAB'2019, Bangladesh Real Estate Market Research' 2021
With a Housing NEED of approx. **1.90 millions** in Dhaka in 2030, a target housing supply of approx. **2.5 millions** can solve affordable housing crisis in & around Dhaka and in other parts of the country. With **1.2 million BDT** per unit cost creates a target investment of **3000 billion BDT**.

Source: Dhaka Structure plan 2016-2035
According to the 2018 World Bank report, the number of displaced Bangladeshis could reach 13.3 million by 2050.

According to Environment Justice Foundation, by 2050, one in seven people in Bangladesh will be displaced due to climate change, and an increase in sea level alone could force 18 million people to flee.

A study by the Refugee and Migratory Movements Research Unit (RMMRU) found that 3 out of 5 migrants from rural areas (59.2%) took refuge in Dhaka.

According to a survey by the International Organization for Migration, 70% of Dhaka's slum dwellers are displaced due to climate change and natural disasters.
Ring Roads around Dhaka

RSTP, National Connectivity

Joydebpur

Purbachal

Savar

Shingair

Jhilmil

Narayanganj

AFFORDABILITY

OUTER RING ROAD

MIDDLE RING ROAD

INNER RING ROAD

DHAKA ASHULIA ELEVATED EXP.

DHAKA MYMENSINGH EXP.

DHAKA ELEVATED EXP.

DHAKA MAWA EXP.

DHAKA CHITTAGONG EXP.

DHAKA SYLHET EXP.
The Three Pillars of **Sustainability**

- **ECONOMY**
  - Considering the economic issues, local & available materials and techniques have been deliberated for a building.

- **ENVIRONMENT**
  - Environmental decisions that will be equitable, effective at protecting the environment and cost-effective.

- **EQUITY**
  - The distribution of cost or benefits among individuals or groups, is a commonly sought after ideal in conservation planning.

**GOOD DESIGN**

- Responsible Procurement
- Engine of Economic Development
- Energy / GHG Emission – Buildings
- Water
- GAS Emissions – Transpiration
- Residual Materials
- Greening and Biodiversity

- Service Culture
  - Employees
  - Community
  - Soundscape Management
SUSTAINABLE STRATEGIES

- Energy efficient and cost effective materials are used
- Solar power systems will reduce dependence on the main power grid
- It will provide an alternative supply of water
- Biogas plant will convert the biomasses into energy and valuable bio-fertiliser
CASE STUDIES
RMG WORKER’S HOUSING
VITTI Sthapati Brindo Ltd.
11.1: SAFE AND AFFORDABLE HOUSING
By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums.

11.3: INCLUSIVE AND SUSTAINABLE URBANIZATION
By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries.

11.7: PROVIDE ACCESS TO SAFE AND INCLUSIVE GREEN AND PUBLIC SPACES
By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities.
RMG Worker’s Living Conditions

Of these 40% inhabitants about 23-24% are workers in the RMG Sector. The initiative is to develop an housing system for these people which can later be modeled for other low income people of the society.
Rent Analysis of **FAMILY UNITS** in Slum Areas

We will taking all most fifty family with kids type on their monthly income, monthly expensive such as house rent, food & others. All are said below mentioning example.

<table>
<thead>
<tr>
<th>SL. No.</th>
<th>Member</th>
<th>Room size</th>
<th>House rent</th>
<th>Food cost</th>
<th>Others cost</th>
<th>Total cost</th>
<th>Average cost per person</th>
<th>Total earn all persons</th>
<th>Average per persons earn</th>
<th>Total balance</th>
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<tbody>
<tr>
<td>1</td>
<td>3</td>
<td>144 sft</td>
<td>6500</td>
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<td>7500</td>
<td>10500</td>
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<tr>
<td>2</td>
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<td>168 sft</td>
<td>8000</td>
<td>9500</td>
<td>4000</td>
<td>21500</td>
<td>7167</td>
<td>18000</td>
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<td>20500</td>
<td>6833</td>
<td>33000</td>
<td>0</td>
<td>33000</td>
</tr>
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</table>

Current Average Rent per **FAMILY** per Month (occupying 170 sft) in (3-4 people sharing) is **7900 Taka** considering the average rent structure per unit

**47 TK per sft / month**

With Shared toilet & Shared kitchen

**RMG WORKER’S HOUSING**
Rent Analysis of **DORM UNITS** in Slum Areas

We will take all most fifty mess on their monthly income, monthly expensive such as house rent, food & others. All are said below mentioning example.

### 1. Mess type analysis.

<table>
<thead>
<tr>
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<td>5600</td>
<td>52000</td>
<td>10400</td>
<td>4800</td>
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CONCEPTUAL POSITION

What are the issues for the disparity?

1. COLLATERAL?
2. AN APPROPRIATE & CREATIVE SOLUTION?
3. GOVERNANCE & STEWARDSHIP?
4. ASSUMING RESPONSIBILITIES?

168 SFT Rent = 7900 tk
408 SFT Rent = 18000 tk
Rent per SFT = 45.5 tk avg.
Facilities:
- One Light
- One Fan
- Shared Toilet
- Shared Kitchen
- No Ventilation
- No Natural Light
- No facilities

2550 SFT Rent = 60,000 tk
Rent per SFT = 23.5 tk avg.
With All Facilities & Luxury
At areas like Dhanmondi, Gulshan, Banani

RMG WORKER’S HOUSING
PROJECT DESCRIPTION

- Total Land Area: 75,520 Sq. Ft (1.7 Acre)
- Total Development Footprint: 35,670 Sft (47% of the Total)
- Total Proposed Built Area: 4,14,020 Sft
- Land Value: 1.86 crore
- Total Construction Cost: 29.75 crore

PROJECT VALUE: 31.61 CR.

PROJECT RENT ANALYSIS

<table>
<thead>
<tr>
<th>Rent per Dorm. Occupant</th>
<th>Rent</th>
<th>Unit</th>
<th>Remarks</th>
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<tbody>
<tr>
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<td>2,250</td>
<td>Tk/ Month</td>
<td>10 Tk per Sft (gross) per Unit 22 Tk per Sft (nett) per Unit</td>
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<tr>
<td>Annual Rent from Dorm Units</td>
<td>1.14</td>
<td>Crore</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
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<th>Rent per Family</th>
<th>Rent</th>
<th>Unit</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8,000</td>
<td>Tk/ Month</td>
<td>10 Tk per Sft (gross) per Unit 22 Tk per Sft (nett) per Unit</td>
</tr>
<tr>
<td>Annual Rent from Family Units</td>
<td>1.88</td>
<td>Crore</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Annual Housing Rent total</th>
<th>Rent</th>
<th>Unit</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>3.02</td>
<td>Crore</td>
</tr>
</tbody>
</table>

PROGRAM BRIEF

1. 196 FAMILY = 784 OCCUPANTS approx. (avg. 4 member per family)
2. 424 DORM OCCUPANTS in 105 units-
   - 70% female occupants - 280
   - 30% male occupants - 120

TOTAL OCCUPANTS- 1208
The current concept of shared common facilities was an influencing factor for the design. It supports and strengthens the value of this community.
MASTER PLAN

- PRIMARY SCHOOL CLASS ROOMS
- DISABLE FAMILY UNITS
- COMMUNITY SHOPPING
- FAMILY UNITS
- GATE HOUSE WITH PHARMACY AND GUARD ROOM
- RECREATIONAL GHAT
- EXISTING CANAL

LEVEL 0

VITTI STHAPATI BRINDO LTD.
RMG WORKER’S HOUSING

SECTION

KHAL

+3’-6” LEVEL:
  LEVEL 1

-6’-0” LEVEL:
  LEVEL 0

-10’-6” LEVEL

±0’-0”
LEVEL:
  ROAD LEVEL

-10’-6” LEVEL: EXISTING GOUND LEVEL
BIRD’S EYE VIEW
ENTRANCE VIEW SHOWING COMMUNITY PLAY FIELD
GATEWAY TO THE INNER COURTYARD

RMG WORKER’S HOUSING

VITTI STHAPATI BRINDO LTD.
SOCIAL SPACES

VITTI STHAPATI BRINDO LTD.
SOCIAL SPACES
RMG WORKER’S HOUSING

SOCIAL SPACES

VITTI STHAPATI BRINDO LTD.
CELEBRATION IN THE COURTYARDS
FLORA & FAUNA IN THE INNER COURTYARD
COURTYARD WITH CHILDREN
SOCIAL CORRIDOR
SOCIAL SPACE & UNIVERSAL ACCESSIBILITY
UNDP funded Affordable Housing
VITTI Sthapati Brindo Ltd.
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By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums.

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NUPRP targets improvement in the livelihoods and living conditions of the urban poor across towns and cities of Bangladesh.

Funded by the Department For International Development (DFID) and the Government of the United Kingdom, it is being implemented by the Local Government Division (LGD) of the Government Of Bangladesh together with the United Nations Development Program (UNDP).

From 2016 to 2021, NUPRP has targeted 35 cities to,

• Focus on Urban Poor Communities
• Reduce Vulnerability
• Create Pro-poor Policy Making Environment at the National Level
• Promote Inclusive Planning Practices
• Promote Evidence-based Decision-making
• Improve Accountability
ANTHROPOLOGICAL BASIS FOR HOUSING CLUSTERING

Courtyard is unique to the regional architectural identity of rural Bangladesh. Bangladeshi courtyard layout arises from a specific context of social and environmental conditions and represents a unique regional typology. Introvert in character these courtyard gives security and privacy to its dwellers. It also provides a sense of belonging and weaves a communal bonding between the individual dwellings and thereby family members that comprise the homestead.
Type A- Family type, with shared kitchen & Individual Toilet between 2 units. So, Rate per SFT 1,600
So, Cost per Unit 512,000
Total cost Unit + Land 1,200,000

The analyses above is done on the considering land price to be 40-45 lacs per Acres.
Type B - Common Service Type, with shared kitchen and toilet between 12 units.

WALK UP 6 STORIED
TYPE B – COMMON SERVICE TYPE

PRODUCTION

<table>
<thead>
<tr>
<th>Net Unit Area</th>
<th>197.34 Sft</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shared service area</td>
<td>49.93 Sft</td>
</tr>
<tr>
<td>Common area</td>
<td>62.00 Sft</td>
</tr>
<tr>
<td>Gross area</td>
<td>306.67 Sft/28.68 Sqm</td>
</tr>
</tbody>
</table>

So, Rate per Sft | 1,444.84 |
So, Cost per Unit | 4,459.79.42 |

So, Rate per SFT | 1,450 |
So, Cost per Unit | 446,000 |
Total cost Unit+Land | 1,060,000 |

Number of units per floor (12 x 2) = 24
Total Number of Units in the complex 144
3D VISUALIZATION of Courtyard Concept
INTRODUCING PUBLIC-PRIVATE PARTNERSHIP FOR AFFORDABLE HOUSING
Government is paying for purchase of land, cost of development, cost of money & management.

Government is also giving utilities at pro-rata basis like electricity, gas, roads etc. at no return against infrastructure investment.

Thus, Govt. is getting no benefit, End buyer is at loss, but middle-man is making high profit.

Land Buyer is taking benefit of all these extra govt. benefits and raising the land value.

Conclusion: Lands and plots are now not affordable for many after middle-man has raised price.
**PROPOSED CONCEPT**

**Step-1:**
Private investor buys land and develops it;

**Step-2:**
Government gives investors **utilities like electricity, gas, roads etc.**;

**Step-3:**
In return, private investor will **give government ~30% land at actual** (incl. purchase of land, cost of development, cost of money & management) **Cost**;

**Step-4:**
Government will **invite private developers** to a 50/50 partnership to build apartments;

**Step-5:**
Govt. will give their flat to buyers **at affordable price** with a small down payment;

**Step-6:**
If a family can **afford a 500 sft flat for 10 lac taka** then they can **amortize the price of the flat in 8 years paying monthly rent.**
Government will establish new institute & create fund for affordable housing scheme.

Institute’s Scope Of Work:

- Fund management and utilization, For eg. Land Purchase & rent collection
- Preparation policy framework;
- Management team.
FURTHER PROPOSITION

What could be the BREAK THROUGH SOLUTION?
2 bumps on the ride?

**PROBLEM:**
1. Stagnant Market
2. Conventional Record or Book Keeping

**SOLUTION:**
- Creating an inclusive, participatory market.
- Transforming conventional land record keeping with effective technology based management.
INTRODUCING

Real Estate BlockChain (RealChain)

an initiative of
DIGITAL BANGLADESH
With **no financial help** from the Government, lowest income groups can also invest in housing sector.

- Undivided and undemarked land allocation only shall allow apartment purchase.
- Instead of purchasing flats as unit, one SFT can be purchased.
- Each purchased fragment or SFT has to be **transferable**.
RealChain: Benefits

- Ensures tamper-proof recordkeeping of real estate assets
- Enables fractional ownership of property
- Facilitates creation of secondary markets for trading property thereby increasing liquidity and investment
- Improves govt Tax collection
- Reduces real estate transaction Fraud
• And finally, the National Housing Authority can release bonds to develop sustainable housing scheme with the investment of Public, for the Public.

• Thus each unit/module invested by the Public individual will be sold as GREEN BOND.

• When An individual buys a GREEN BOND (SFT or unit or module) of a certain category from a government approved housing company, he/she will be un-demarcated owner of that SFT in all the housing projects in that category of that company.

• This will lead to 2 things. The investor is partner of the gain and losses of this sector just like the Share Market. Second the investor also becomes a partial owner of the housing and can later invest in additional SFT to buy a full flat.
**Green Bonds: Benefits**

- Investment through **Public Realm**
- Investment through **Partnership on individuals**
- Investment **leads to Housing Production**
- Production will **fulfill Housing needs**
- Government will only **Orchestrates the Participation**
THANK YOU