

SUSTAINABLE HOUSING FOR RESILIENT COMMUNITIES: THE CHALLENGES OF AFFORDABILITY

UIA, CA + HR



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**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



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

1
01

Dhaka is the **8th** largest city in the world projected to become **3rd** largest by **2030**.

2
02

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

3
03

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

4
04

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



More than **40%** of urban population are living in slum for non-inclusive policy.

HOUSING DELIVERY SYSTEM (TOTAL 1.0 MILLIION DWELLING UNITS, 100%)

FORMAL SYSTEM (40 %)

INFORMAL SYSTEM (60 %)

PUBLIC SECTOR HOUSING SUB-SYSTEM (10 %)

FORMAL PRIVATE SECTOR HOUSING SUB-SYSTEM (5 %)

FORMAL INDIVIDUAL HOUSEHOLD SECTOR HOUSING SUS SYSTEM (25 %)

COOPERATIVE HOUSING (<1.0 %)

INFORMAL HOUSEHOLD SECTOR HOUSING SUB SYSTEM (21 %)

INFORMAL SLUM OR SQUATTER HOUSING SUB-SYSTEM (35 %)

INFORMAL ACCOMODATION IN NON-RESIDENTIAL SPACE (4 %)

HOMELESS OR PAVEMENT DWELLERS (<1.0 %)

TARGETED GROUP



4 Objectives to achieve Housing Need

Affordability

Implement a Comprehensive Government Housing

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**

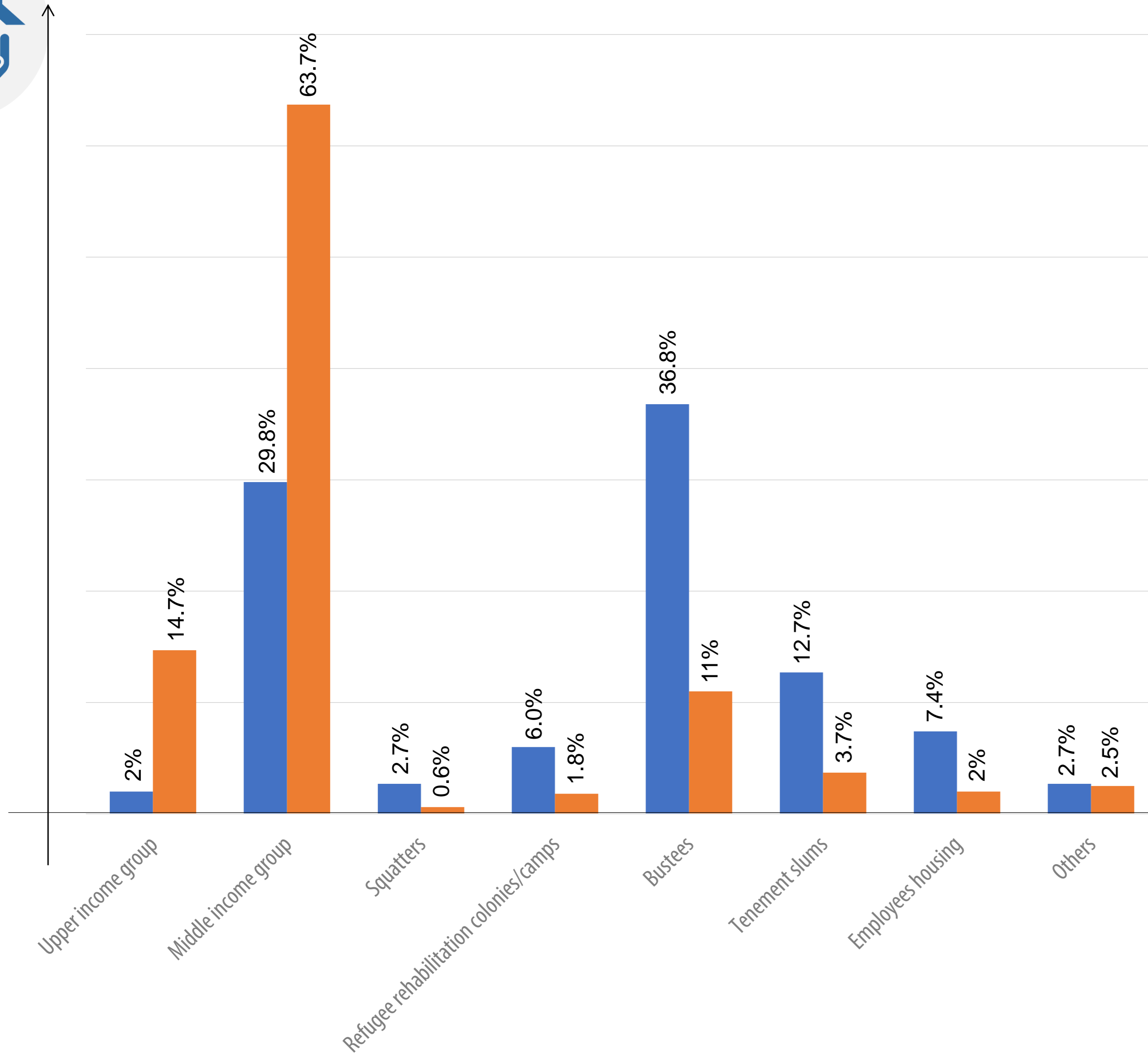
The backlog of dwelling units estimated for 2015 was **0.76** millions.

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: **Housing Need Estimation for DMR (in millions)**

		Year					
		2010	2015	2020	2025	2030	2035
TOTAL	Population Demand						
	 Population	14.73	17.32	19.82	22.21	24.22	24.94
	 Household	3.36	3.89	4.55	5.24	5.91	6.52
	 Demand	0.68	0.76	0.88	0.88	1.14	1.26



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

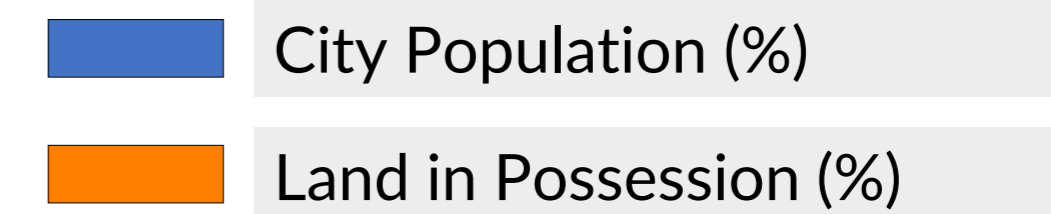
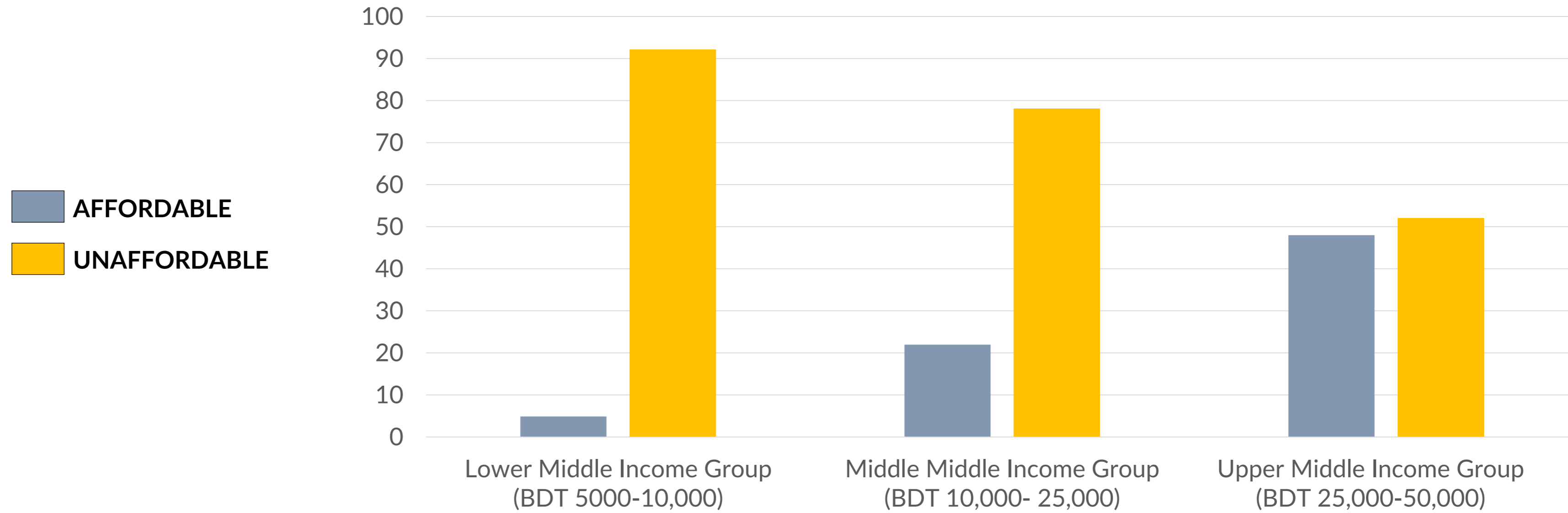


Figure: Land Occupancy by Different Group of People in Dhaka

(Source: Islam, 1998)



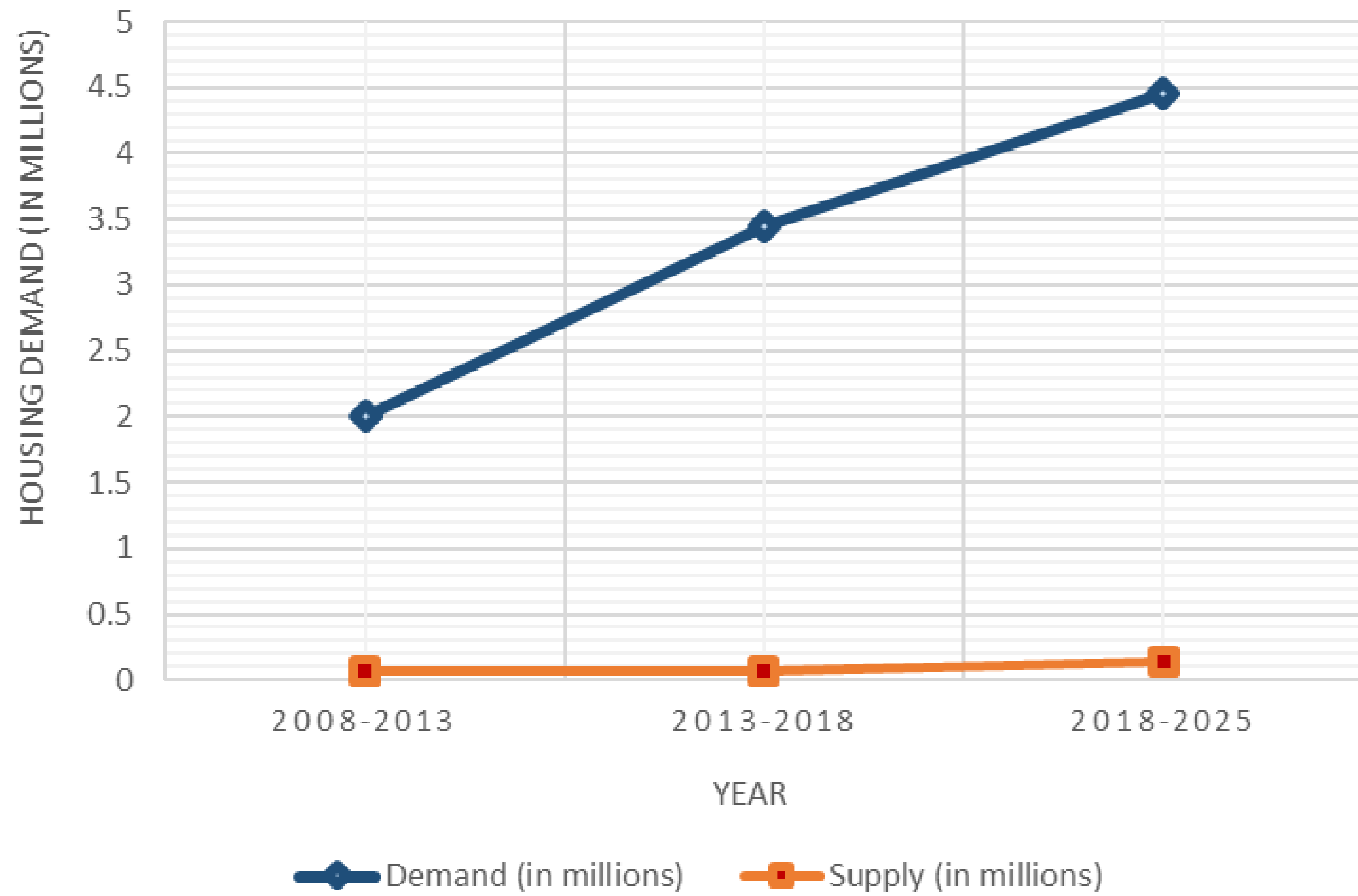
Affordability level of Different Income Groups of People
(in %)



Affordability level of Different Income Groups of People (in %)			
Affordability level	Lower Middle Income Group (BDT 5000-10,000)	Middle-Middle Income Group (BDT 10,000- 25,000)	Upper Middle Income Group (BDT 25,000-50,000)
Affordable	4.88	21.95	47.97
Unaffordable	92.12	78.05	52.03



HOUSING DEMAND & SUPPLY IMBALANCE

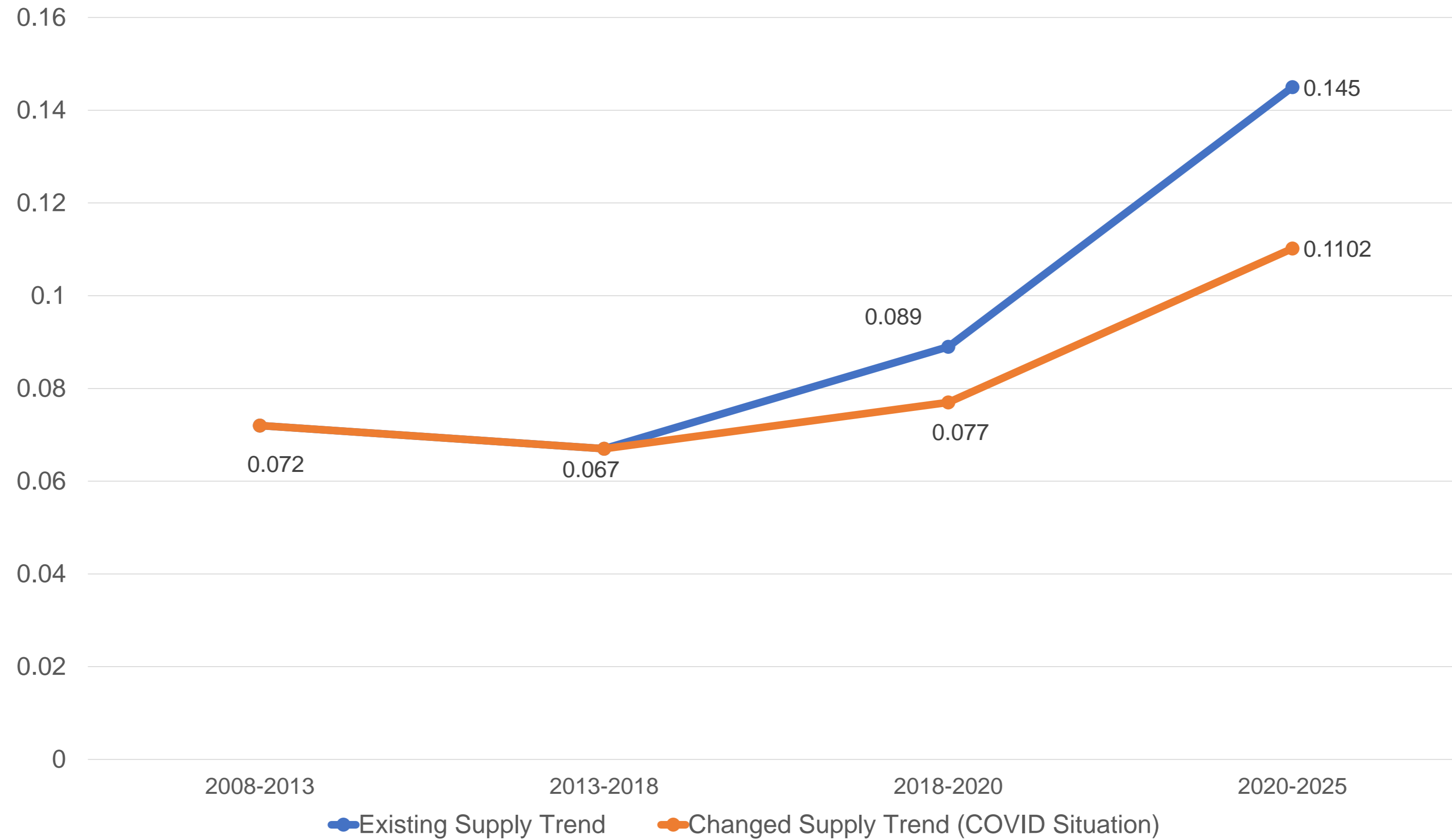


Year	Demand (million)	Supply (million)
2008-2013	02	0.172
2013-2018	3.45	0.067
2018-2025	4.45	0.145

Source: Islam & Shafi; RAJUK, NHA, REHAB, 2019



Housing Supply Trend (in million)



Source: RAJUK, 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.**



1

According to *2018 World Bank report*, the number of displaced Bangladeshis could reach 13.3 million by 2050.

2

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.

3

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.

4

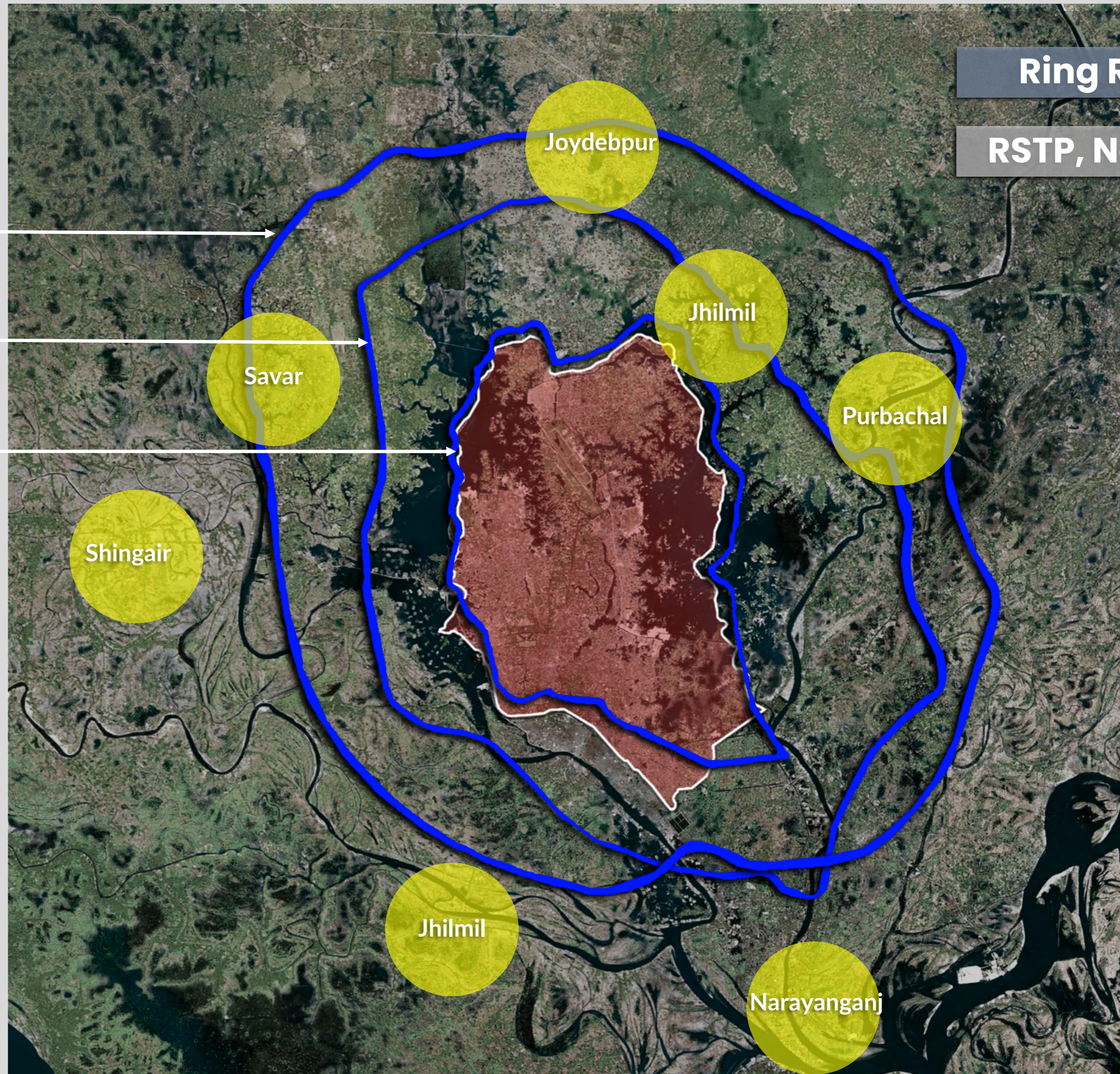
According to a survey by the *International Organization for Migration*, 70% of Dhaka's slum dwellers are displaced due to climate change and natural disasters.



OUTER RING ROAD

MIDDLE RING ROAD

INNER RING ROAD



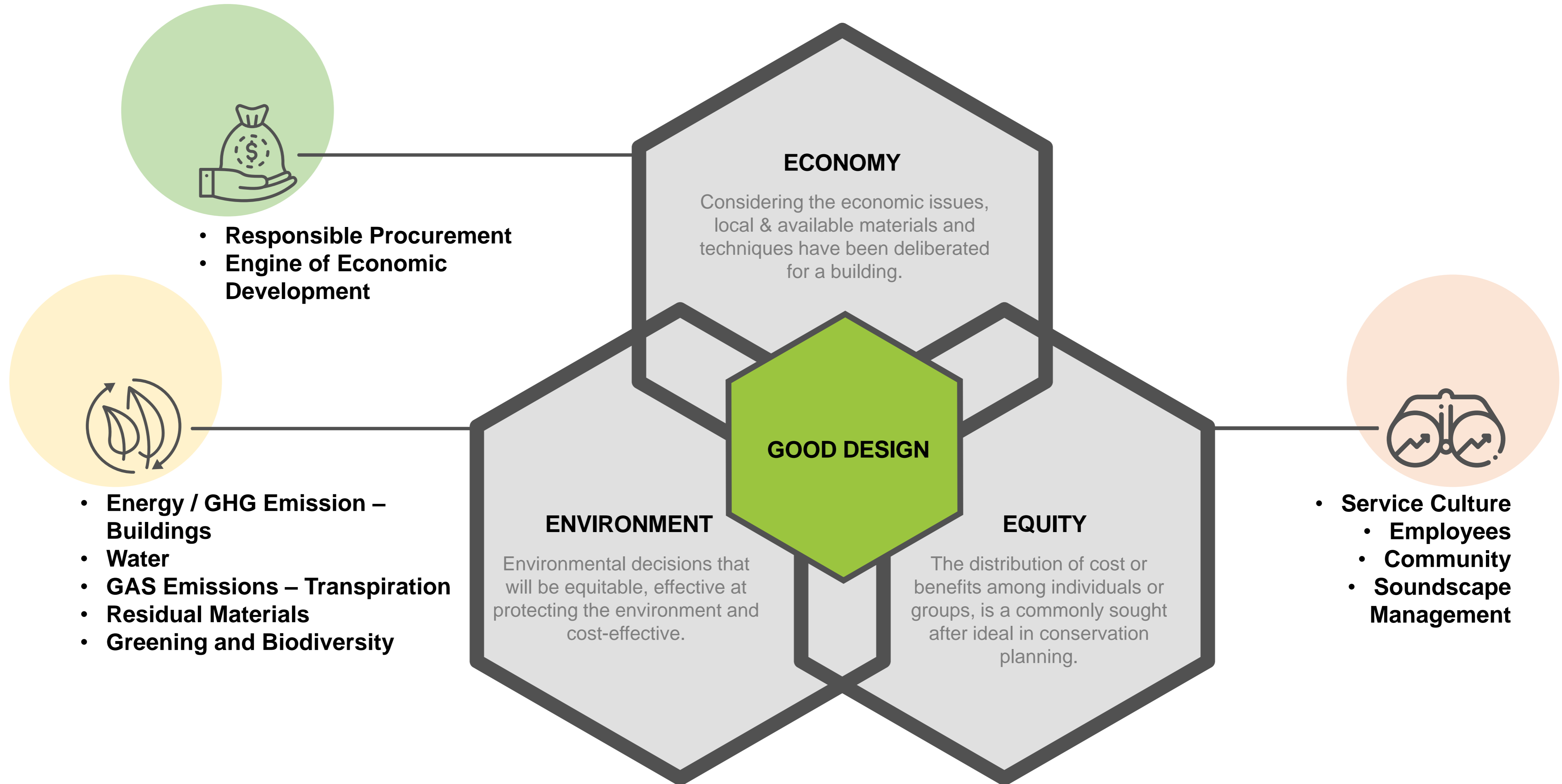
Ring Roads around Dhaka

RSTP, National Connectivity

- DHAKA ASHULIA ELEVATED EXP.
- DHAKA MYMENSINGH EXP.
- DHAKA ELEVATED EXP.
- DHAKA MAWA EXP.
- DHAKA CHITTAGONG EXP.
- DHAKA SYLHET EXP.



Three Pillars of Sustainability





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



RAIN WATER HARVESTING

SUSTAINABLE MATERIALS

SOLAR PANELS

RAIN WATER HARVESTING

BIO GAS PLANT





CASE STUDIES

01

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.**



Toilet and Bath facilities



Public-Private Corridor



Community gathering space





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

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.

2. Family with kids type analysis

Sl. No.	Member	room size	House rent	Food cost	Others cost	Total cost	Average cost per person	Total earn all persons				Average per persons earn	Total balance
								Self	Wife	Soon	Total Earn		
1	3	144 sft	6500	8000	3000	17500	5833	13500	7500	0	21000	10500	3500
2	3	168 sft	8000	9500	4000	21500	7167	18000	9000	0	27000	13500	5500
3	3	168 sft	7800	8500	3500	19800	6600	24000	0	0	24000	24000	4200
4	3	120 sft	6500	9000	3000	18500	6167	22500	0	0	22500	22500	4000
5	3	144 sft	7500	9500	4500	21500	7167	17000	9500	0	26500	13250	5000
6	3	144 sft	7700	9500	5000	22200	7400	32000	0	0	32000	32000	9800
7	3	168 sft	8000	10500	5500	24000	8000	35000	0	0	35000	35000	11000
8	3	168 sft	6500	8500	3500	18500	6167	18500	8500	0	27000	13500	8500
9	3	144 sft	6500	8500	3000	18000	6000	15000	9000	0	24000	12000	6000
10	3	144 sft	7500	9000	4000	20500	6833	33000	0	0	33000	33000	12500



Current Average Rent per **OCCUPANT** per Month (occupying 50 sft) in DORM (8 people sharing) is **2250 Taka** considering the average rent structure per unit

44 TK per sft / month

With Shared toilet & Shared kitchen

Rent Analysis of **DORM UNITS** in Slum Areas

We will taking 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.

Sl. No.	Member	room size	House rent	Food cost	Others cost	Total cost	Average cost per person	Total earn all persons	Average per persons earn	Persons balance
1	6	288 sft	11500	15000	9000	35500	5917	75000	12500	6583
2	5	168 sft	8000	12000	8000	28000	5600	52000	10400	4800
3	6	288 sft	10500	13500	9500	33500	5583	58000	9667	4083
4	8	408 sft	17500	21000	12000	50500	6313	115000	14375	8063
5	5	144 sft	7000	12500	5200	24700	4940	31500	6300	1360
6	7	288 sft	11000	19500	10500	41000	5857	84000	12000	6143
7	6	168 sft	7800	14000	7500	29300	4883	68000	11333	6450
8	8	408 sft	18500	21500	12500	52500	6563	118000	14750	8188
9	5	168 sft	7700	14500	13000	35200	7040	72000	14400	7360
10	6	288 sft	13800	15000	16000	44800	7467	86000	14333	6867



CONCEPTUAL POSITION



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

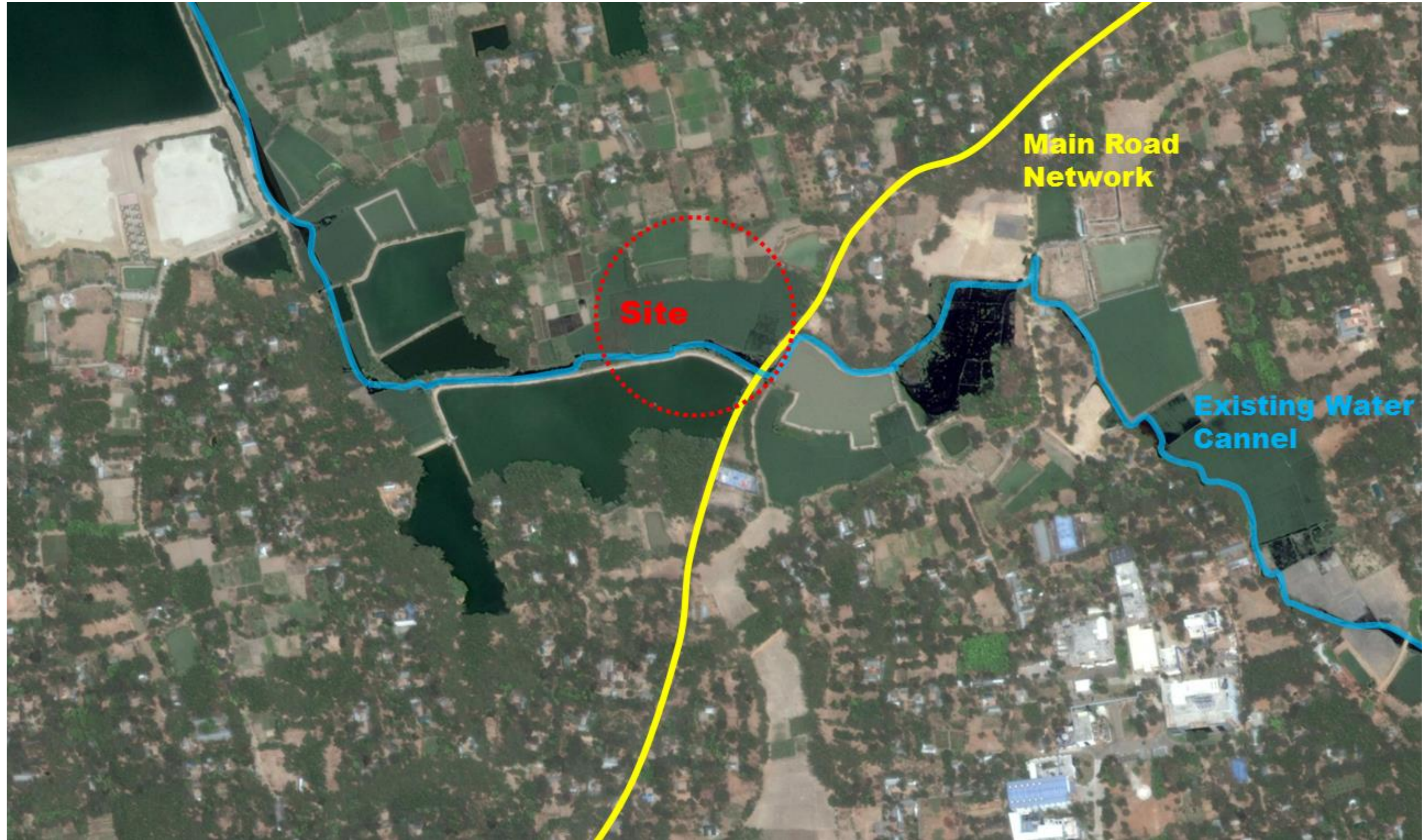
At areas like Dhanmondi,
Gulshan, Banani

What are the issues for the disparity ?

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



SITE MAP





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.

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

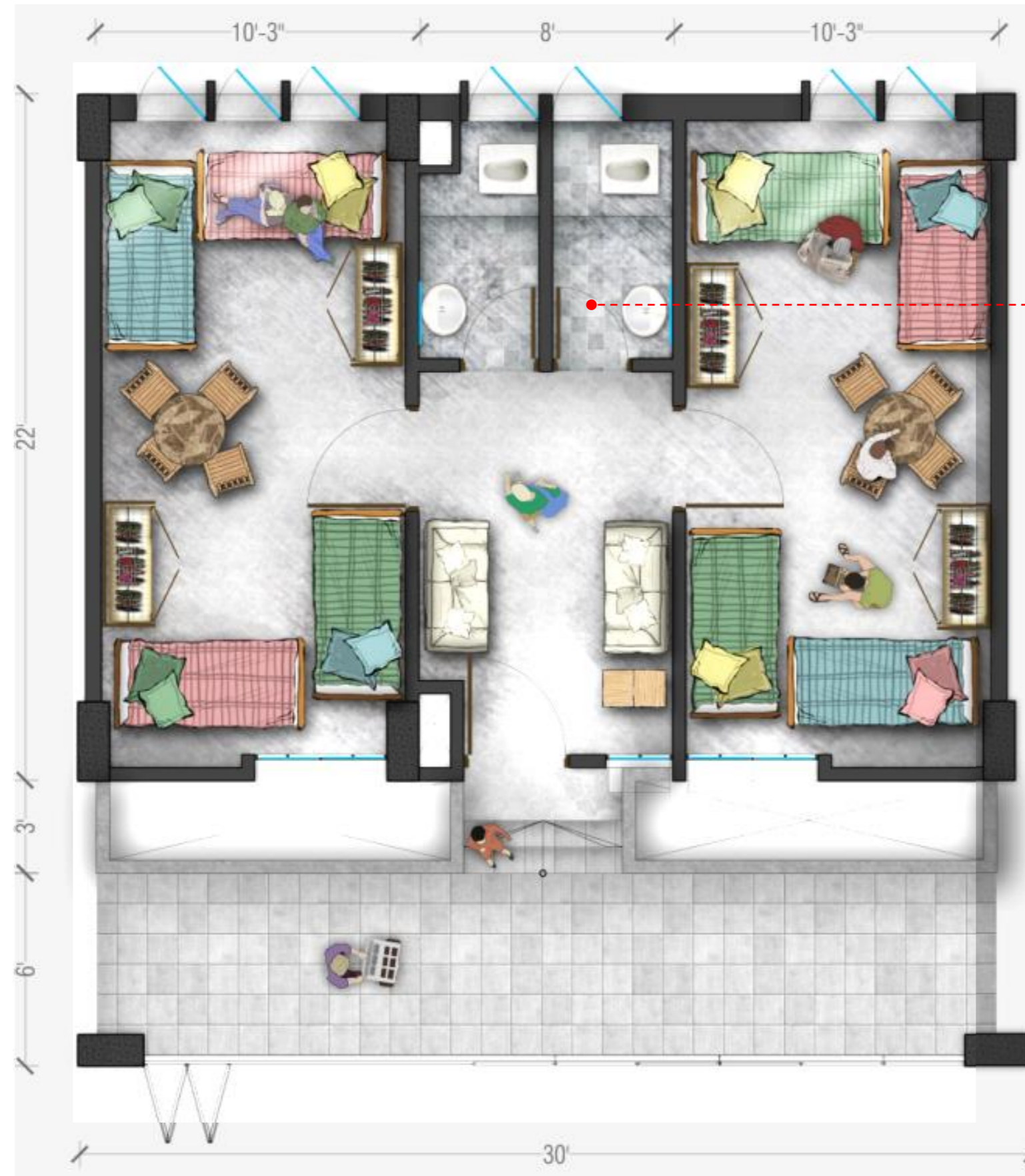
TOTAL OCCUPANTS- 1208

PROJECT RENT ANALYSIS

	<u>Rent</u>	<u>Unit</u>	<u>Remarks</u>
Rent per Dorm. Occupant	2,250	Tk/ Month	10 Tk per Sft (gross) per Unit 22 Tk per Sft (nett) per Unit
Annual Rent from Dorm Units	1.14	Crore	
Rent per Family	8,000	Tk/ Month	10 Tk per Sft (gross) per Unit 22 Tk per Sft (nett) per Unit
Annual Rent from Family Units	1.88	Crore	
Annual Housing Rent total	3.02	Crore	



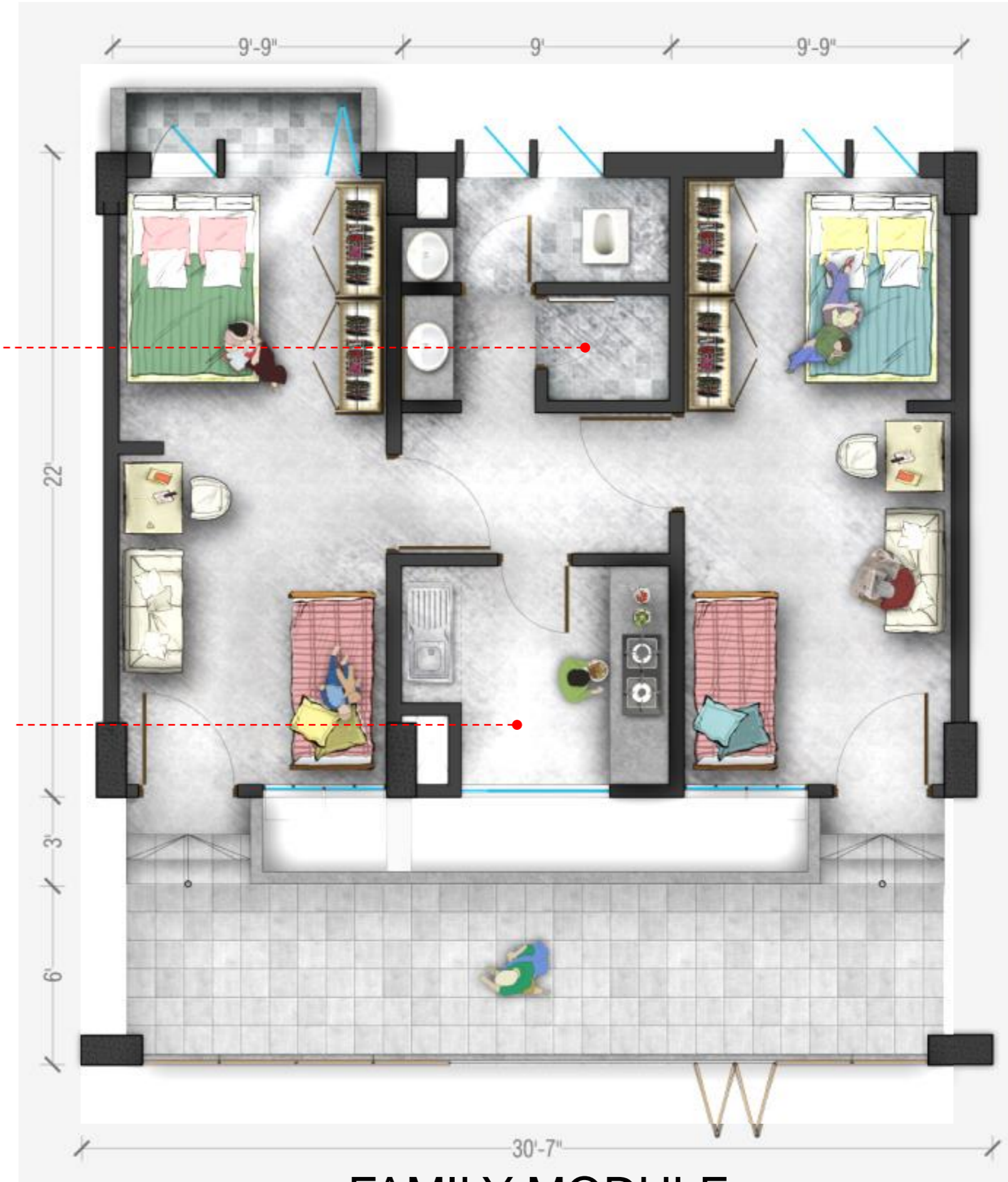
DWELLING DETAILS



DORMITORY MODULE
(COMMUNITY KITCHEN)

SHARED TOILET

SHARED KITCHEN



FAMILY MODULE

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



DISABLE DORM. UNIT

PRIMARY SCHOOL
CLASS ROOMS

DISABLE FAMILY UNITS

COMMUNITY SHOPPING

FAMILY UNITS

GATE HOUSE WITH
PHARMACY AND GUARD ROOM

RECREATIONAL GHAT

EXISTING CANAL

 LEVEL 0



SECTION





BIRD'S EYE VIEW



VITTI STHAPATI BRINDO LTD.



ENTRANCE VIEW SHOWING COMMUNITY PLAY FIELD

RMG WORKER'S HOUSING





GATEWAY TO THE INNER COURTYARD



VITTI STHAPATI BRINDO LTD.

RMG WORKER'S HOUSING



SOCIAL SPACES





SOCIAL SPACES

RMG WORKER'S HOUSING



VITTI STHAPATI BRINDO LTD.



SOCIAL SPACES





CELEBRATION IN THE COURTYARDS





FLORA & FAUNA IN THE INNER COURTYARD





CANAL & THE GHAT





COURTYARD WITH CHILDREN





SOCIAL CORRIDOR





SOCIAL SPACE & UNIVERSAL ACCESSIBILITY





COURTYARD & CORRIDORS



02

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.

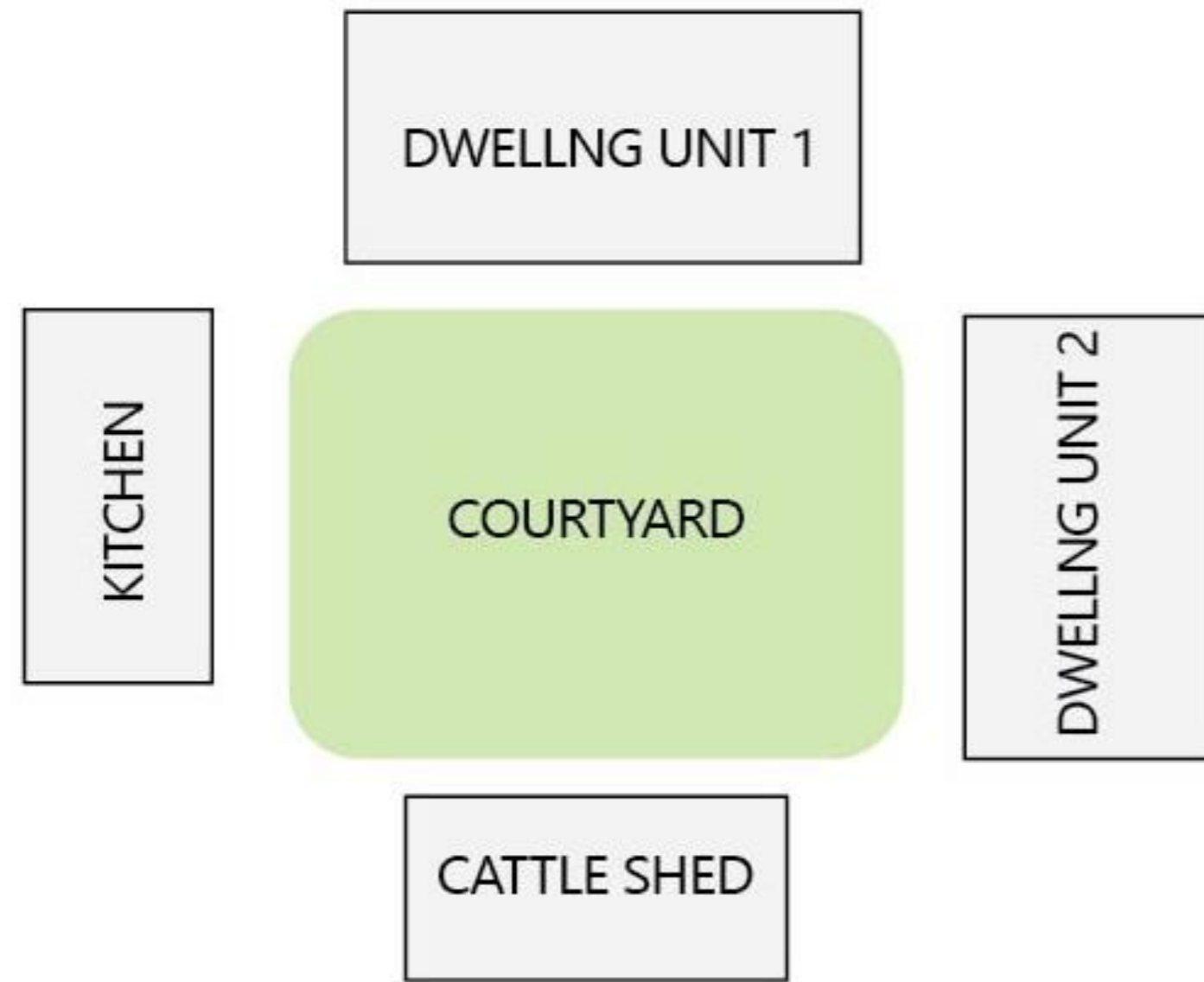
Funded by the Department For International Development (**DFID**) and the Government of the **United Kingdom**, it is being implemented by the Local Government Division (**LGD**) of the Government Of Bangladesh together with the United Nations Development Program (**UNDP**).

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



PRODUCTION



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.

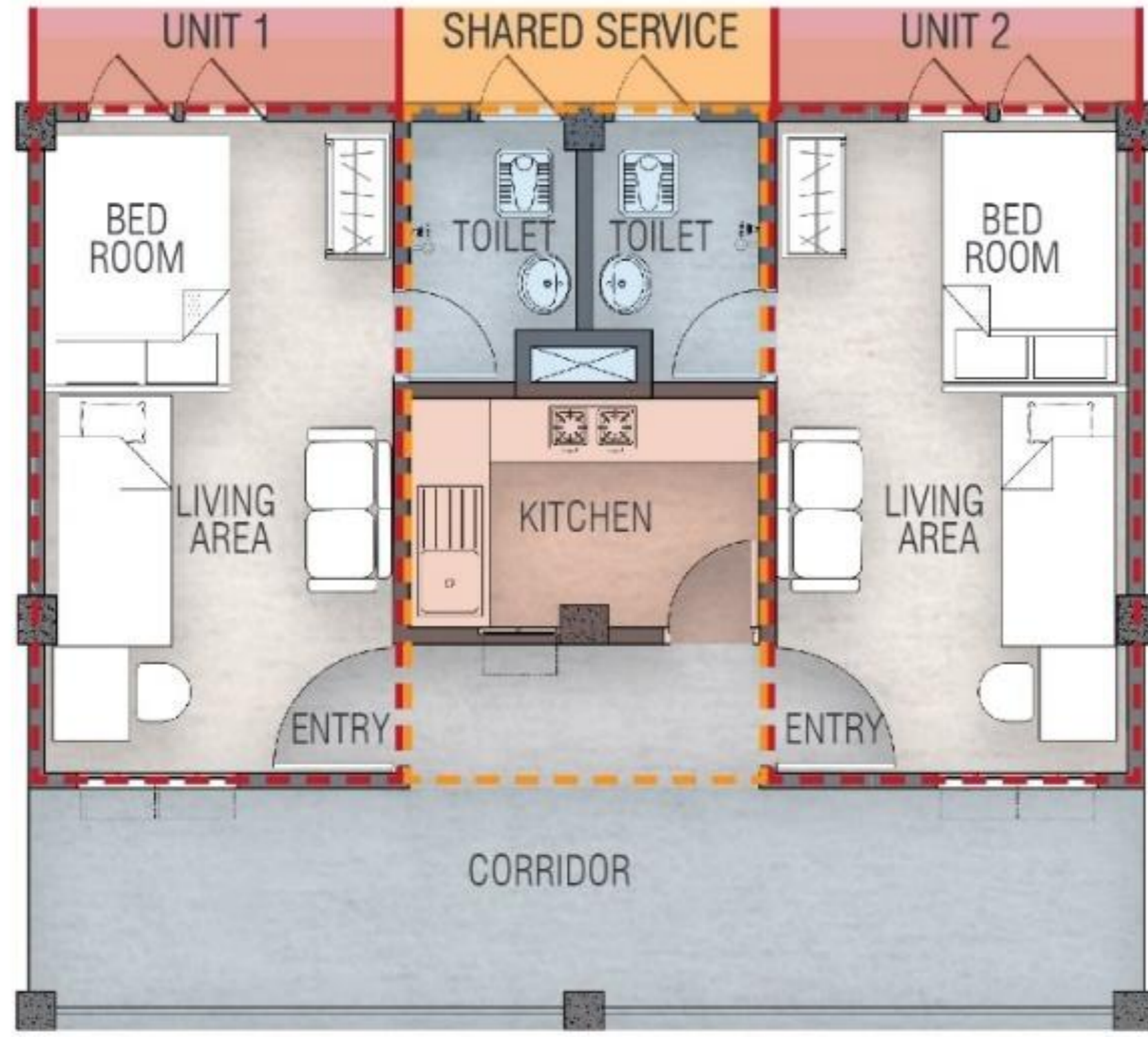




PRODUCTION

WALK UP **6 STORIED**
TYPE A - FAMILY TYPE

Type A- Family type, with shared kitchen & Individual Toilet between 2 units.



MODULE PLAN
 (TWO UNITS SHARING COMMON KITCHEN)

Net Unit Area	169.08 Sft
Shared service area	84.54 Sft
Common area	66.00 Sft
Gross area	319.62 Sft/ 29.69 Sqm

So, Rate per SFT	1,600
So, Cost per Unit	512,000
Total cost Unit + Land	1,200,000

CLUSTER PLAN

Number of units per floor $(10 \times 2) = 20$
 Total Number of Units in the complex **120**

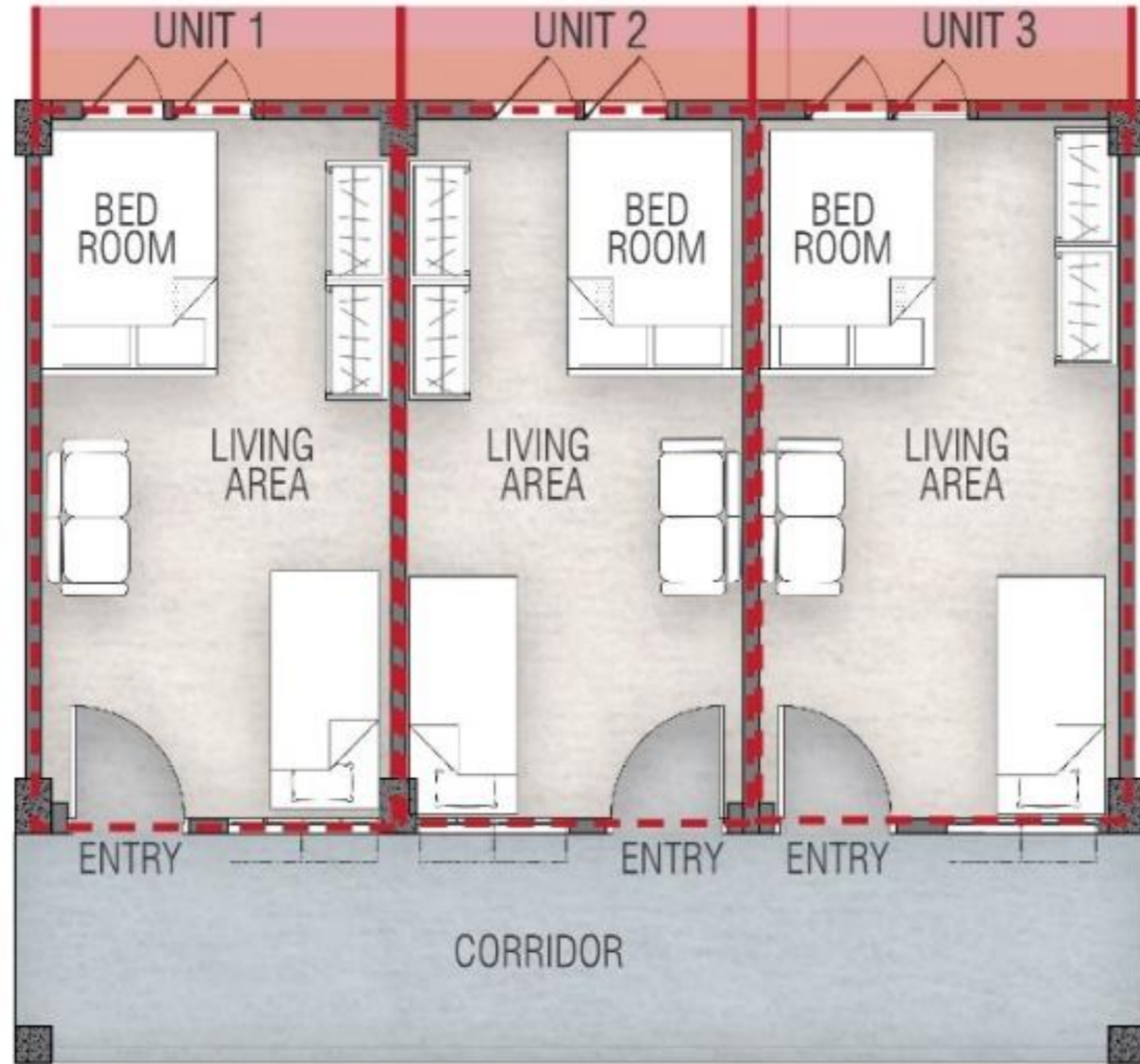
The analyses above is done on the considering land price to be 40-45 lacs per Acres



PRODUCTION

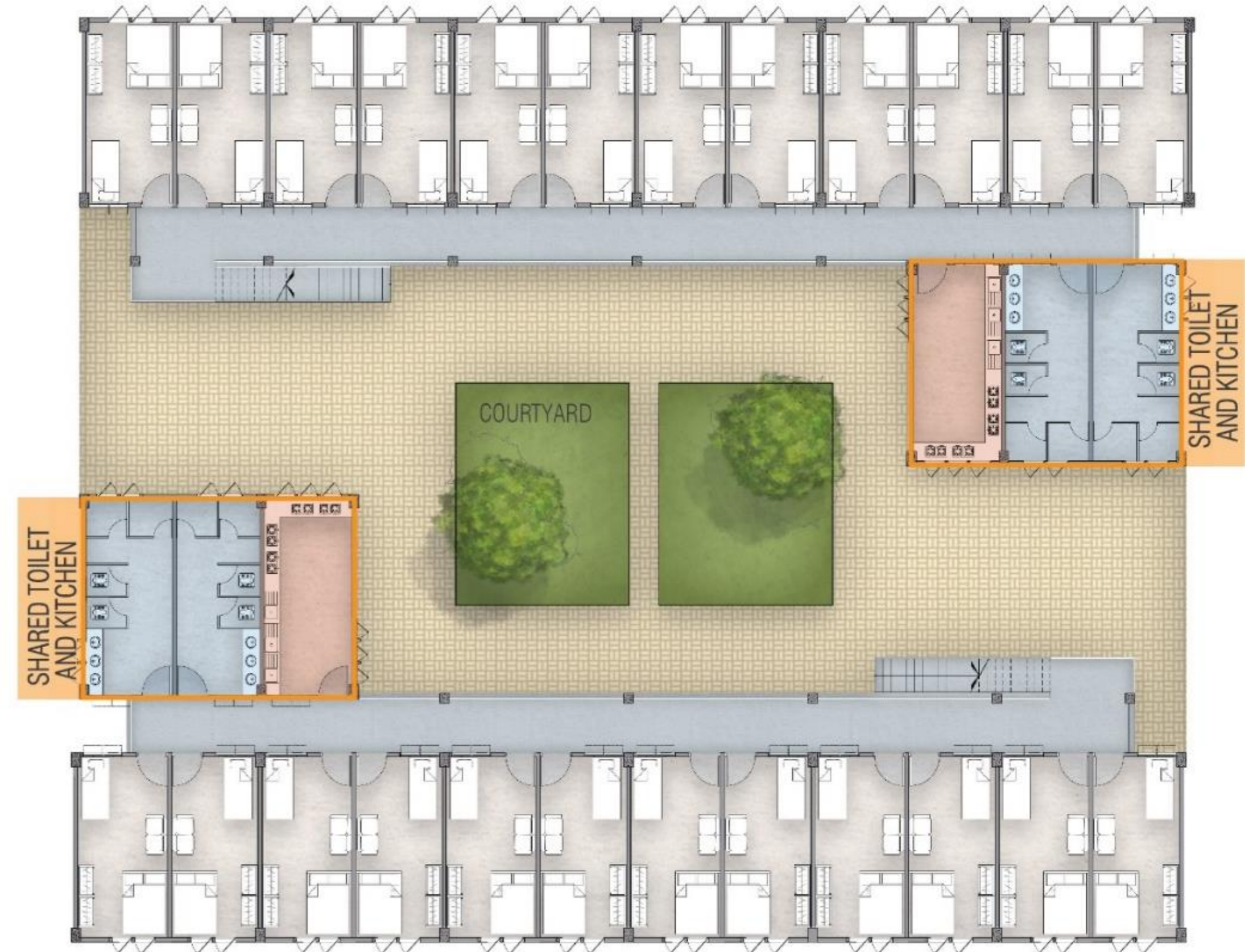
WALK UP **6 STORIED**
TYPE B – COMMON SERVICE TYPE

Type B- Common Service Type, with shared kitchen and toilet between 12 units.



So, Rate per Sft	1,444.84
So, Cost per Unit	4,45,979.42

Net Unit Area	197.34 Sft
Shared service area	49.33 Sft
Common area	62.00 Sft
Gross area	308.67 Sft/ 28.68 Sqm



CLUSTER PLAN

Number of units per floor (12 x 2) = 24
 Total Number of Units in the complex 144

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



The National Urban Poverty Reduction
Program (NUPRP) 2016-2021



3D VISUALIZATION of Courtyard Concept



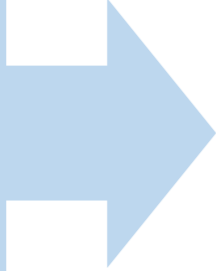
INTRODUCING
PUBLIC-PRIVATE
PARTNERSHIP
FOR AFFORDABLE HOUSING





CURRENT SCENERIO

Current Govt. Housing Scenario



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



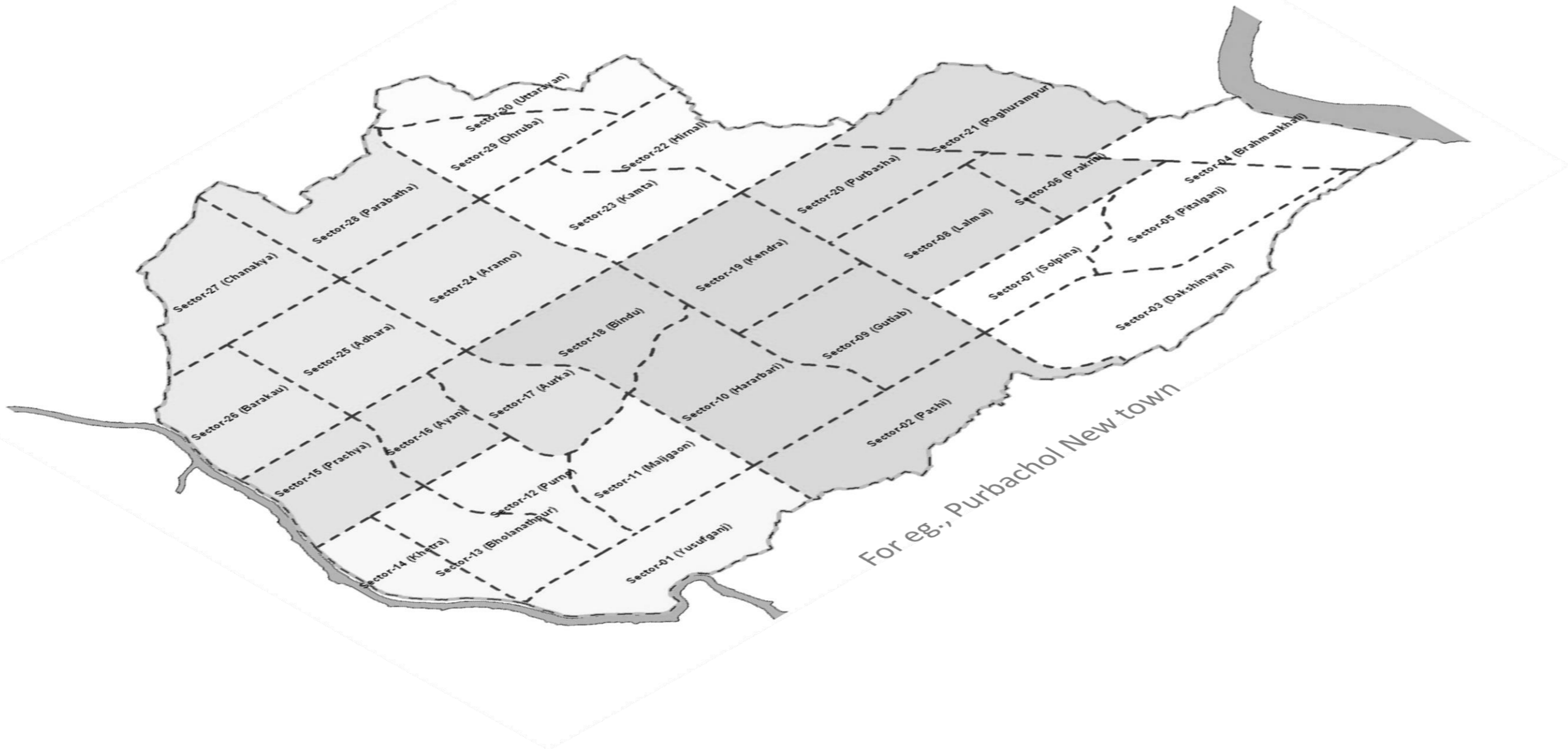
Land Buyer is taking benefit of all these extra govt. benefits and raising the land value.



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



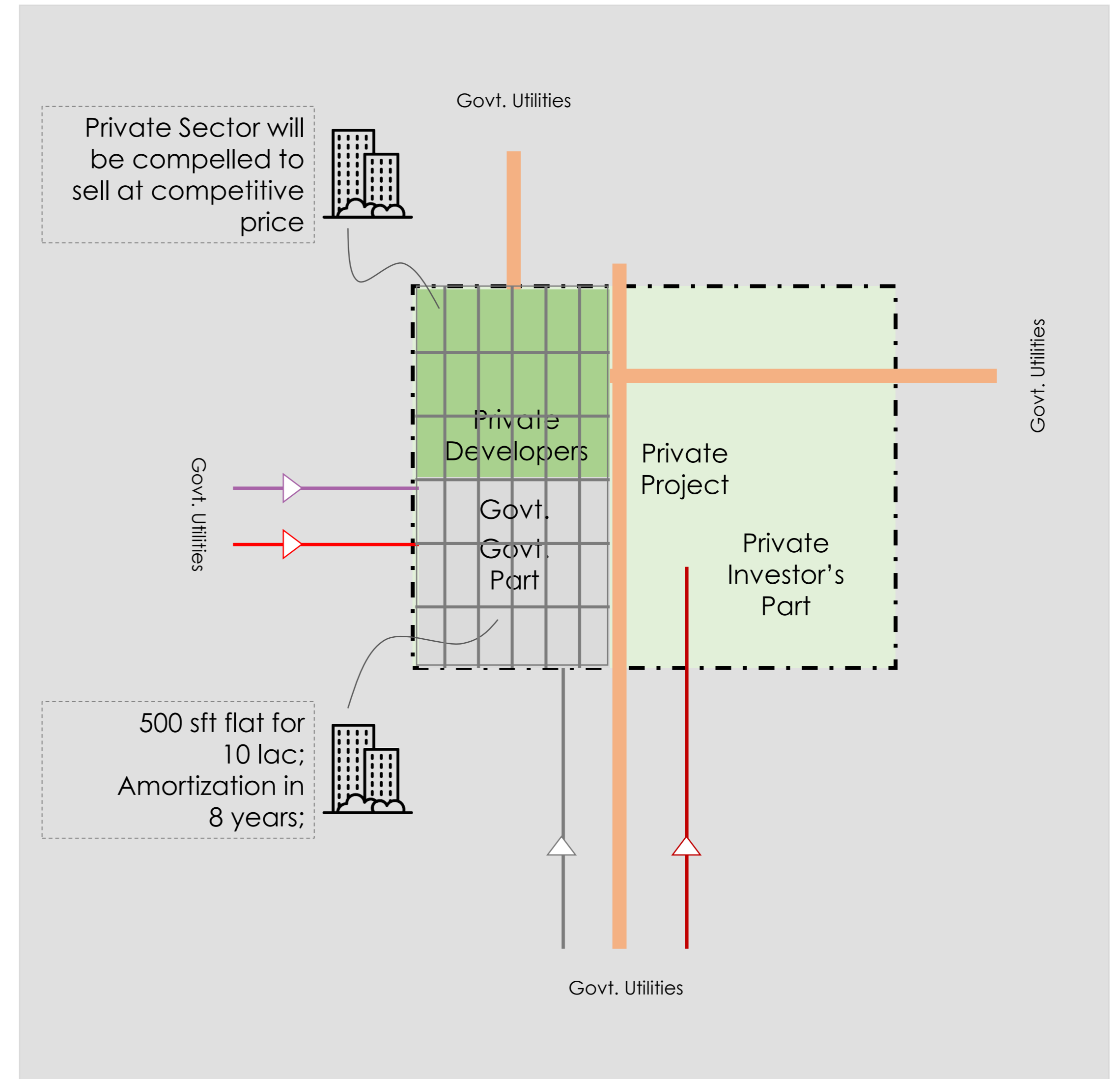
Conclusion: Lands and plots are now **not affordable** for many after middle-man has raised price.





PROPOSED CONCEPT

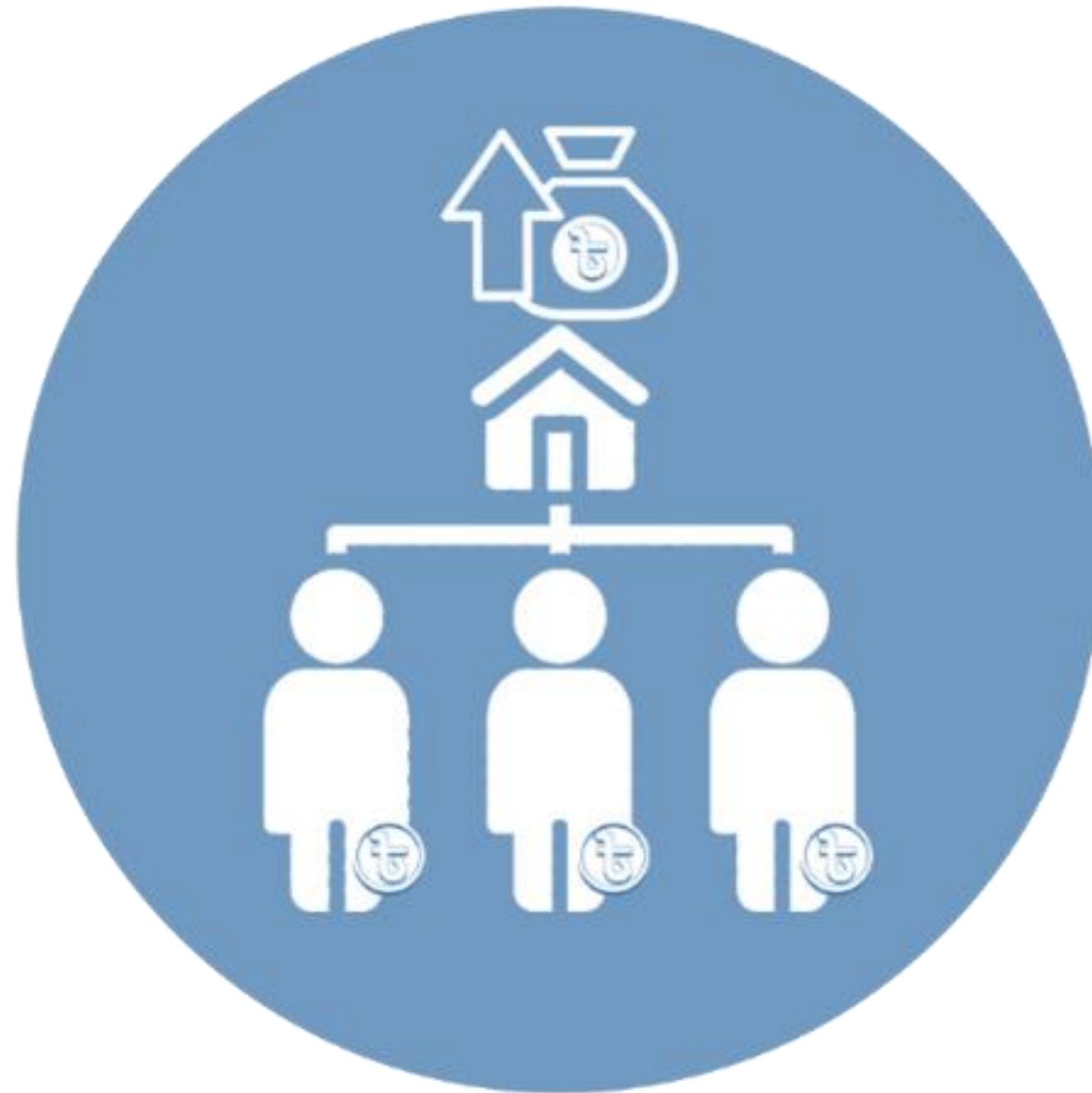
- Step-1:
Private investor buys land and develops it;
- Step-2:
Government gives investors **utilities like electricity, gas, roads etc.;**
- Step-3:
In return, private investor will **give government ~30% land at actual** (incl. purchase of land, cost of development, cost of money & management) **Cost;**
- Step-4:
Government will **invite private developers** to a 50/50 partnership to built 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.**





PROPOSED CONCEPT

AFFORDABLE HOUSING SCHEME



HOUSING FUND

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

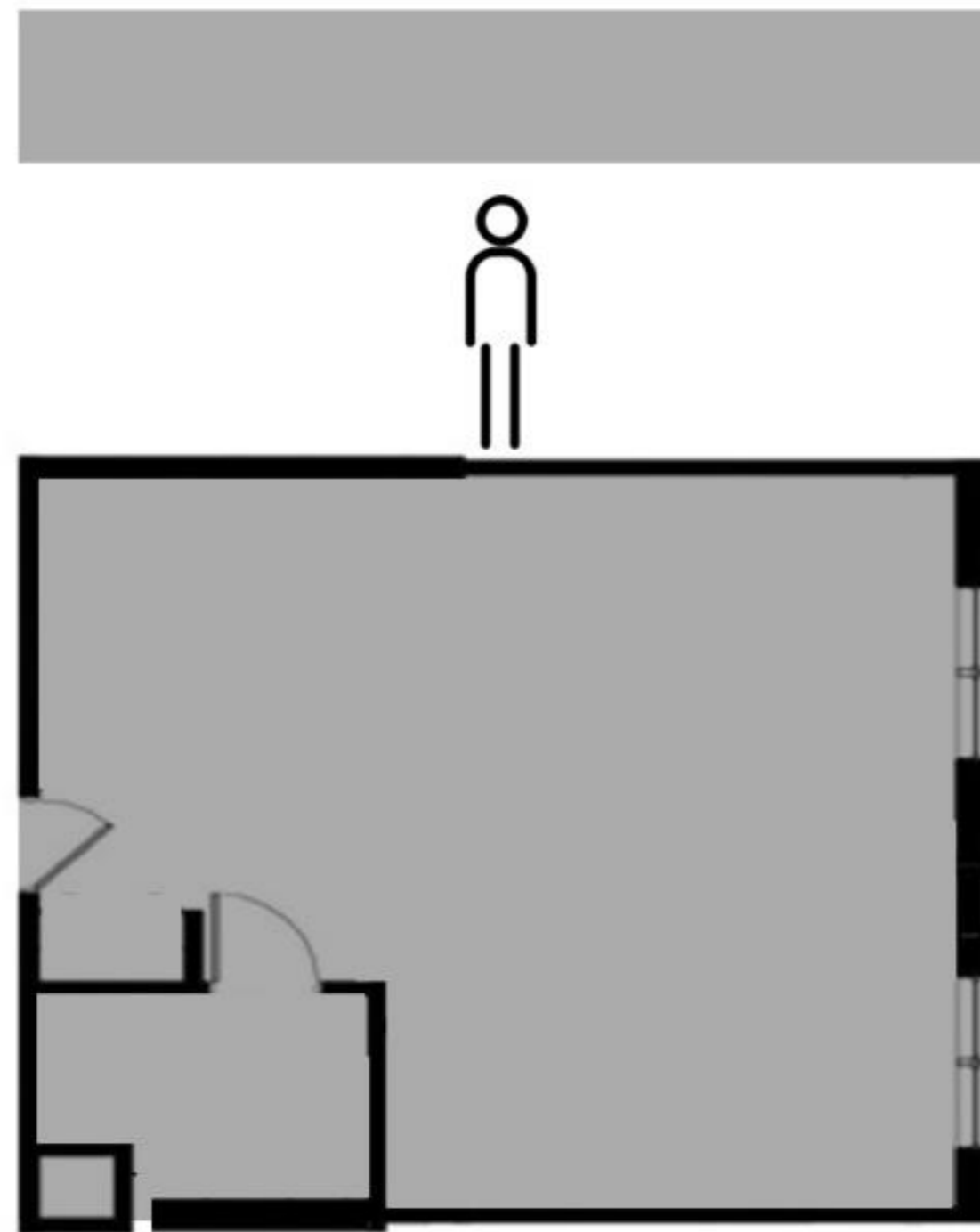
Real Estate BlockChain (RealChain)

an initiative of
DIGITAL BANGLADESH



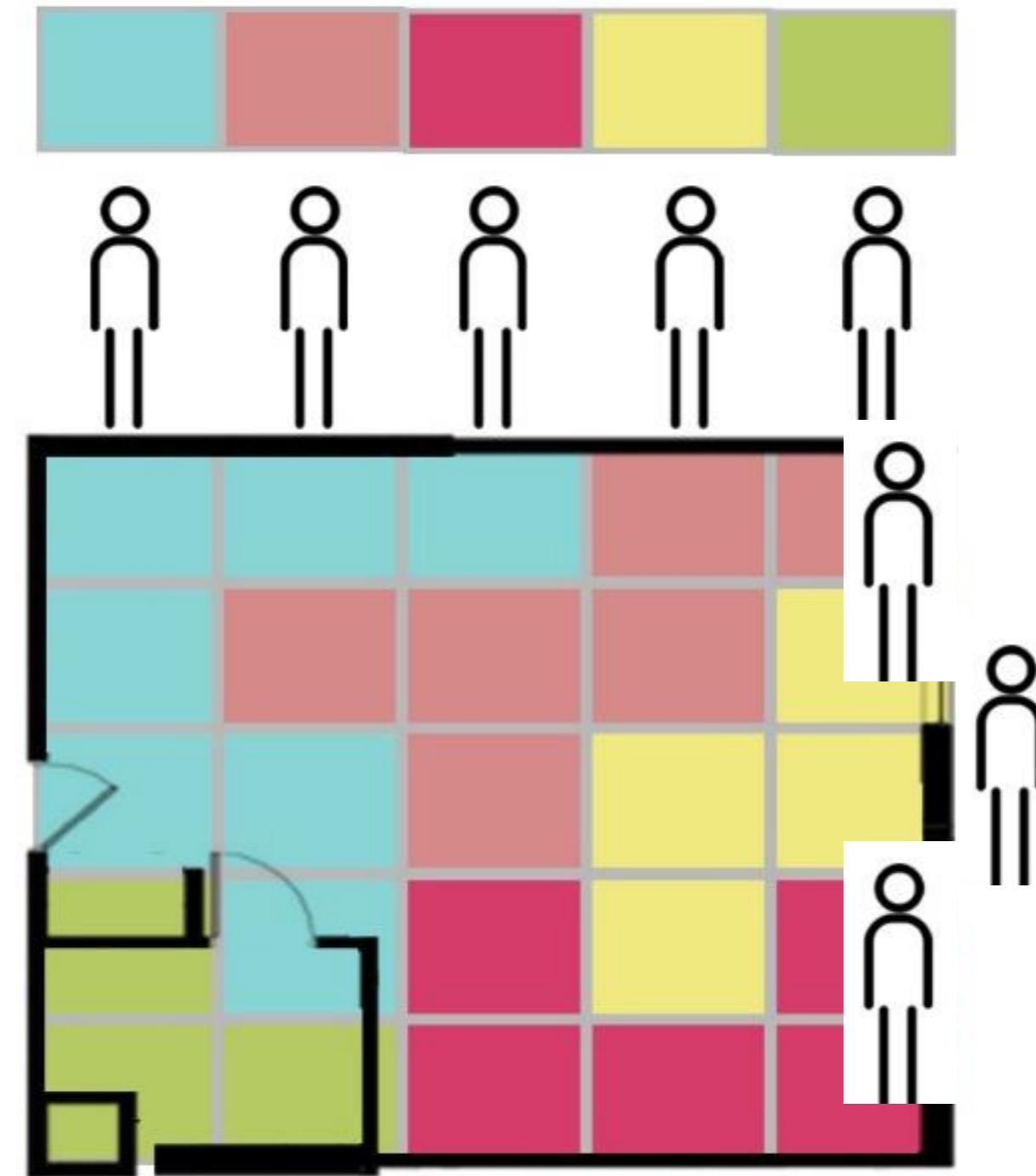


Conventional Tenure-ship Model: Smallest housing unit is a flat.



Owner of Flat

Proposed Tenure-ship Model: Smallest Housing units is a Square Foot.



Owner of UNDEMARKED Sft as per capacity to invest

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**



OF THE PEOPLE,

FOR THE PEOPLE,

BY THE PEOPLE



- 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.**



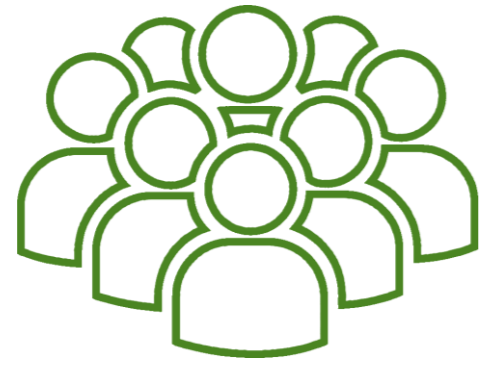
- When An individual buys a GREEN BOND (SFT or unit or module) of a certain category from a government approved housing company, **he/she will be un-demarcated owner of that SFT in all the housing projects in that category of that company.**



- 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 **Orchestrate the Participation**



THANK YOU