57TH ISOCARP World Planning Congress
(Doha , Qatar)

Redevelopment of Dumar Talab Slum with Incremental Housing Solutions

The Urban Housing Challenge

A case of Raipur , India

Undergraduate Thesis Project

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Dumar Talab slum , Raipur (India)

India , the second most populated country in the world encounter an alarming rise in the rate of unemployment which directly affects the affordability aspect of housing. Therefore, it is necessary that the housing sector is dealt in a cautious and judicious manner with standardized planning approach which is the product of detailed research and development in the economical, physical and social aspects. The story of Indian cities, a home for approximately 101 million slum dwellers of diverse and heterogeneous communities has always been conflicting yet unconventional. These cities face an influx of migratory population in search of employment and decent living conditions resultant of which are the slums.

Housing : An interactive necessity...!
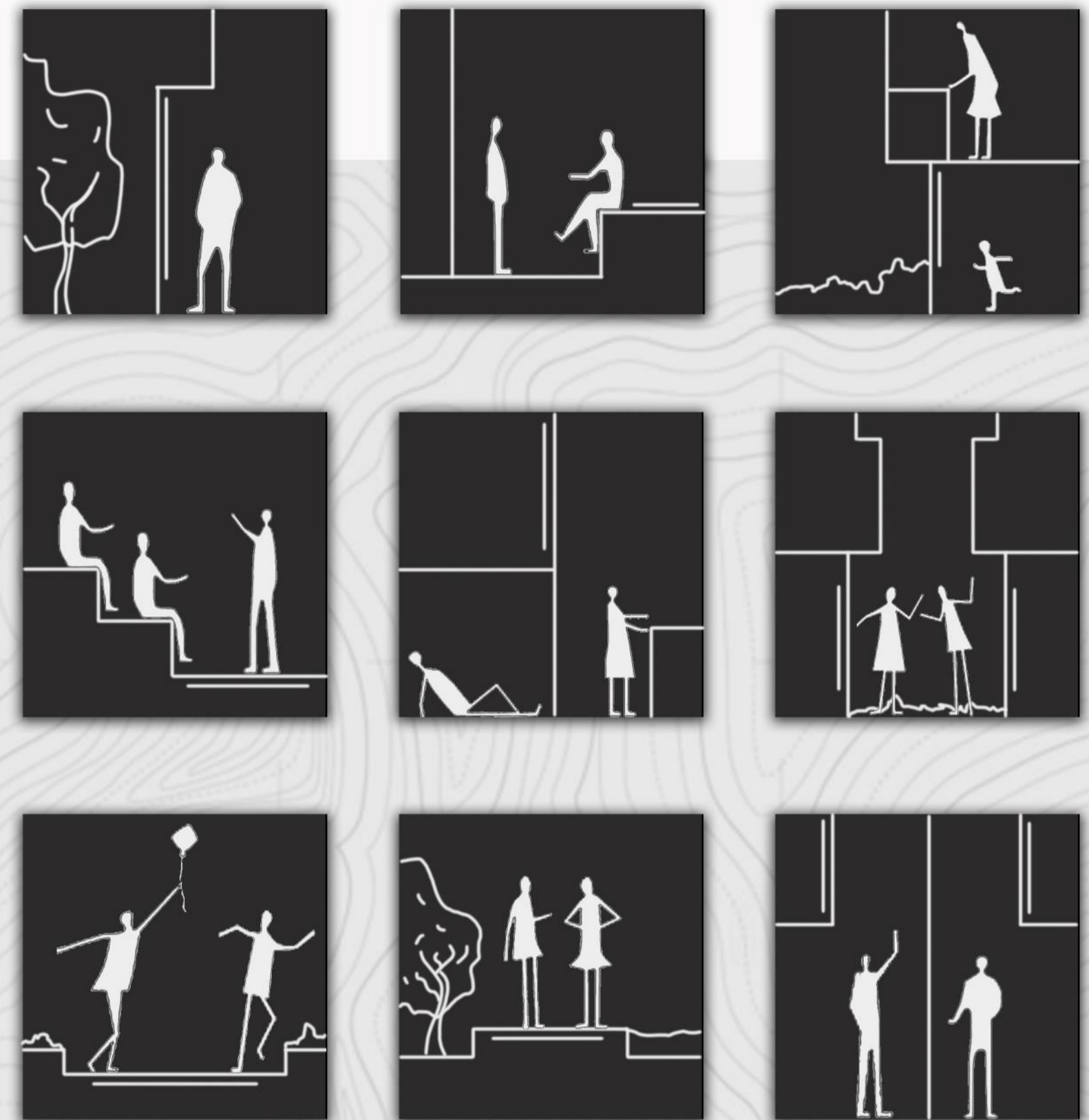
SLUMS IN INDIA

Asset or Burden ??

The forgotten population

Thesis Topic

Redevelopment of Dumar Talab Slum (Raipur city) with Incremental Housing Solutions

The Brief

To study and analyse the housing problems faced by the Dumar Talab slum and to provide suitable incremental housing solutions with optimum space utilization.
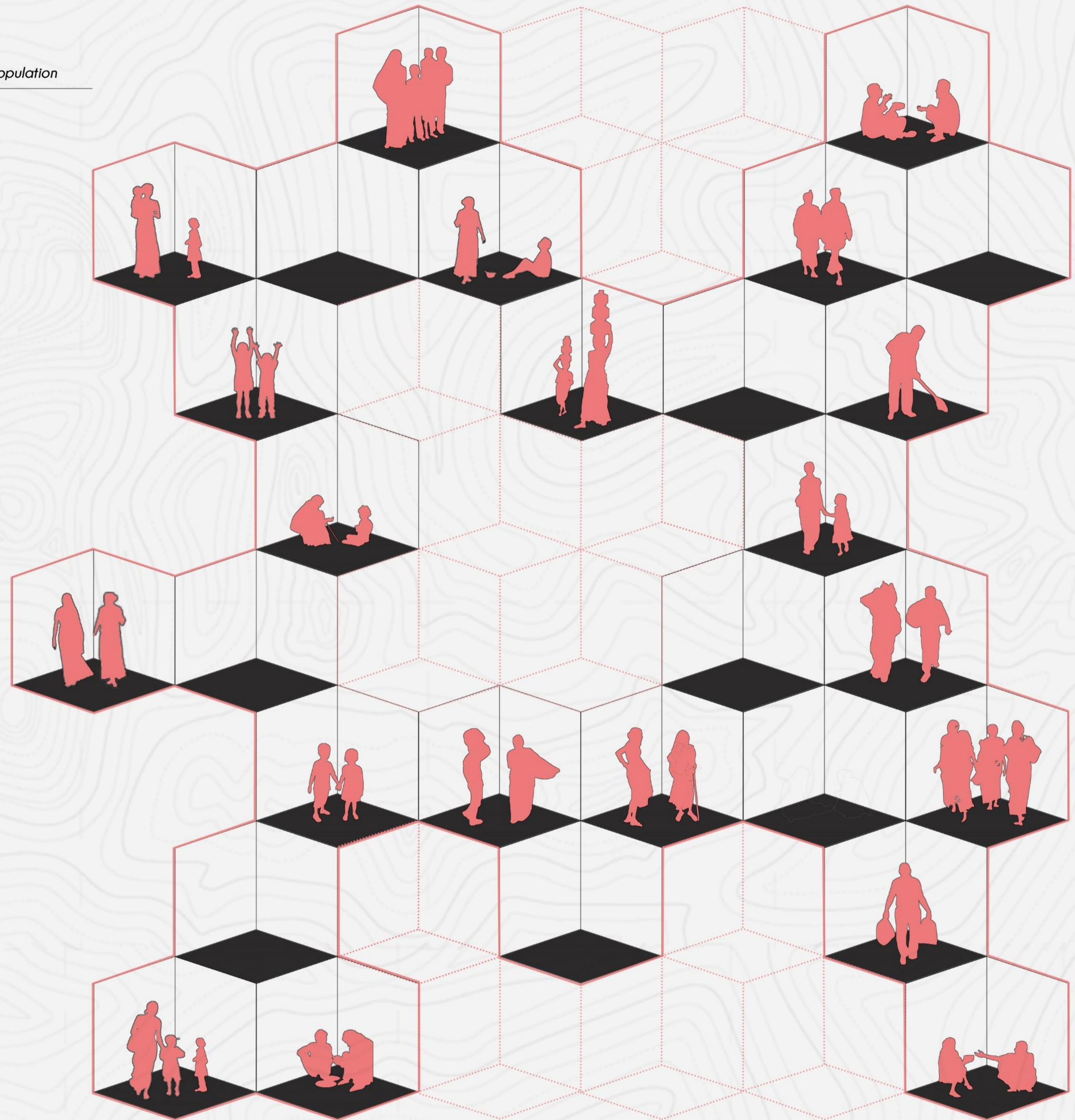
The Background

The word "slum" is often used to describe informal settlements within cities that have inadequate housing and miserable living conditions. They are often overcrowded, with many people crammed into very small living spaces. Slums are not a new phenomenon. They have been a part of the history of almost all cities, particularly during the phase of urbanisation and industrialisation. Slums are generally the only type of settlement affordable and accessible to the poor in cities, where competition for land and profits is intense. The main reason for slum proliferation is rapid and non inclusive patterns of Urbanisation catalyzed by increasing rural migration to urban areas.

The Proposal

So are there better alternatives? How can slums be redeveloped in a manner that ensures affordability, inclusivity in decision making, improved quality of life and socio-economic wellbeing of the community? It is important to understand that the vision of a slum-free city needs to be viewed through the lens of inclusive development.

Afia Siddiqui , B.Arch , NIT Raipur (India)
Undergraduate Thesis Project (4th year)
2018-19

INTRODUCTION TO THE TOPIC

India , the second most populated country in the world encounter an alarming rise in the rate of unemployment which directly affects the affordability aspect of housing. Therefore it is necessary that the housing sector is dealt in a cautious and judicious manner with standardised planning approach .

Raipur, despite being the capital city of the state of Chhattisgarh and its rapid economic growth, struggles to accommodate the urban poor and poses a myriad of serious problems to these people in slums mainly due to densifications, deterioration in the physical environment, inadequate infrastructure and poor quality of life. The lack of adequate housing and social security have grappled the migrant population into these slums exacerbating the social impacts of threats and problems.

Addressing to this issue, the Amanaka (Dumar Talab) slum in Raipur is one such case that I studied and analysed during my undergraduate thesis and introduced an incremental approach as a proactive solution. By evaluating variousaspects, required housing design was proposed with typologies by incremental housing with long term benefits to the people of the slum.

Existing temple structure in the slum for the community

The internal streets of almost 1m - 1.5 m width.

The existing housing with temporary roof structures

The internal road that connects the slum to the main road

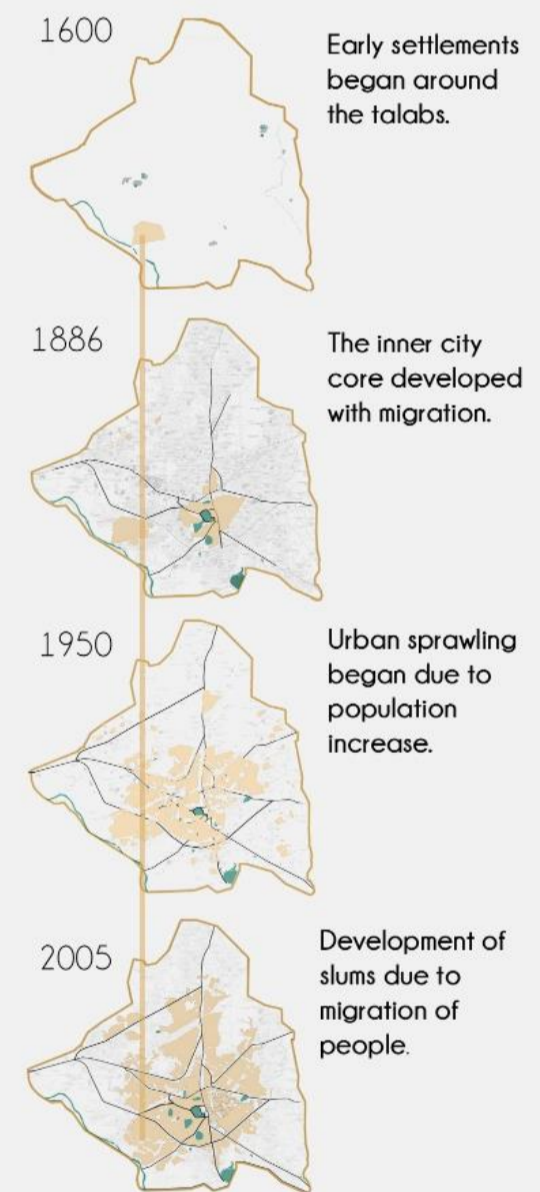The main road with the university on the opposite side

ABOUT RAIPUR
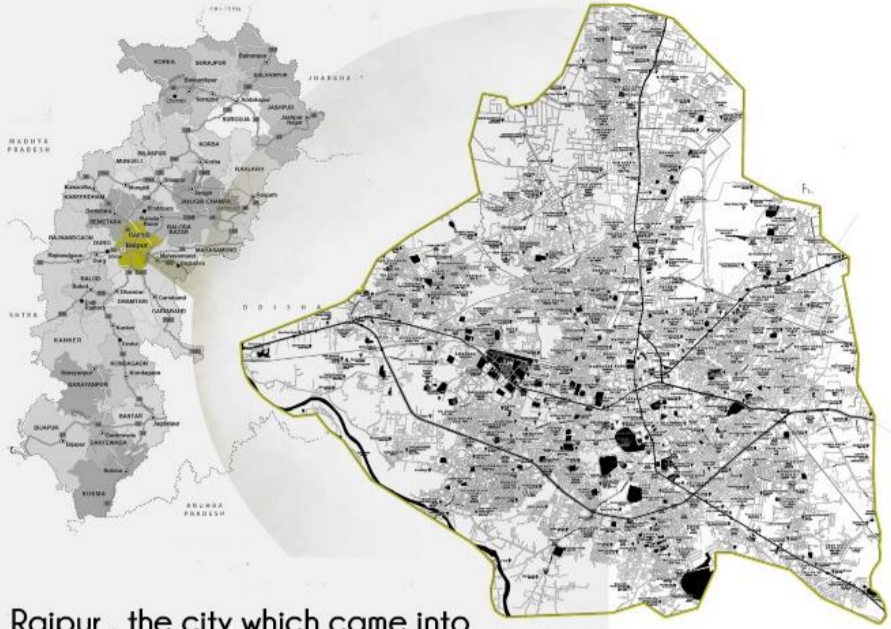

Raipur , the city which came into existence due to its trade and commerce , is considered one of the major growth centres in the state.

The natural location of the talabs have always initiated the growth of residential area around it.

EVOLUTION

1600 — Early settlements began around the talabs.

1886 — The inner city core developed with migration.

1950 — Urban sprawling began due to population increase.

2005 — Development of slums due to migration of people.

Being the state capital , it has many linakges to the neighbouring urban centres and connected to cities like Bhilai , Durg through the main GE road that facilitates the movement of the people within the city.

Raipur region
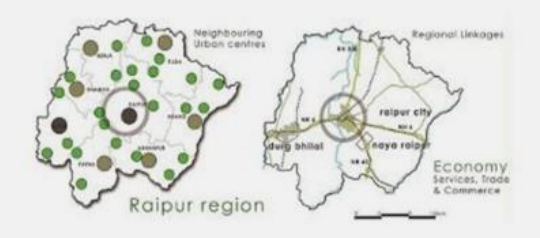
SLUMS IN RAIPUR

→ Urban poor faces serious problems , due to inadequate infrastructure and poor quality of life.

→ Problems of densifications and deterioration of physical environment prevails everywhere.

→ According to the city development plan of 2014 , Raipur is experiencing high population growth rates.

Dumar Talab Slum

▷ The slum is a notified slum in City Development Plan , 2014.

▷ Surrounded by different types of landuses.

▷ The selected slum has natural growth over the years.

▷ People are engaged in various activities for income.

▷ The residents belong to various communities.

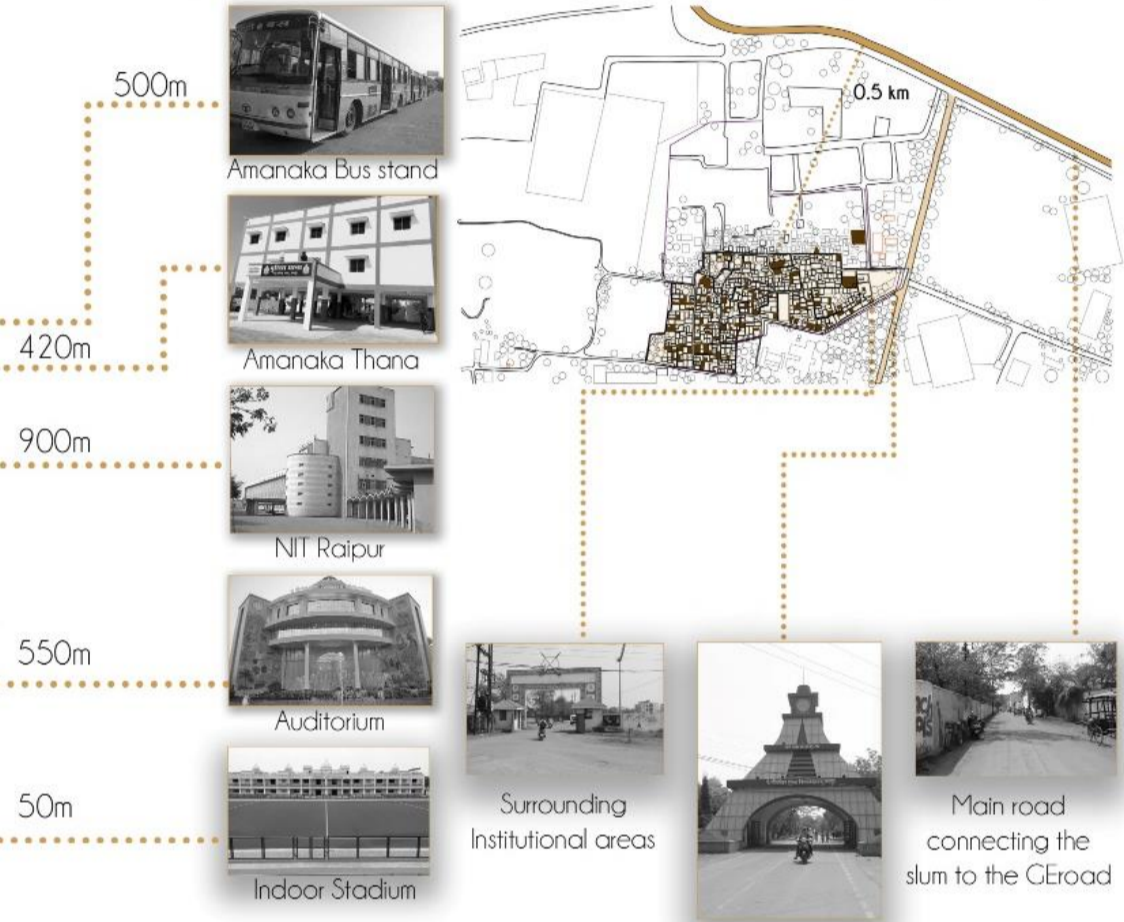▷ The unorganized sectoral activities of people results in poor economic status.

Location — North west part of Raipur

Area — 48763 sq.m

Population — 3218 persons

Households — 326 households

▷ **Occupation**
Daily wage workers
Shop owners
Fabricators
Plastic product manufacturers

Slums map in Raipur

SITE CONTEXT

The existing slum is surrounded by various landuses like Pt. Deendayal Upadhyay Nagar is residential use , NIT Raipur , Science college are institutional landuses while Amanaka is the transport hub. Due to easy availability of public transport in Amanaka area , the people of the slum are benefitted to get great connectivity to the whole city.

- 500m — Amanaka Bus stand
- 420m — Amanaka Thana
- 900m — NIT Raipur
- 550m — Auditorium
- 50m — Indoor Stadium

Surrounding Institutional areas

Main road connecting the slum to the GEroad

STUDIED SLUM

The slum is a notified slum surrounded by differential landuses . The Dumar Talab slum has developed due to its proximity to the talab that has attracted population resulting into the natural growth of the housing with varying housing conditions.

The densely populated and congested housing pattern and narrow streets along with people belonging to different occupations describes the nature of the slum.

- Site boundary
- Unused land
- Existing houses
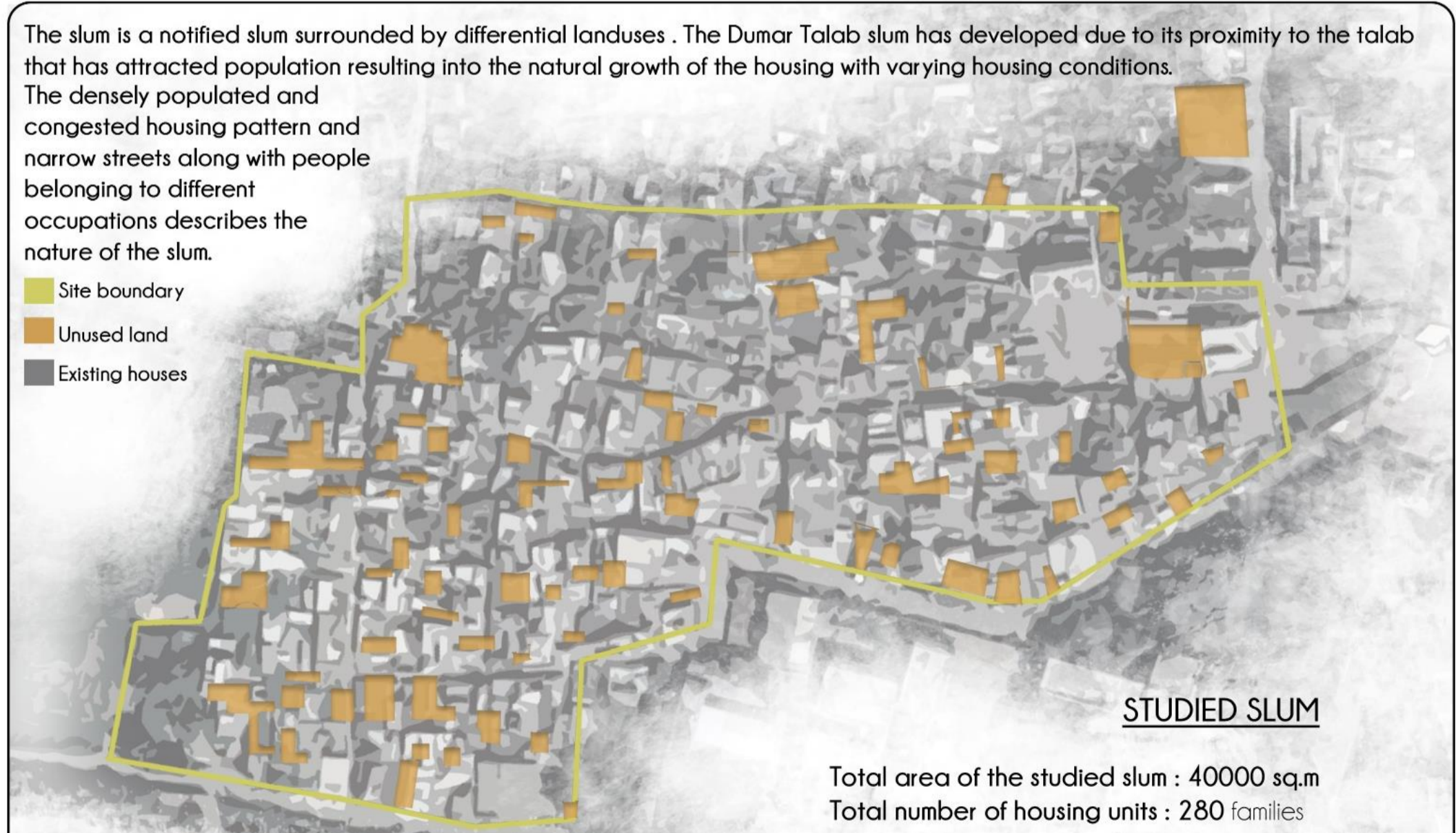
Total area of the studied slum : 40000 sq.m
Total number of housing units : 280 families
Total number of families : 280 families

Studied slum map

ABOUT THE SLUM

→ The slum has been analysed based on certain parameters and the typology of the houses in the selected area along with the people's occupation have been studied.

Building Structure

- Kachcha houses
- Pakka houses
- Permanent structures

The housing layout is congested and poorly ventilated .The study shows that most of the pakka houses have developed towards the main conecting road while the Kachcha and dilapidated houses are built in the interior parts.

Height map

- G structures
- G+1 structures

Most of the structures are ground floor structures on the basis of the analysis and hence uneven building height has raised the problem of light and ventilation for various households .

Street and road

- Amanaka road
- Dumar Talab road
- Inner streets
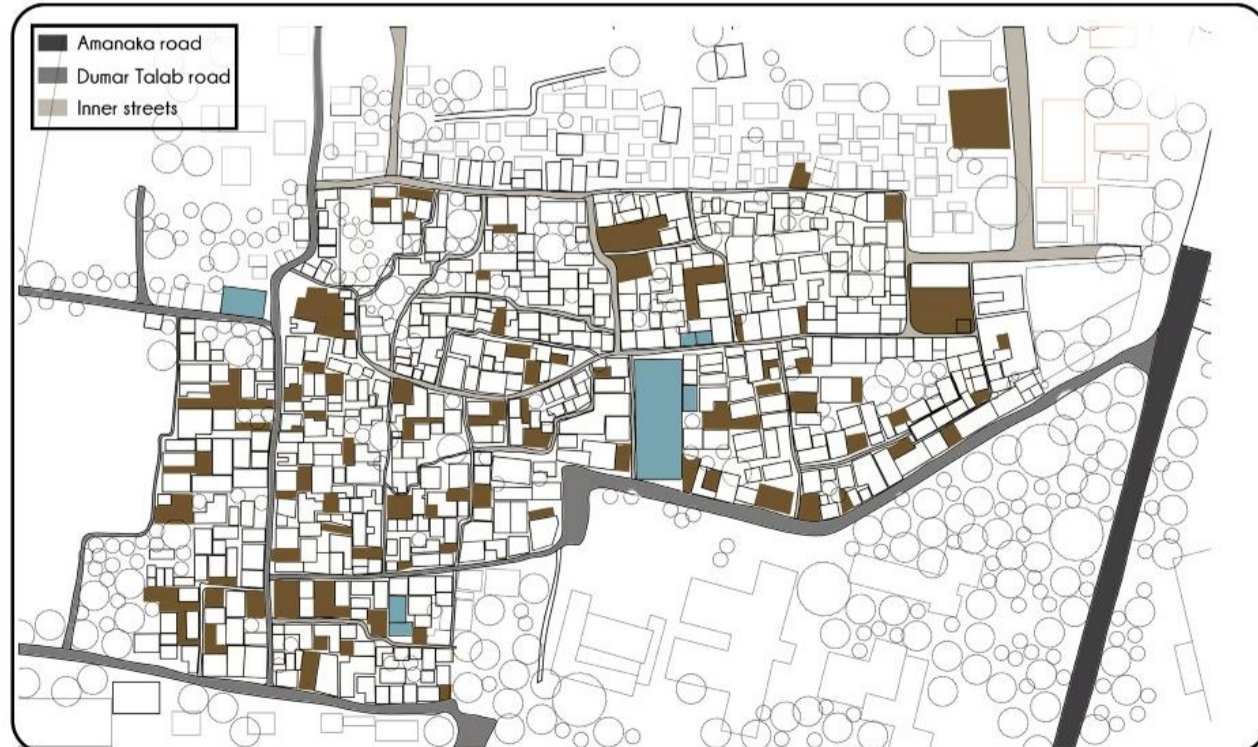
The Dumar Talab slum is accessible through the 6m Amanaka road that is connected to the main GE road . The main peripheral road is 3m wide that runs between the university and the slum .
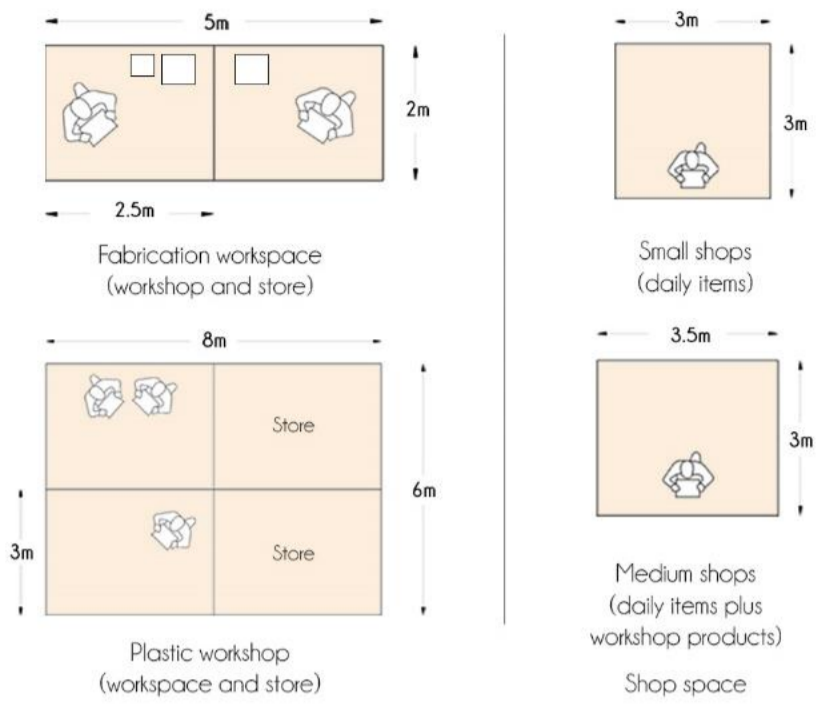
OCCUPATIONAL ANALYSIS

Based on the study and home-based survey of the selected area of the slum , the people are primarily involved in four major occupations and the type of the occupation involved affects the basic layout of the house according to their needs

Steel Fabricators
Workshop space and store for materials and equipments
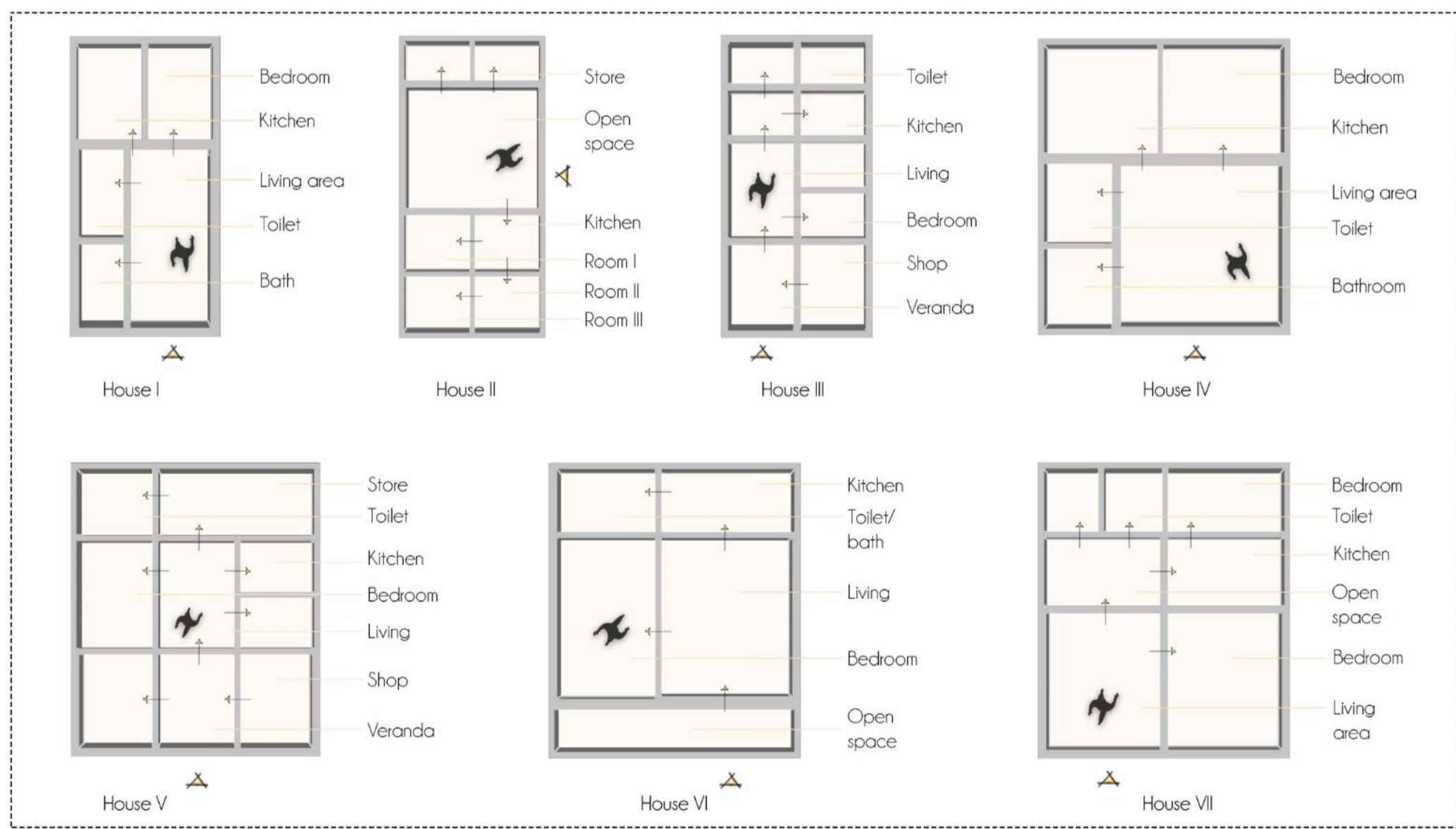
I dont have sufficient working space

Shop owners
Basic shop size 3x3m 3x3.5m

We dont have enough sleeping space.

Daily wage workers
We don't have common spaces

Mostly involved in labour work for construction

Our places lack playground

Plastic product workers (Includes children)
The plastic workers have a common workshop space.

Streets used as a place for packaging

I dont have proper kitchen.

Women (housewives)

- Fabrication workspace (workshop and store) — 5m × 2m / 2.5m
- Small shops (daily items) — 3m × 3m
- Plastic workshop (workspace and store) — 8m × 6m, 3m, Store, Store
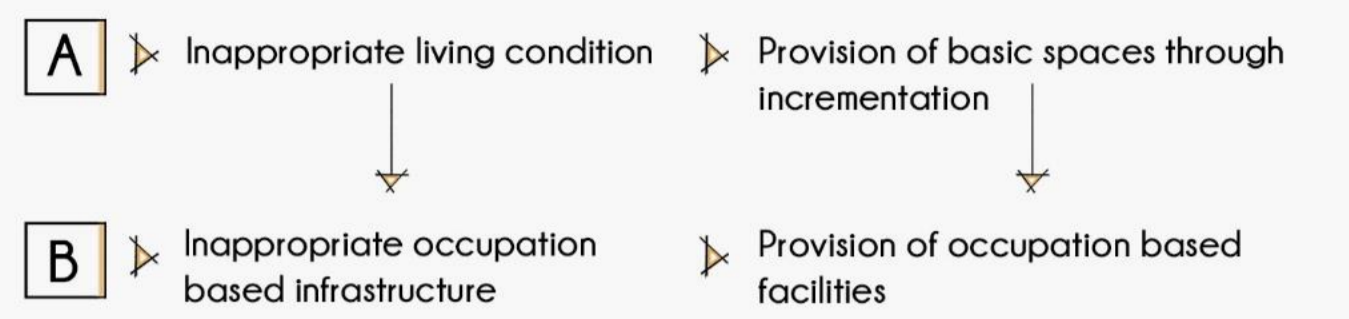- Medium shops (daily items plus workshop products) — 3.5m × 3m, Shop space

> Streets are used for carrying out daily activities due to lack of planned and functional spaces.
> Streets are multi functional spaces with their width ranging from 1.5-2m that are less.
> Streets are also used by children due to lack of any play area or playground.

House I — Bedroom, Kitchen, Living area, Toilet, Bath
House II — Store, Open space, Kitchen, Room I, Room II, Room III
House III — Toilet, Kitchen, Living, Bedroom, Shop, Veranda
House IV — Bedroom, Kitchen, Living area, Toilet, Bathroom
House V — Store, Toilet, Kitchen, Bedroom, Living, Shop, Veranda
House VI — Kitchen, Toilet/bath, Living, Bedroom, Open space
House VII — Bedroom, Toilet, Kitchen, Open space, Bedroom, Living area

INCREMENTAL HOUSING

Incremental housing is an integral urban development process of building housing for the people and is a step-by-step process. It involves housing that is seen more as a process rather than a product and is considered as an efficient approach in many countries of the world like Chile , India. The process usually starts with simple make-shift shelters or a core that can be transformed into middle houses with time and affordability factors.

vertical expansion · Addition of spaces · Compact housing design · Provision of common spaces · Shared wall concept

PROPOSAL

To improve the living conditions of the people in the Dumar Talab slum and provide them dwelling units with incrementation as a proactive approach so that it cater to their needs , responds to their lifestyle and that can be expanded according to their future affordability and conditions.

A ➤ Inappropriate living condition ➤ Provision of basic spaces through incrementation

B ➤ Inappropriate occupation based infrastructure ➤ Provision of occupation based facilities

To provide flexible built form that impart identity and inculcate a sense of belonging amongst the inhabitants and framework that allows progressive change as a part of a natural development process.

Salient Features

- To reach minimum space
- Construction as an improvement process
- Family and house timelines

SITE SELECTION

Study slums in Raipur → Issue identification → Site selection criteria → Analysis of various sites → Selecting the most probable site
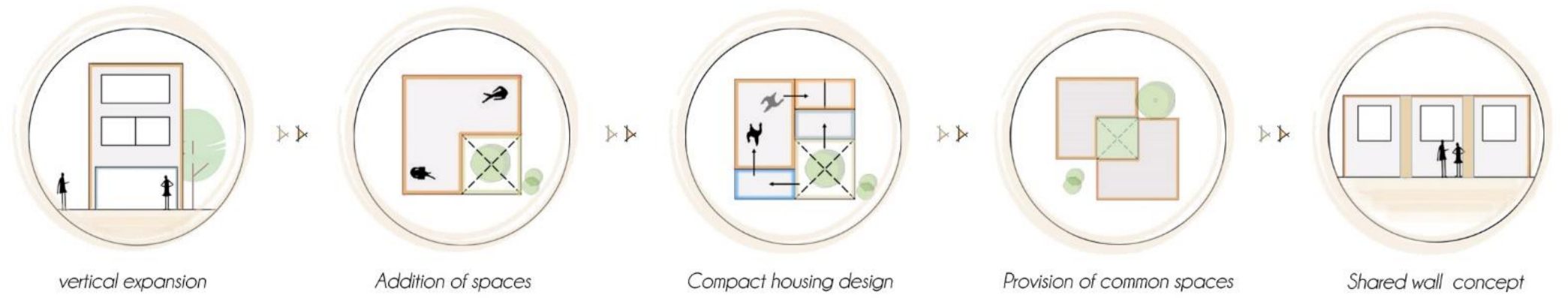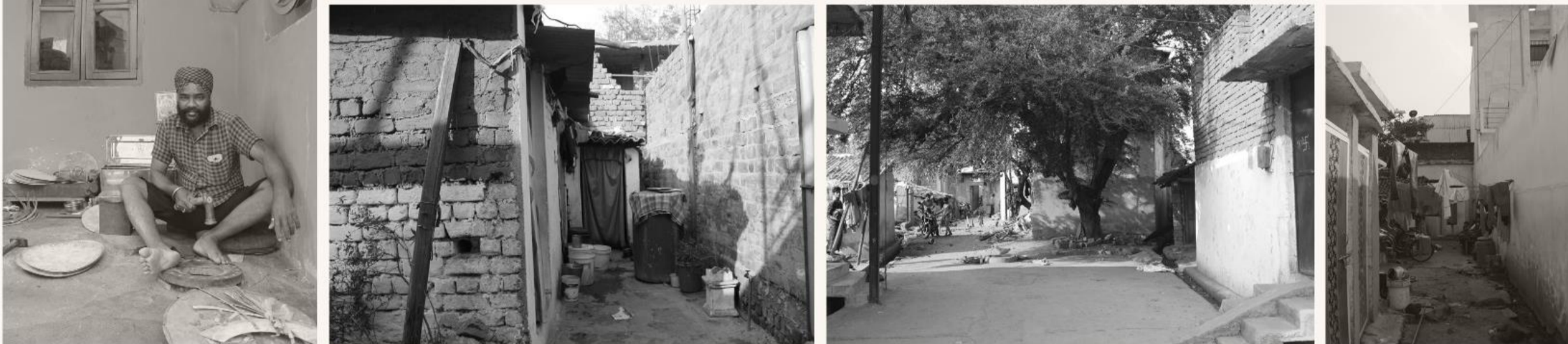
> Distance : Site must be located in the vicinity of the slum.
> Location of the city to the market and work place of daily wage workers.
> Transportation and connectivity to the city.
> Scale : It must be able to cater to the slum population.

Selected Site

Studied Slum

Amanaka , Raipur

INCREMENTAL HOUSING

Incremental housing is an integral urban development process of building housing for the people. Incremental housing is a step-by-step process. It goes by different names (starter house, phased-development house, owner-driven house), but fundamentally, incremental housing is an integral urban development process, building housing communities and citizens.
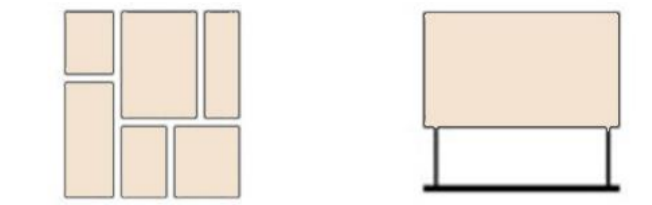

Half a house built owner's choice

Addition of new spaces
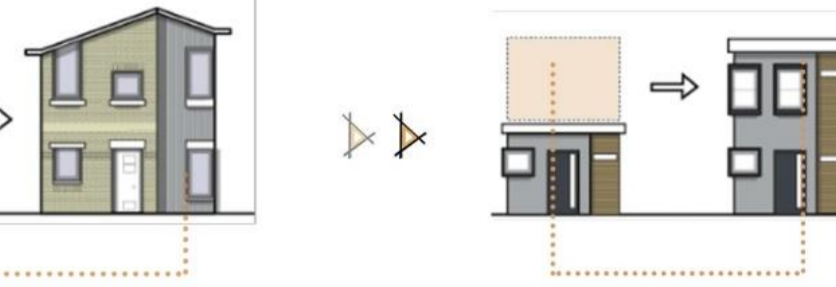
Vertical Incrementation flexibility of spaces

Little — Much

Small — Large
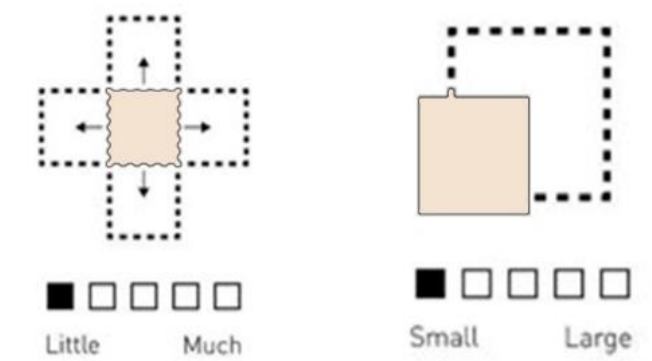
Flexibility and scale of extension

Few — Many

Little — Much

Degree of personalisation and Transitional spaces

SCOPE OF INCREMENTAL HOUSING

SALIENT FEATURES

scope of future expansion — Future expansion allows the controlled increment growth of the spaces over the time as the income or family size increases.

speedy construction — Modern construction techniques lead to further catering the housing shortage.

sustainable use of materials — Designing the spaces according to the climate and local materials with structure to support further expansion of spaces.

economical, affordable

designing to the climate of the area

Vertical or horizontal expansion can be achieved and hence people can choose.

Aranya Communtiy housing , Indore

Prominent examples of Incremental Housing
Chile and India

To reach minimum space.

Construction as an improvement process

Family and House timeline

Increment housing involves housing that is seen more as a process rather than a product and is considered as an efficient approach in many countries of the world like Chile , India. The process usually starts with simple make-shift shelters or a core that can be transformed into middle income houses with time and affordability factors.
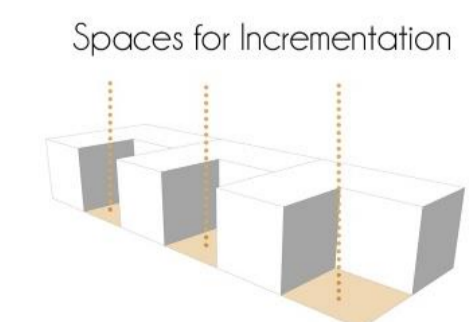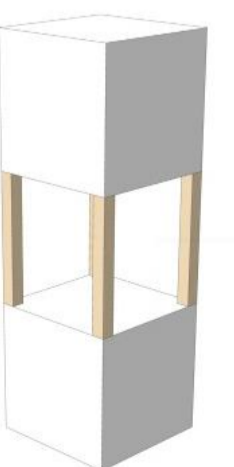
INFERENCES
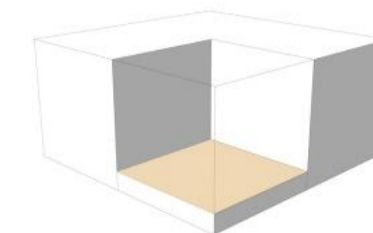
Provision of vertical and horizontal expansion
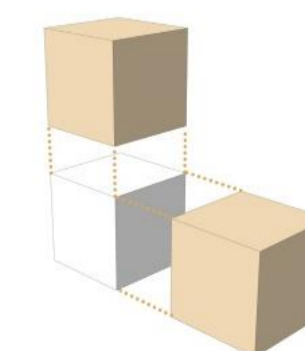
Flexibility of spaces as different spaces can be added

Spaces for Incrementation

Sufficient and equal spaces to all the units for expansion

Structural framework capable of future expansion

AREA STATEMENT

Studied Site Area : 40000 sq.m
Proposed Site Area : 50000 sq.m
Ground Coverage : 40%
FAR : 1.75 (for each unit)
Height of each unit : +8.8 m
AREA DIVISION :

Residential zone : 19250 sq.m
Commercial zone : 1000 sq.m
Open spaces : 15000 sq.m
Roads , Pathways and
streets : 14000 sq.m

Area for Module I : 5000 sq.m
Area for Module II : 8750 sq.m
Area for Module III : 5500 sq.m

A : 70 sq.m unit 1
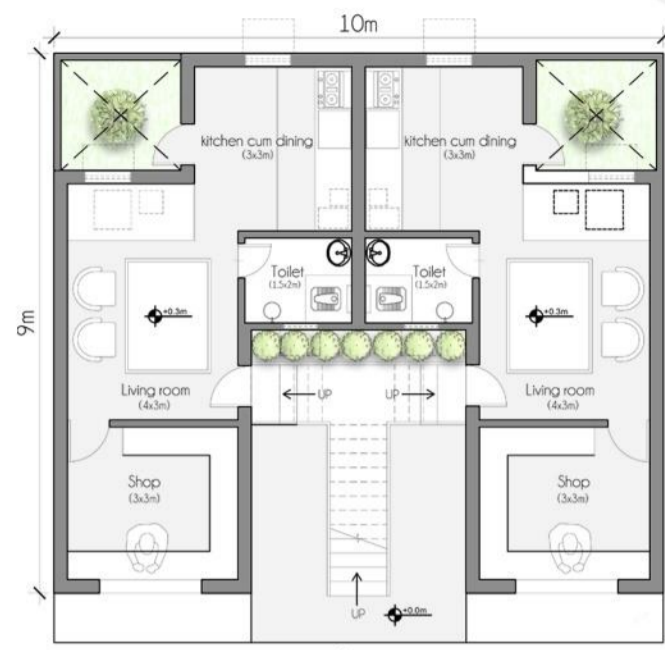B : 70 sq.m unit 2
C : 55 sq.m unit 1
D : 45 sq.m unit 1
E : 45 sq.m unit 2

1. Open ground
2. Tree=lined area
3. Kids play area
4. Parking space
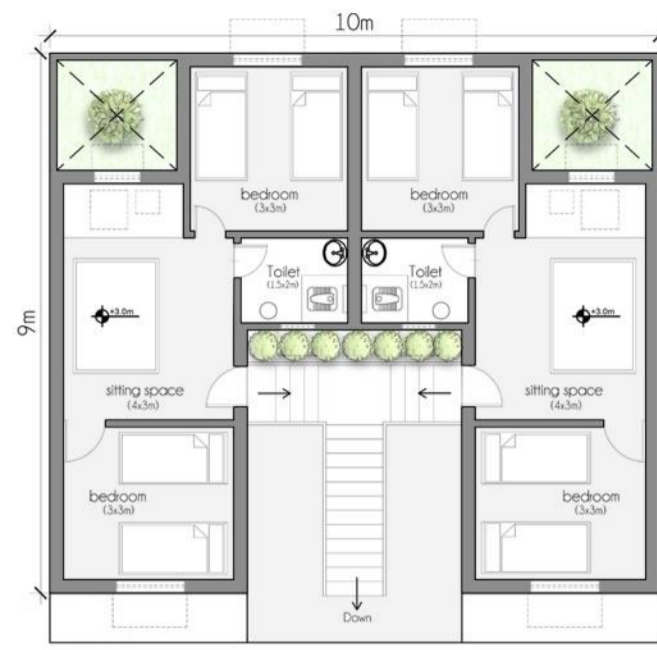5. Temple
6. Commercial area

185m

63m

80m

1

1

2

3

1

2

71m

8m wide road

94m

4

5

8m wide road

6

1

170m

115m

45m

N

Entry

Exit

160m

10m wide road
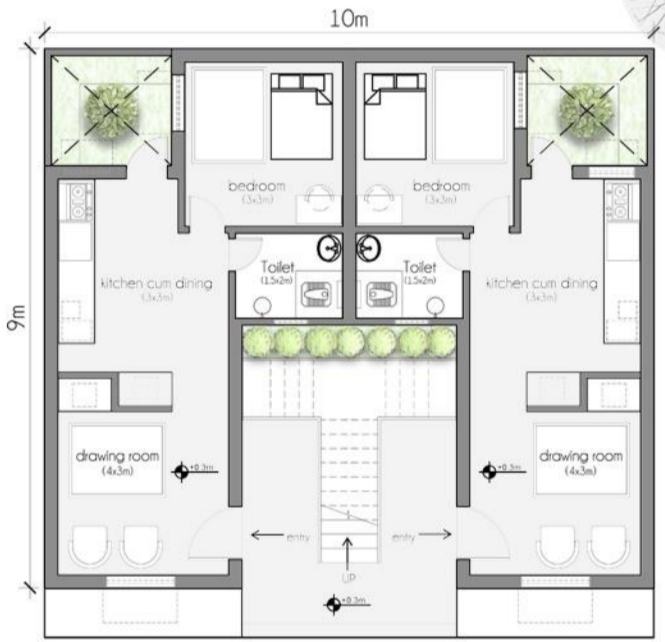
Site plan

MODULE I （45sq.m）

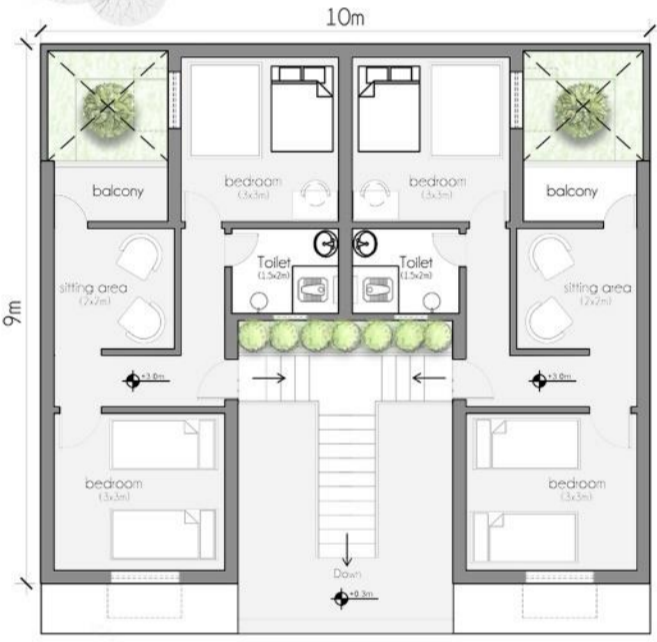### Prototype A

GROUND FLOOR PLAN
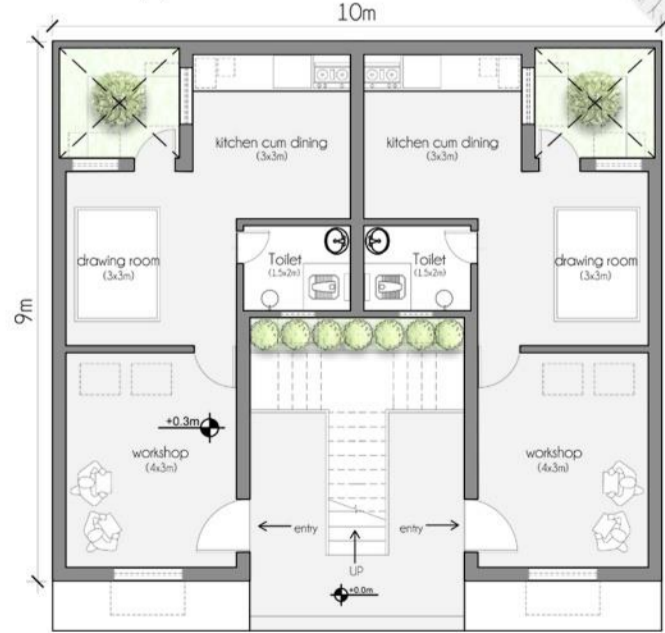

FIRST FLOOR PLAN

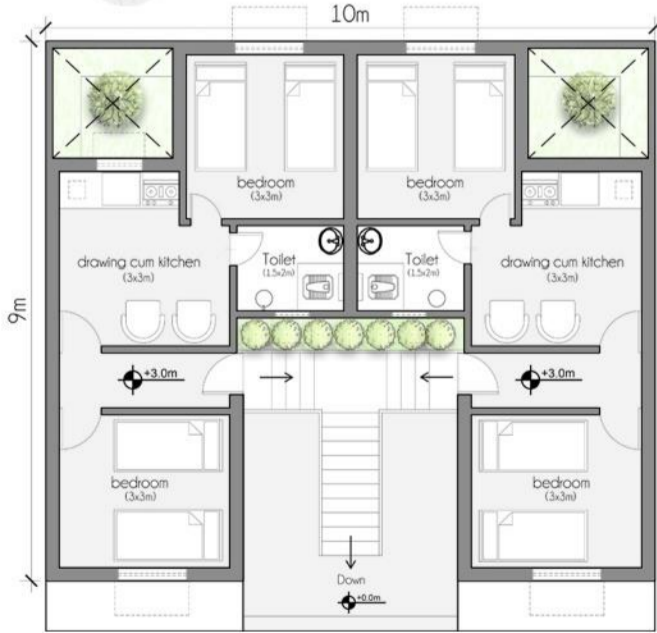### Prototype B

GROUND FLOOR PLAN

FIRST FLOOR PLAN

Prototype C

GROUND FLOOR PLAN

FIRST FLOOR PLAN

Two houses arranged in cluster form with shared staircase to reduce effective costs. Open space incorporation at the centre acting as interactive social space. Each cluster consists of 10 houses with pathway and green space.
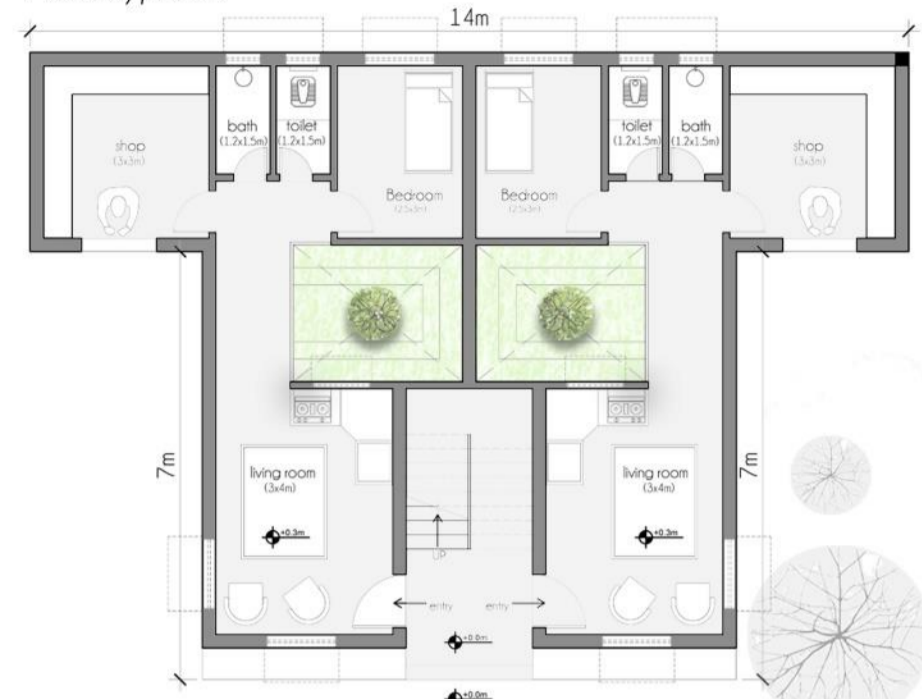
1. Cluster of Module I
2. Open ground
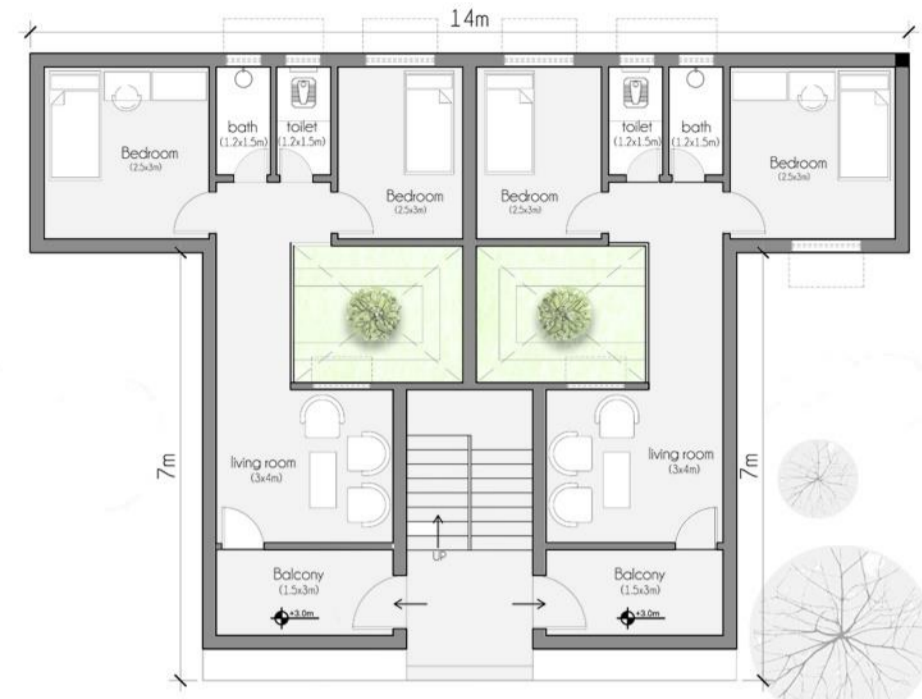3. Tree lined area
4. Common area
5. 8m wide road

Cluster of units

N

MODULE II - *Option 1*　(55sq.m)

Prototype A

GROUND FLOOR PLAN

FIRST FLOOR PLAN

Prototype B

GROUND FLOOR PLAN

FIRST FLOOR PLAN

Prototype C

GROUND FLOOR PLAN

FIRST FLOOR PLAN

Cluster of units

Concept

1. Cluster of Module II
2. Temple
3. Commercial area
4. 8m wide road
5. Open ground
6. 10m wide road

N

MODULE II - *Option 2* （55sq.m)

Prototype A

GROUND FLOOR PLAN

FIRST FLOOR PLAN

Prototype B

GROUND FLOOR PLAN

FIRST FLOOR PLAN
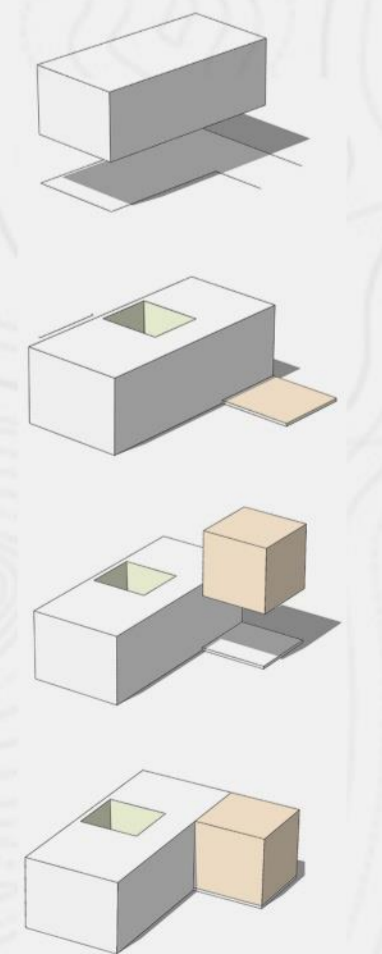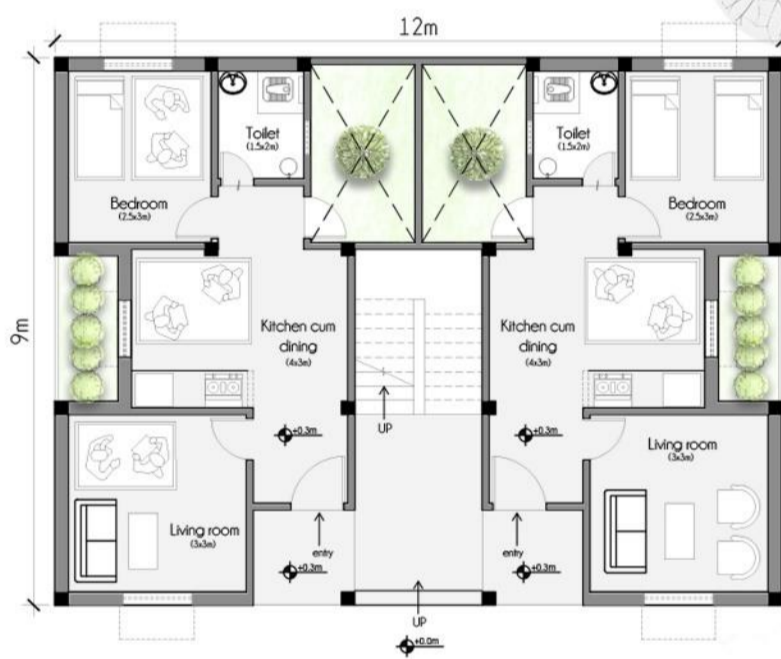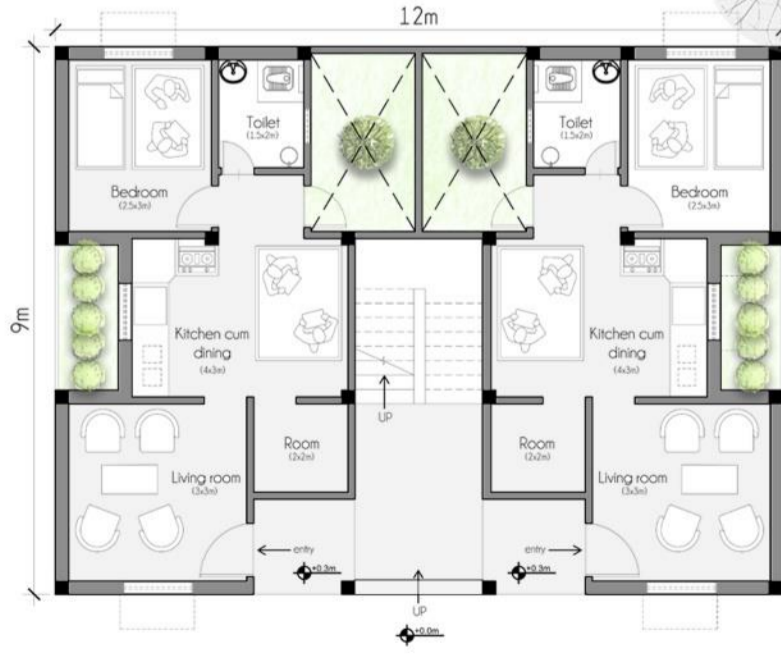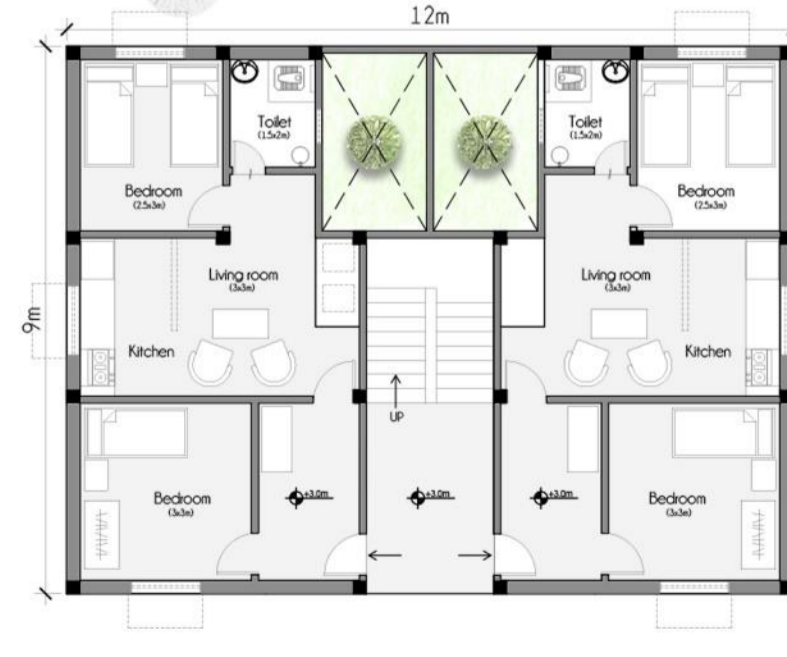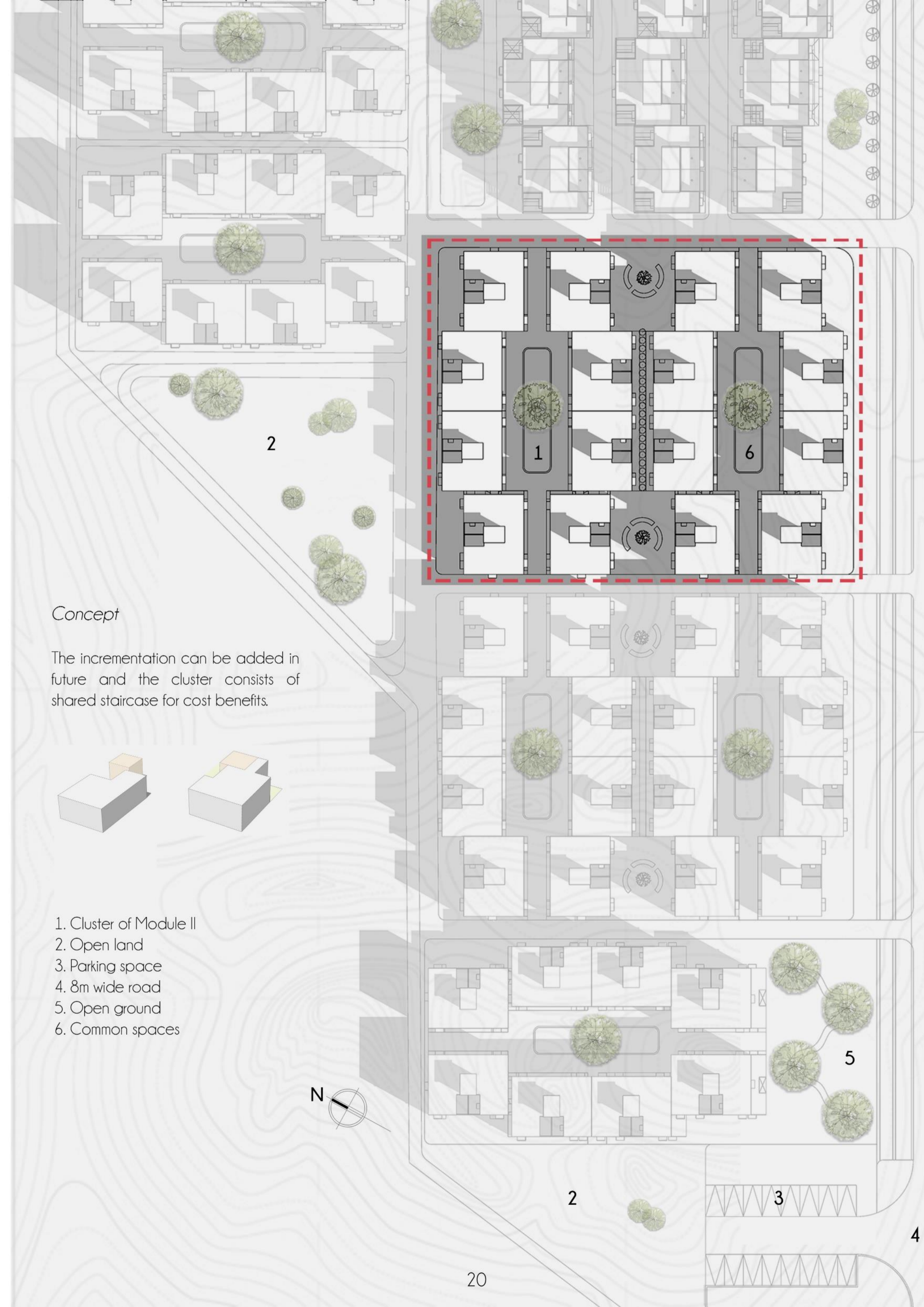
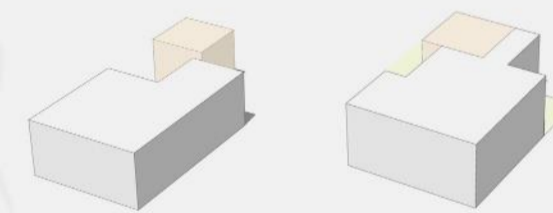## Prototype C

GROUND FLOOR PLAN

FIRST FLOOR PLAN

Concept

The incrementation can be added in future and the cluster consists of shared staircase for cost benefits.

1. Cluster of Module II
2. Open land
3. Parking space
4. 8m wide road
5. Open ground
6. Common spaces

N

MODULE III - *Option 1* (70 sq.m)

Prototype I (Ground fl)

7m

10m

bedroom (3.5x3m)

Toilet (1.5x3m)

kitchen (2.5x2m)

Multi utility space

living room (4x3.5m)

shop (3.5x3m)

UP

Prototype II (Ground fl)

7m

10m

bedroom (3.5x3m)

bedroom (3.5x3m)

Toilet (1.5x3m)

kitchen (2.5x2m)

Multi utility space

living room (4x3.5m)

UP

Prototype III (Ground fl)

7m

10m

bedroom (3.5x3m)

Toilet (1.5x3m)

kitchen (2.5x2m)

workshop (3.5x3m)

workshop (3.5x3m)

living room (4x3.5m)

UP

Prototype IV (Ground fl)

7m

10m

bedroom (3.5x3m)

Toilet (1.5x3m)

kitchen (2.5x2m)

Multi utility space

living room (4x3.5m)

bedroom (3.5x3m)

UP

Prototype I (First fl)

7m

10m

Toilet (1.5x3m)

living room (4x3.5m)

A — A'

bedroom (3.5x3m)

UP

Prototype II (First fl)

7m

10m

Toilet (1.5x3m)

bedroom (3.5x3m)

living room (4x3.5m)

bedroom (3.5x3m)

UP

Prototype III (First fl)

7m

10m

terrace (4x3.5m)

Toilet (1.5x3m)

kitchen (2.5x2m)

Multipurpose room (3.5x3m)

Living room (3.5x3m)

UP

Prototype IV (First fl)

7m

10m

Toilet (1.5x3m)

bedroom (3.5x3m)

living room (4x3.5m)

bedroom (3.5x3m)

UP

Prototype V (First fl)

7m

10m

bedroom (3.5x3m)

bedroom (3.5x3m)

Toilet (1.5x3m)

living room (4x3.5m)

bedroom (3.5x3m)

balcony (1.2x3.5m)

1. Cluster of Module III
2. 8m wide road
3. Open ground
4. Kids play area

4

3

1

2

3

N

Vision Statement

" *The project envisions to follow the 'Incremental approach' towards the design process of the housing for the slum dwellers of Dumar Talab in Raipur city while adressing the requirements and the needs of various age groups thus forming spaces for their activities with the provision of future incrementation both in their houses and the site as well. Appropriate housing and working conditons make them an integral part of the city , establishing a sense of ownership and belongingness and encourage them for future investments in improving their houses.* "

Incrementality can be conceptualised as both a Process and a Product that can work towards the improvments of informal settlements and slums to share the burden of formal housing supply. The key is to develop incremental strategies to promote well-organized communities that are integrated into the city fabric for now and for the future as well.
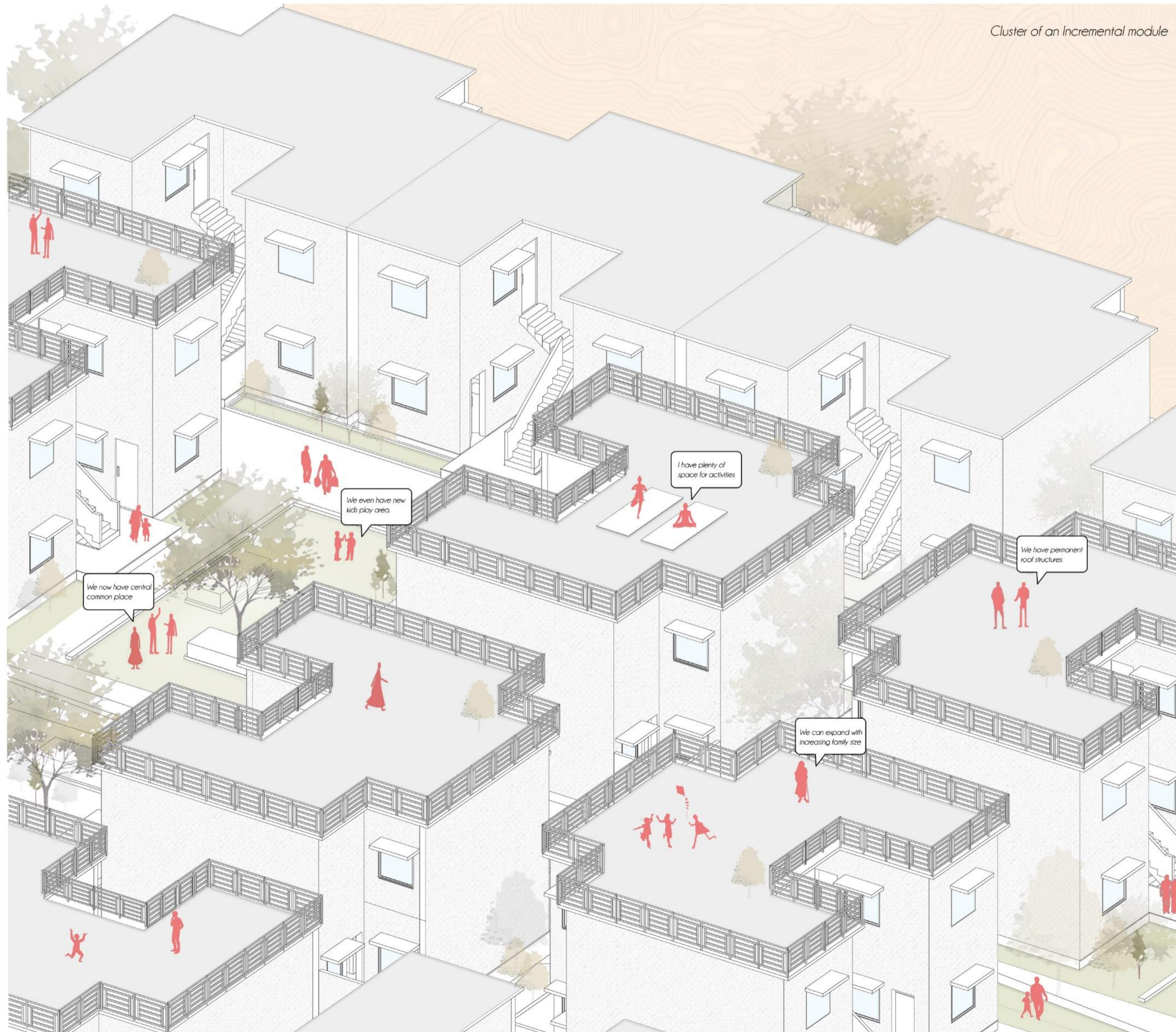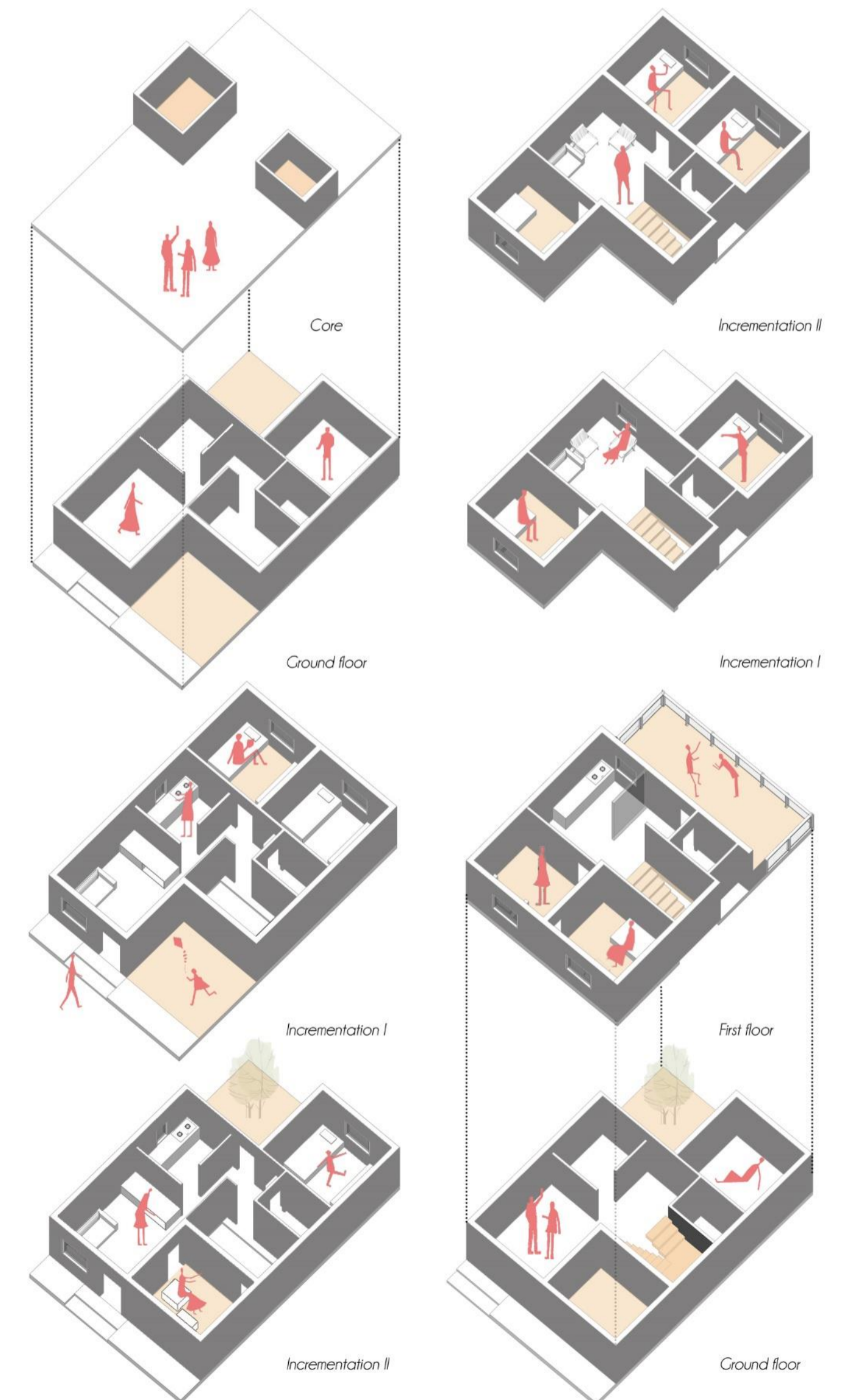
Cluster of an Incremental module

DESIGN PROPOSAL

The Design included creating 5 types of Modules/Units according to the spaces required by the people for their living and basic space requirements as per local Bye-laws and regulations.The modules were designed for future incrementation (both vertically and horizontally) in the plot with the residents needs and investments. The houses were arranged in a cluster form with a shared staircase to reduce effective costs and space and strategically placed in the site with internal streets. All types of clusters consisted of Common open and green space incorporated at the centre acting as a interactive social space that can be utilised by the residents for various purposes. The site also consists of various other amenities for the residents like a children's park , a community gathering and seating space , internal pathways, a tree-lined area and commercial for further expansion of their shops with substantial parking for present and future use.

This approach of Incremental housing units can potentially and strategically cater to the housing problem and may not be limited to Raipur city itself : *Rather this will act as a prototype for the future multiplicty of idea.*


Core

Incrementation II

Ground floor

Incrementation I

Incrementation I

First floor

Incrementation II

Ground floor

Contextual site model

Studied slum area : 40000 sq.m
Proposed site area : 50000 sq.m

The Inception

'People in the Dumar Talab slum have had a cultural and historical connect to the place hence continued to survive and live in such diapidated conditions devoid of basic needs.'
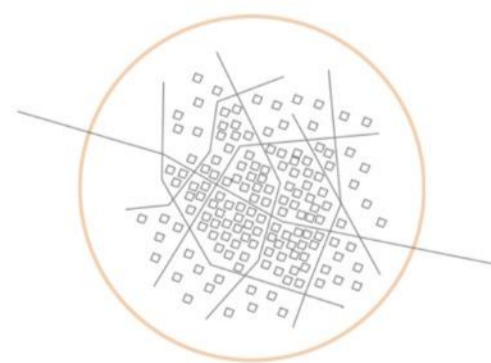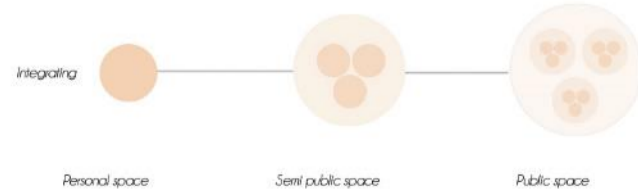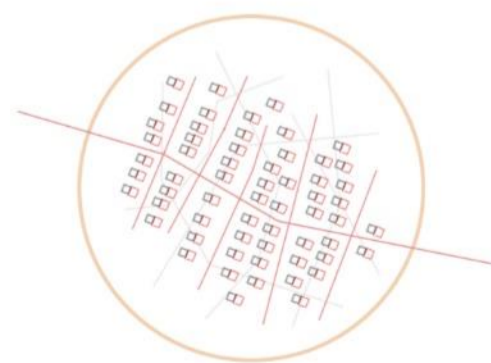
Strategy

Giving prime importance to the needs and requirements that supports local occupation and culture as well as cater to the context of the community as a whole

Design evolved spaces that foster community interaction kee -ping intact the spirit and aspirations of the local people.

Slum fabric

Integrating

Personal space   *Semi public space*   *Public space*

The Motivation

'Examples throughout the world suggest for better strategic approaches for formal housing units that create opportunities for the inhabitants to increment as they grow and develop.'
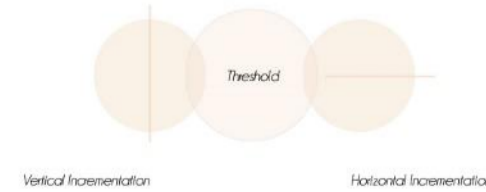
Strategy

The successful example of Quinta Monroy housing in Chile imp- lies that the provision of core and supporting framework allows families to exoand their units with various benefits .

Incorporating vertical and horizontal future expansion in the units and making the community more habitable in nature.

Incremental housing

Threshold

Vertical Incrementation   *Horizontal Incrementation*

The Conclusion

'Incremental housing for the Dumar Talab slum aimed at providing future increment solution to the inhabitants both at the house level and the community level as well for the future.'

Strategy

The result is an eccentric amalgamation of various spaces and people that underwent transfiguration to create versa- tile housing reflecting the actual notion of the community.

Amenities provided to them in the form of playground , parks and gathering space help uplift their spirit with inclusivity.

Scale
Product   adaptable
Affordability
Speed
Availability
accessible
Process
Scarcity

3S -4A diagram

unit — *expansion* — *new floor* — *expansion* — *new floor*

Incrementality both as a process of expansion and a final product

Dumar Talab slum , Raipur (India)
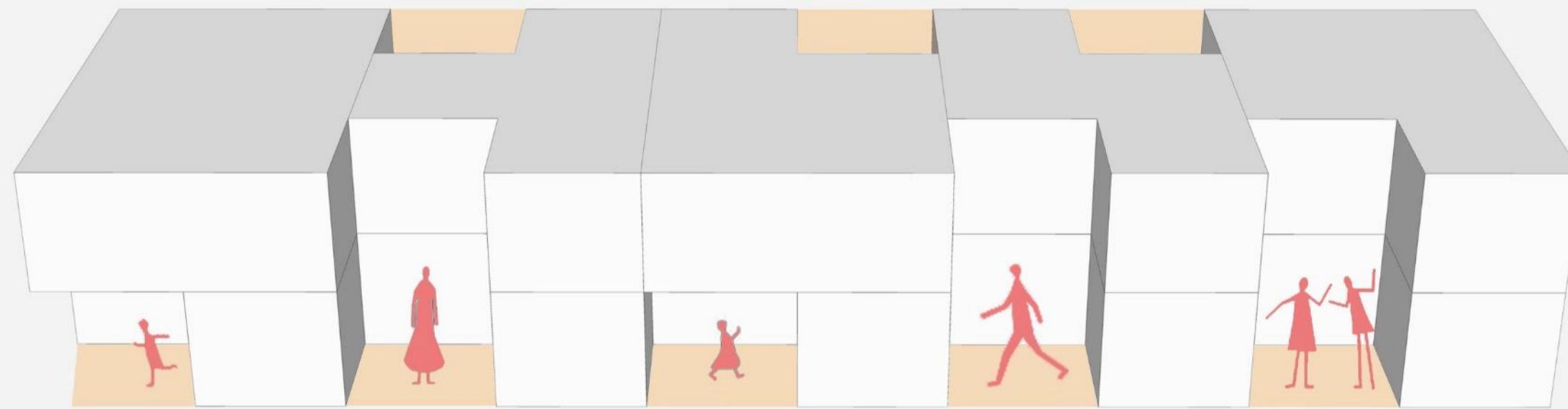
> *The result is the design of multiple self-build communities enhancing the social interaction and uplifting the spirit of identity and flexibility amongst the people belonging to the slum.*
>
> Small yet consistent and dedicated efforts by the community have the potential to transform , enliven and give a whole new identity to the space.

'Redevelopment of Dumar Talab Slum with Incremental Housing Solutions'

by
Afia Siddiqui