

## RESEARCH ARTICLE

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# A Twin Track Approach for Informal Settlements Development: Combining Upgrading and Housing— A Case Study of District 13 Kabul City

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## Abstract

**Objectives:** Urban upgrading is a widely used method in developing informal settlements. The method has shown a high satisfaction rate among the residents of informal settlements in Kabul city. However, after years the upgraded area still lacks urban facilities. And, only implementation of urban renewal destroyed the existing community. This paper studies a twin-track approach to upgrading and resettlement housing. Resettlement is done using the Urban Renewal method. Urban renewal implementation is compared in three development typologies of the master plan to relocate affected landowners inside the project area. We also carve out urban facilities from empty plots. **Methods:** The methodology of this research contains five stages; Literature review, data collection, data import, and manipulation, data analysis, and finally, proposing a model for upgrading informal settlements in Kabul city. A case study site of 28 hectares in District 13 of Kabul city is selected to study urban upgrading applicability. **Findings:** We found through a questionnaire that most residents are willing to accept urban redevelopment projects in the area. However, they prefer to be relocated to the same neighborhood or district. The informal settlements have vast vacant plots; hence we can carve out public facilities. Resettlement housing projects are preferred to be implemented in the mixed-use area typologies of the master plan. As a result of the twin-track approach, public land increases from 15% to 35%. **Novelty:** Affected landowners are relocated inside the project area by exchanging land for the apartment floor area. The method does not destroy the existing community and avoids gentrification in informal settlements. Hence, this research can help the Afghanistan government and international NGOs upgrade the informal settlement in Kabul city.

**Keywords:** Informal settlements; Urban Upgrading; Urban Renewal; Twin track approach; District 13; Kabul City

## 1 Introduction

Urban Upgrading is being used worldwide by governments and international NGOs to increase the mobility and quality of life of slum areas. This method has been effective in connecting informal settlements with urban areas. Moreover, it has resulted in an increased level of economic and commercial activities in those areas. Upgrading at the primary level is improving the physical environment of a settlement.<sup>(1)</sup> However, Slum or informal settlement upgrading also consists of social, economic, organizational, and environmental improvements undertaken cooperatively and locally among citizens, community groups, businesses, and local authorities.<sup>(2)</sup> Upgrading the informal settlements was also part of Millennium Development Goals 7, target 11.<sup>(2)</sup> However, now, it is also part of the SDGs. SDG 11 aims to renew and plan inclusive, safe, resilient, and sustainable cities.

Nowadays, this approach is favored by most governments, slum communities, NGOs, and international funding agencies. It is affordable, does not involve relocation to remote public housing estates, and immediately visible results.<sup>(2)</sup> However, informal upgrading is not a stand-alone solution. We need a twin-track approach that ensures upgrading and housing opportunities.<sup>(2)</sup> Hence, the analysis set out in this paper suggests constructing housing through urban renewal methods for the resettlement of affected landowners inside the project area.

This study aims to propose a detailed plan for revitalizing a part of district 13, comprising 28 hectares of Kabul city, the capital of Afghanistan. The proposed method uses urban upgrading alongside carving out of the urban facilities from empty plots. It also explores various typologies of the master plan in the case study to find a new area for relocation of affected landowners and ensure minimum disruption of the resident's livelihood.

## 2 Overview of Kabul City Informal Settlements

The Taliban regime and communist regime ruled Afghanistan until the end of the 20<sup>th</sup> century. After the US invasion of Afghanistan in 2001, Kabul was seen as an ideal place for migrating villagers and returning refugees to resettle. "Afghanistan's urban population is expected to grow at an average of 3.14% up to 2050 - still one of the fastest rates in the world."<sup>(3)</sup> "Kabul city was estimated at 4.5 million for the existing population in 2008, and 8.0 million for the planning year of 2023."<sup>(4)</sup> Returning refugees and internally migrating villagers contribute to 40 percent of Kabul's population.<sup>(5)</sup> After the Taliban regime fell and the civil war ended, the Afghan refugees returned to Afghanistan. Kabul seemed an ideal place for employment opportunities with better security. As a result, the city's population increased tremendously, leading to mass informal settlements.

During the communist regime, the state led the housing project with no private sector investment involved—Kabul city famous Macrorayan apartment Housing were built by the communist state. In 1978, the state adopted a master plan for the city, which was not fully implemented due to the civil war that broke out in the country. Only 20 percent of the master plan was implemented as of 2002.<sup>(4)</sup> Incomplete implementation of the master plan has led to massive informal settlements. Today more than 70 percent of Kabul city is covered by informal settlements.<sup>(3–10)</sup> By 2005, more than 2.44 million people lived in informal settlements.<sup>(11)</sup>

The number of informal settlements has been multiplying in the country. Furthermore, this rapid growth has resulted in land tenure and accessibility issues. The government of Afghanistan has decided to upgrade the informal settlements and distribute the land title deed with the help of international organizations like UN-Habitat. UN-Habitat called the process a "people process," With the community's support, they upgraded the informal settlements.

The Kabul municipality implements the projects in partnership with UN-Habitat and other international NGOs. The program is organized at three main levels: community, municipal, and national. Families and residents form Community Development Councils (CDCs) at the community level. These councils are responsible for designing, implementing, and maintaining projects such as roads, drainages, and open spaces. UN-Habitat's urban CDC approach grew and reached a large scale and implemented several projects around Afghanistan cities. As of 2016, over 1.5 million Afghans in over 170,000 households (an estimated 19 percent of the urban population) had been directly engaged through 645 CDCs.<sup>(2–10,12–17)</sup> Kabul municipality leads its staff's strategy development and training to work with the residents at the municipal level. The national level ensures that laws, policies, and regulations are in place to support and strengthen the upgrading processes.<sup>(4–10)</sup> It was a good step in starting the in-situ participatory slum upgrading. However, the project implemented was mostly physical upgrading of roads and partly focused on building community councils. However, as councils were funded, most community development councils failed to survive when the projects were finished.

Urban upgrading has helped provide an access road in Kabul, which has positively impacted the lives of the residents. Research, done by<sup>(6)</sup> Nazire. H et al has shown the effect of upgrading between 2012-2016 in the Afshar area of Kabul. The results showed a 91% satisfaction rate among the residents. The upgrading improved the local economy. People started to build new mixed-use houses where the first floor was used for shops. It also created a playground for children and supported social

gatherings. Overall, the project helped improve accessibility and decreased commute time for residents to the facilities in the area.<sup>(6)</sup>

However, the urban upgrading implemented in some parts of Kabul has not given an ideal result. After four years of upgrading, Afshar Neighbourhood, local schools and clinics are unavailable in the settlement area. Residents spend an average of 20 minutes by car to access those facilities outside the settlement area.<sup>(6)</sup> Hence a different approach is needed for better results in upgrading the informal settlements in the city. This paper studies the upgrading method and compares the urban renewal implementation in three development typologies of the master plan for relocating affected landowners inside the project area. We also carve out facilities like a school, clinic, kindergarten, and park from empty plots in our study area.

### 3 Case Study Site

Kabul city comprises 22 Districts. District 13 (here after as D13) is one of the most populated areas in the city. It is located about seven kilometers away from the city center. In the 1978 master plan, this place was considered the ideal site for residential expansion of the city to the west. Today the same area is home to about 700,000 informal settlers.<sup>(8)</sup> The main road in the district is Shaheed Mazari Road, which goes through the central part of the district. This corridor connects Kabul city with the central and southern province of Afghanistan. The expansion in construction and population was developed after 2001. The district is third in rapid urbanization growth in Kabul city. It is developed chiefly informally, and title deeds owned by residents in the area are mainly customary (Urofi). Only around 2% of the residents were said to have had legal title deeds in 2005.<sup>(18)</sup> District 13th, 4660 hectares, has mainly been developed informally and densely. Most of the area is covered by residential houses occupying around 2840 hectares.<sup>(19)</sup> Figure 1 shows the current land use of District 13.

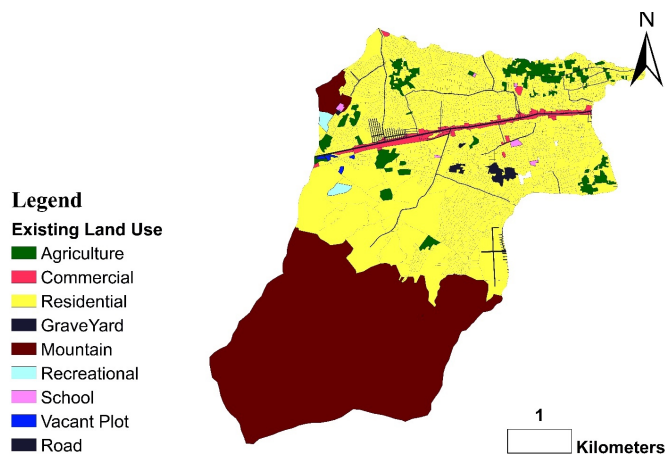


Fig 1. Existing Land Use D13 [UN-Habitat Afghanistan]

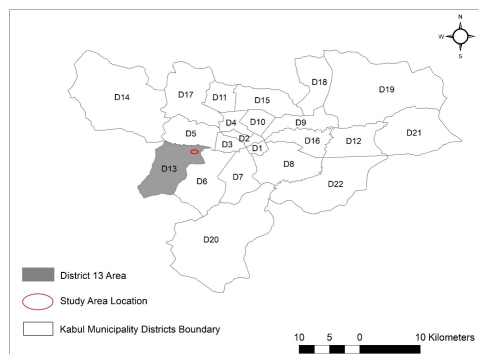


Fig 2. Location of D13 and Case Study Site

The case study area is located at the center of district 13. We chose this area because it is connected to the main Mazari Road, and the size of this master plan block is small. Hence it is easier to calculate. The area has three important development typologies of the master plan. The typologies will help us better perform a comparative urban renewal study in the area. Another reason for choosing this study area is for our future research. It is a diverse area in terms of a geographical community; residents migrated from the rural provinces and settled in a community based on their rural districts. It can be one of the reasons that the landowners want to resettle inside the project area to save their community.

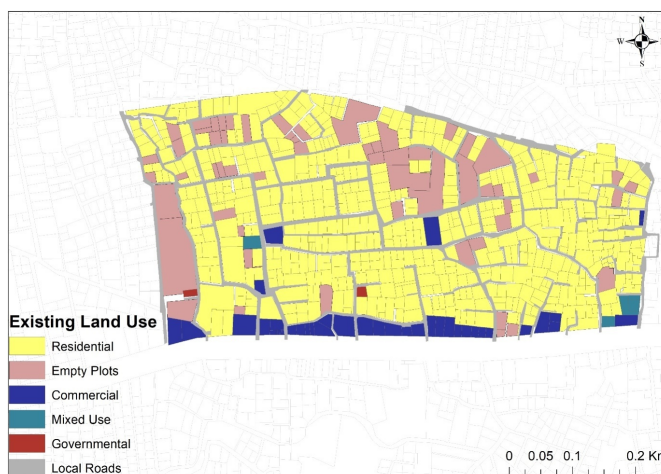
The site will be developed using urban upgrading and urban renewal. It is 28 hectares with an estimated population of around 5000 people. Below are some of the existing problems in the area:

- No open spaces and parks
- Low land price, mainly if it is located away from the main road
- Lack of infrastructures like drinking water, drainage, and roads
- No official title deeds
- Lack of public facilities

Figure 3 and Table 1 show the existing land use in the case study area.

**Table 1. Existing Land Use of the Area**

Existing Land Use	Existing Situation		
	Area (m <sup>2</sup> )	Proportion (%)	
Public Land	Social Facilities	1,500	1%
	Road	35,000	13%
	Governmental build-ings	500	0.2%
	Subtotal	37,000	14%
Private Land	Residential	175,000	65%
	Commercial	16,000	6%
	Mixed-use Buildings	2,000	1%
	Empty Plots	40,000	15%
	Sub-total	233,000	86%
Total (m <sup>2</sup> )	270,000	100%	



**Fig 3. Existing Land Use of the Case Study Area**

## 4 Methodology

This research methodology contains a literature review, data collection, data cleaning and manipulation, data analysis, and finally, proposing a model for redeveloping the informal settlements. After finding the results, we suggest a new upgrading plan for the area. Figure 4 shows the research methodology.

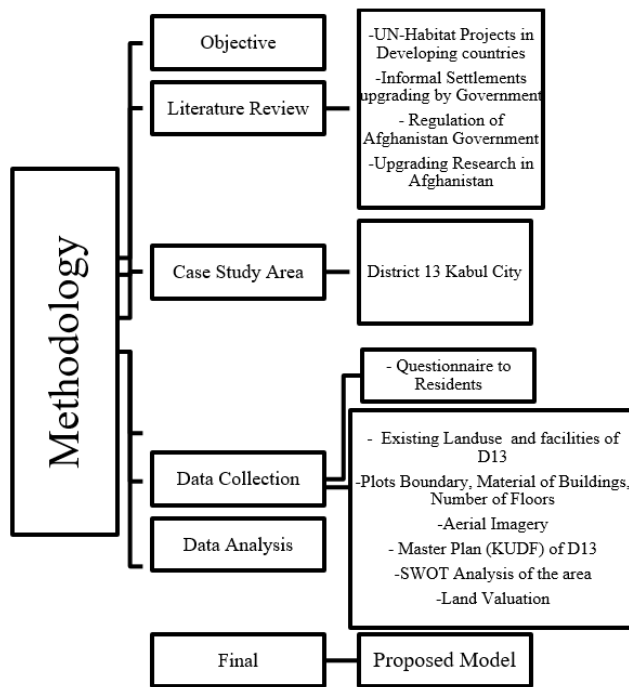


Fig 4. Flow Chart of the Research Methodology

### 4.1 Literature Review

Our methodology contains literature reviews of different upgrading methods performed over the years in other countries. We studied books and journal research papers on upgrading. We also used reports like UN-Habitat on street-led upgrading in different developing countries and regulations of the Afghanistan government for urban development. We mentioned a few of the studies in our introduction and overview of Kabul city informal settlements.

### 4.2 Data Collections

A case study area is chosen from district 13 of Kabul city, and data are collected in two parts. First, we designed a questionnaire and asked the residents about their ideal form of urban redevelopment. In every urban development project, community involvement should be a priority. We asked people about the location of their new houses and where they want to be relocated to propose a model based on what residents prefer.

Second, we collected all the required data of the case study site from different organizations in Afghanistan.

Hence, the data collection is divided into the following two parts:

#### 4.2.1. Primary Data

We distributed 100 questionnaires to the people in the area. As the size of the area was big with many households coupled with security and financial constraints, we could not survey the entire area. Hence, we selected random houses from four corners and the center of the study area.

We asked the landowners whether or not they were willing to sell their land for the government to build public projects and facilities. They were also asked if they prefer detached houses or apartments and their new houses to be inside or outside the project area.

The land use we acquired from Kabul Municipality did not have house age. We required this information to calculate the age of the buildings for compensation in case it is demolished. Therefore we asked the landowners about the age of those buildings in the questionnaire. We get an average age for different buildings according to their materials in calculating house age.

#### **4.2.2. Secondary Data**

Kabul Municipality made District 13 land-use in partnership with UN-Habitat.<sup>(16)</sup> The land-use contains the plot's boundary, the material of the buildings, number of floors, area of the plot, and commercial and agriculture area. We used this land use to find out the current urban situation of the area. Aerial imagery of Kabul city is also used from Kabul Municipality and the Ministry of Urban Development and Land of Afghanistan (MUDL).<sup>(10)</sup> The new master plan, developed by Sasaki Company and the Ministry of Urban Development and Land of Afghanistan, is used to propose the new plan. Kabul Municipality regulation of an informal area is also reviewed.<sup>(9)</sup>

### **4.3 Data Import and Analysis**

First, the survey questionnaire is studied, and based on the residents' demand; we proposed our model. Furthermore, all the collected data is analyzed using Geographic Information System (GIS). We found the intersection of the Kabul Urban Design Framework (KUDF) and the current land use of the area to find the destruction caused by the KUDF. We also intersected the current land use with the proposed plan to find the destruction for upgrading the area and carving out the facilities. The proposal's implementation will demolish a few buildings; hence we have to relocate the landowners. We compared three typologies of the KUDF in the case study area to find the best typologies for implementing urban renewal. We used AutoCAD to draw the new urban renewal plan for constructing apartment buildings. The data were exported to Microsoft Excel to analyze, and finally, we propose our model for upgrading the informal settlements in Kabul city.

### **4.4 Proposed Model for Upgrading Informal Settlements in Kabul City**

After analyzing the questionnaire and data from the Afghanistan organization, we proposed a model for upgrading informal settlements in Kabul city. We develop most of the area by upgrading and providing urban facilities in the empty plots. However, many landowners will lose their land because of upgrading and widening the road and implementing the master plan road. As per our questionnaire, the residents preferred to be resettled inside the project area, as they prefer their current community. So we decided to develop part of the area using urban renewal to provide housing for the resettlement of affected landowners. For choosing an area to develop through urban renewal, we compared three master plan typologies in the case study area to find a suitable area for constructing resettlement housing.

## **5 Data Analysis**

### **5.1 Questionnaire**

Fifty-two percent of the respondents, most landowners, want to live anywhere within district 13. Thirty-two percent prefer living in the same neighborhood (Gozar). They prefer living with the existing neighbors and other amenities near the neighborhood. In comparison, 16 percent of respondents are willing to relocate anywhere in Kabul. As the result shows, most people prefer relocating within the same district and neighborhood. According to the survey responses we received, there were numerous reasons why the residents preferred relocating within and near the same area. They included being near to their relatives and ethnic communities and security. Security is why the district is considered safer than other parts of Kabul at the time of the interview. Other reasons are near their workplaces, schools, the main road, and the market. Relocating to a different location far from this area would add to their daily time and cost in transit to travel to schools or workplaces. Therefore, upgrading the same area is an effective method to preserve the community with minimum destruction of their houses, ensuring minimum disruption of their livelihoods while being relocated.

78% of the residents surveyed agreed to the land expropriation by the government, whereas 22% opposed the idea. Overall, we received a positive response, with most of them agreeing on land acquisition. The results show that the government can apply urban development projects in the case study area.

When asked for their preferences on the type of houses, 52 percent preferred apartments, whereas 48 percent detached houses. Since the plan for the study area is to develop apartments only, we need to further negotiate with the 48% of the landowners that preferred detached houses. The reason is that the urban renewal area is small, and it is not feasible to develop horizontally. In exchange for an apartment, land acquisition can be made by increasing the apartment floor area for original

landowners Figure 5.

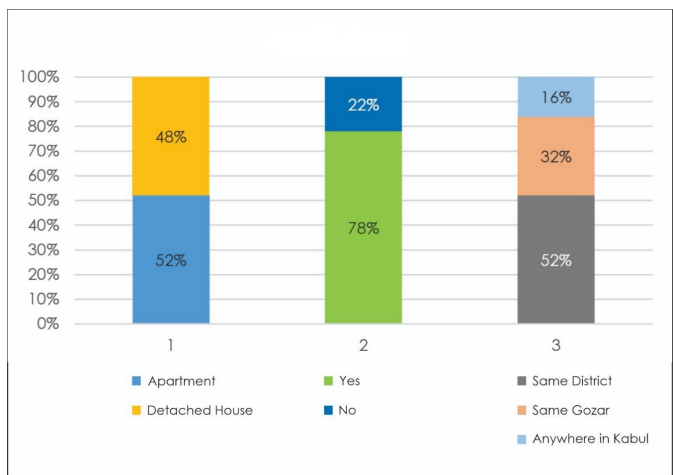


Fig 5. Questionnaire Results

### 5.2 Masterplan typologies of the case study area

The new master plan for Kabul was developed in 2018 and is called Kabul Urban Design Framework (KUDF). It is a series of design concepts from a regional to an architectural scale that can guide decision-making for a decade and beyond. The plan outlines a set of strategies to guide for implementation of these design concepts.<sup>(7)</sup> We wanted to study urban renewal in different typologies of KUDF. This master plan was financed by the Ministry of Urban Development and Land Afghanistan (MUDL) and the Afghanistan government. Sasaki Company developed it.

The new master plan "Typologies are ways of classifying the built environment according to shared characteristics such as population density, building heights, land uses, or street network. Unlike traditional land uses, development typologies incorporate the physical form of development into the classification".<sup>(7)</sup> KUDF development typologies include formal residential mid-rise, formal residential high-rise, mixed-use Mid-rise, mixed-use high-rise, institutional-large parcel, agriculture, organic residential hillsides, and organic residential.

The case study area is divided into three typologies, as shown in Table 2 :

Table 2. Master plan Typologies of the case study area

Characteristic of the Area in the Master Plan			
No	Mixed-Use High Rise	Organic Residential	High Rise
1	Allowed six to fifteen floors to be built,	The number of the floor is two to 8 floors	The number of floors is allowed from six to twenty floors
2	Vibrant and walkable public realm	Average population density 160/ha	Residential primary, Commercial and institutional secondary
3	Community centers, neighborhood park	Residential primary, Commercial and institutional secondary	Industrial and agriculture is discouraged in the area
4	Commercial primary, Residential and institutional secondary		Average population density of 300/ha
5	Industrial and agriculture is prohibited in the area		
6	Average population density of 200/ha		

Table 2 shows that the area is divided into a residential high-rise, mixed-use midrise, and organic residential.<sup>(7)</sup> We developed part of the area using urban renewal to relocate the affected landowners from master plan road construction and upgrading of

the area. We studied the adaptability of urban renewal in these three typologies of the master plan. Figure 6 shows the master plan of the case study site.

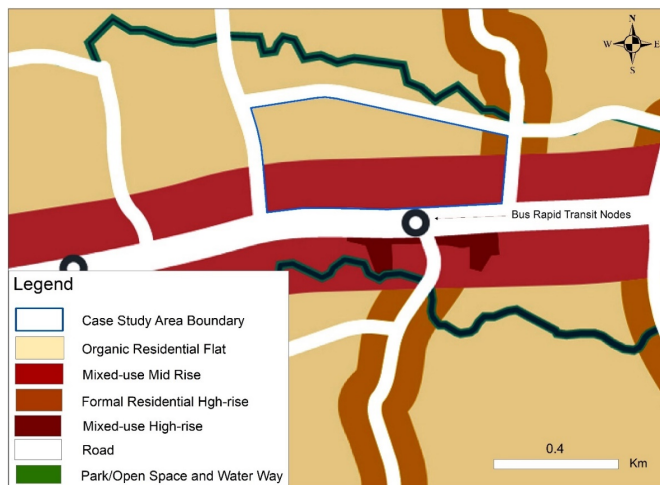


Fig 6. Master Plan of the Case Study Area (KUDF)

### 5.3 SWOT Analysis of the Area

SWOT (Strengths, Weaknesses, Opportunities, and Threats) Analysis is a popular method used worldwide by researchers and organizations for research and strategy development.<sup>(3-10,13,14)</sup> The SWOT analysis is essential in determining the merit and demerit of choosing the area for urban redevelopment. Hence, a SWOT analysis of district 13 of Kabul city was done with the help of a team from Kabul municipality. We Found the strengths, weaknesses, opportunities, and threats of the area. Table 3 shows the SWOT analysis of district 13.

Table 3. SWOT Analysis of District 13

Strengths	Weaknesses	Opportunities	Threats
Mazari Road as a corridor	Informally developed	Comparatively high-water table	People may not accept Urban Renewal
Significant private education facilities	Road network is minimum	One side is surrounded by Kabul city ring road	Natural drainage is closed due to construction
People are helpful	Small land parcels	Near Darul Aman civic hub	Political problems
Low height housing	Lack of public facilities	Near city center	
Near neighborhood park of KUDF	High cost of compensation	Close to Kabul university	
Availability of vacant land	Commercial land on master plan road	Near to commercial hubs	
Industrial activities	Land ownership is customary	The government is planning to work on the district	
Population density is high	No solid waste management	The private sector will invest	
Mazari road connecting the adjacent province to Kabul	No detailed plan for the district		

### 5.4 Land Ownership and Land Valuation

The case study area is covered with informal settlements. The Land Titling and Economic Restructuring Activity (LTERA), funded by USAID, identified four types of informal settlements as follows:<sup>(3-10,12,13,20)</sup>



1. Settlements on public lands,
2. Settlements where most houses were built on privately owned lands,
3. Settlements, where most houses were built on lands, grabbed directly or bought from land grabbers
4. Settlements where there is a murky legal situation.

The area has developed over the years. Owners bought the lands from private landowners and built their houses on them. The titles are customary title deeds. The majority of the area is private land bought from previous landowners; hence it is type two of the aforementioned informal settlements.

Land valuation is based on market value and the location of the property. The property near Mazari road has valued almost twice the land located far away from the main road. We asked the property dealer in the vicinity to find out the land value for district 13.

### 5.5 Land Acquisition and Building Compensation

The land acquisition is made based on the Kabul Municipality code of Land acquisition, and land value is paid according to the market price. The compensation for the buildings is also calculated based on the Kabul municipality building compensation, which is paid based on the evaluation of the building material. We also consider the house age for finding the compensation paid for building destruction. The formula for house age is shown below.

Estimation value of compensation = Brand new value of the building x House age coefficient

House age coefficient =  $1 - (0.8 \times \text{building age} / \text{Maximum age of the building})$

The house age coefficient is multiplied by the brand-new value of the building to find the final compensation to be paid for the owners of a demolished building.

## 6 Proposed Plan Using Informal Settlement Upgrading

The case study area is located near the main road of District 13; it is a complete block of the master plan. We chose to develop the area using an upgrading method to ensure minimal destruction because the road structure is straight, and the width of the road is not narrow. Due to the minimum destruction, the existing community will be preserved, and the project's cost will be minimal. As per our survey, the residents prefer not to be relocated outside the project area, so it is better to develop the area with less destruction of current houses. Hence, the area must be redeveloped through upgrading to ensure minimum disruption of the existing communities while avoiding gentrification. Also, the Government of Afghanistan has a lower development budget, and it is rare for the private sector to invest in big projects such as this. The upgrading will cost less compared to the other methods.

In this paper, we suggest providing facilities in the empty plots of the area. The real challenge is to deal with the resettlements of the affected landowners. According to our survey, most people wanted to relocate within the project area. Hence, we constructed apartment buildings to relocate the affected landowners inside the case study block. To find the best suitable area for this plan, we studied the three existing development typologies of the master plan in the case study area. These include mixed-use mid-rise areas, organic residential areas, and high-rise residential areas. We then compared the three typologies mentioned above to find the suitable one for implementing resettlement housing.

Figure 7 shows the area of the upgrading site. Most land-use is covered by residential houses, followed by commercial and empty plots. Figure 3 and Table 1 shows existing land use and the facilities in the area. At the same time, Table 4 shows the existing material and number of floors of the buildings in the area.

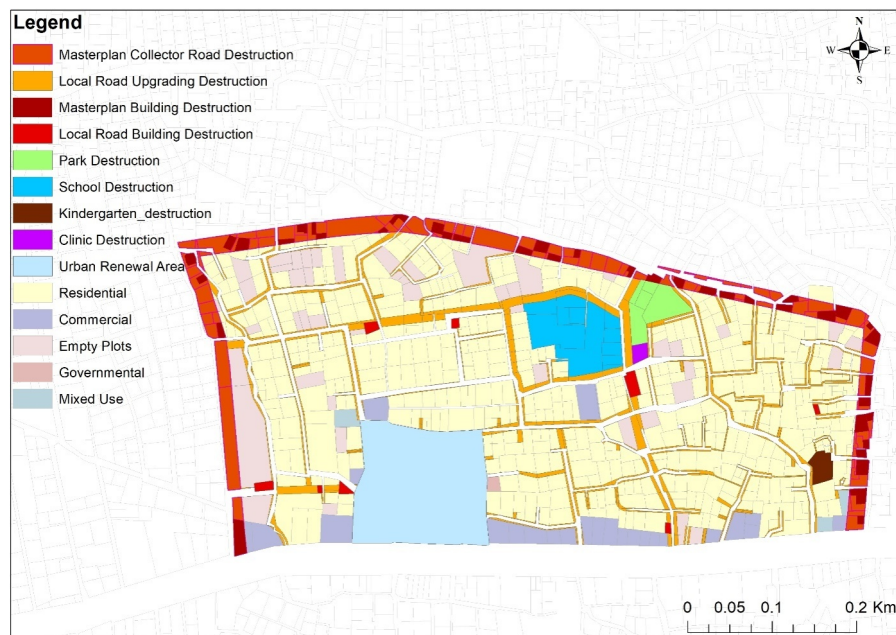
The project aims to bring a better quality of life to the residents in the area. It aims to increase mobility by widening the roads and helping boost commercial and economic activities. Additionally, it aims to transfer the identity of the area by developing the minimum requirement of land registration for title deeds.

The master plan road area is around 2.8 ha of the total land. The local roads are upgraded based on the regulation of Kabul municipality to make the area eligible to be registered for official title deeds. The local streets with maximum traffic are widened to 10m and 8m while others are upgraded to 6m and 4m. After implementing this development plan, each plot will have access to at least a 4m width street. The new road will be paved with asphalt. Figure 7 shows the destruction caused by our proposed plan.

Before upgrading, the total road area percentage is 14% of the project area. After the project is completed, the newly upgraded road, including the master plan road and public facilities, will be 35% of the total area. It will give a bigger open space and facilities and create more mobility in the area. Figure 13 shows the proposed upgrading plan for the area.

**Table 4. Existing Material of the Buildings and Number of Floors**

Type	Existing Situation			
		Area (m <sup>2</sup> )	Number of Plots	Proportion (%)
Existing Material of Buildings	Mud	102,553	312	43%
	Concrete	40,274	141	17%
	Masonry			
	Concrete	53,680	160	22%
	Empty Plots	42,631	66	17.7%
	Unknown	1,457	11	1%
	<b>Total</b>	<b>240,594</b>	<b>690</b>	<b>100%</b>
No of Floors	Five Floors	1,286	6	1%
	Four Floors	6,695	17	3%
	Three Floors	7,688	22	3%
	Two Floors	24,954	98	10%
	One Floors	60,719	190	25%
	Empty Plots	42,631	66	18%
	Unknown	96,620	291	40%
		<b>Total</b>	<b>240,594</b>	<b>690</b>



**Fig 7. Destruction Caused by Upgrading the Area**

Several landowners will lose their land upon implementation of the KUDF master plan and upgrading the area. They will be relocated inside the project; a part of the area will be redeveloped using urban renewal to relocate the affected landowners.

As per the research by Nazari H et al., Urban upgrading was effective in Kabul with a satisfaction rate of 90 percent, and people started investing in their lands. (6) However, after years of upgrading, the area still lacks public facilities like clinics and other facilities. So, in this plan, we have proposed to carve out public facilities from empty plots. A park of 3000 m<sup>2</sup>, school 8000 m<sup>2</sup>, clinic 400 m<sup>2</sup>, and kindergarten of 800 m<sup>2</sup> are proposed for the area. The cost of upgrading for an Area of 28 hectares is 13 million; the cost increased because we are providing public facilities.

The finance of the project will be through the government of Afghanistan. The National government and international NGOs have allocated aid to upgrade the informal settlements. Housing construction for demolished buildings can help attract private sector investments in the area. Hence, it can attract private sector investments.

The Table 5 shows the total construction cost of the upgrading project for an area of 28 hectares in District 13 of Kabul city.

**Table 5. Total Cost of the Upgrading**

Total Cost of Upgrading the Area in USD				
Expenditure		Area (m <sup>2</sup> )	Unit Cost \$/(m <sup>2</sup> )	Total (\$)
Land Acquisition and Construction Cost	Upgrading the local Road	21,900	100	2,190,000
	Master Plan Land Acquisition	23,150	100	2,315,000
	Park	3,000	100	300,000
	School	8,000	100	800,000
	Kindergarten	800	100	80,000
	Clinic	400	100	40,000
	Sub-Total	57,250		5,725,000
	Land Developing Cost	57,170	10	572,500
	Sub-total			6,297,500
Road Construction Cost	Local Road Asphalt construction	31,600	70	2,212,000
	MP Road Asphalt Construction	27,770	70	1,943,900
	Sub-Total	59,370		4,155,900
Building Compensation	Building Destruction of local Road			90,000
	Master plan Building Destruction			370,000
	Sub-Total			460,000
Facility Construction Cost	Park	3,000	50	150,000
	School	8,000	100	800,000
	Kindergarten	800	100	80,000
	Clinic	400	100	40,000
	Sub-Total			1,070,000
Total Cost				11,983,400
Overhead Cost 10%				1,086,600
Total Cost of the Project				\$ 13,070,000

## 7 Comparative Study of Urban Renewal (UR) Method in Three Existing Typologies of KUDF in Case Study Area

We found, through our interview, that the residents prefer living in their neighborhood. Hence to relocate the affected landowners, we propose constructing apartments through urban renewal methods. We also found that more than 50 percent of the landowners want apartments in exchange for their lands. This is less than we aim to work. However, with further information provided to the landowners and negotiation with them by the government representatives, we might get more participants for this project.

As shown in Figure 8 there are three types of typologies in the master plan of the area: mixed-use mid-rise, high-rise residential, and organic residential. To find the best suitable typology for urban renewal in the area, we are comparatively studying the three existing typologies of the master plan in the case study area.

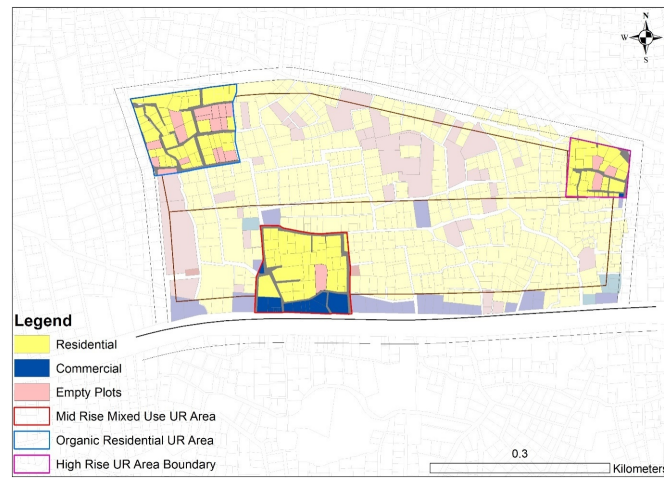


Fig 8. Existing Land Use of the Urban Renewal Sites

### 7.1 Mixed-Use Mid Rise

The area is mainly residential. However, there are a few private facilities and commercial buildings in the area. It has been developed informally throughout the years. The location of the site is shown in Figure 8. The area is 2 ha and planned as a mixed-use mid-rise in the master plan, and it is located near the main road of district 13 at its southern part. Hence the land value near the main road is double that of the rest of the area. The 4600-meter square of the area will be part of the master plan road, and it will be compensated through public money. A park of 1500 meter square is proposed in the plan. The remainder of the area will be the site for the construction of the apartment buildings. The new building layout is proposed based on the north direction to have maximum sunlight during the day. A local road of 16-meter wide is constructed around the UR area for better mobility. The mixed-use midrise UR plan is shown in Figure 10.

Five buildings, each with a built-up area of 608m<sup>2</sup>, are proposed in the UR site. The first floor of each building is considered as parking, and the remaining parking area is around the building. Figure 9 shows the process of UR planning.

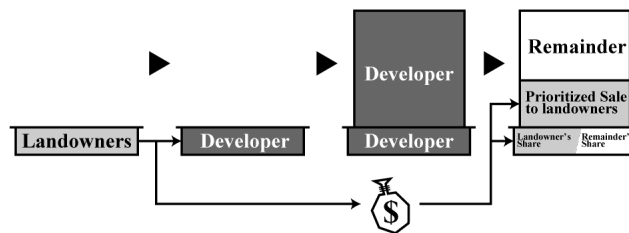


Fig 9. Process of urban renewal Planning

After the final compensation value of land and buildings are found, we divide the total compensation paid for plot owners by the market value of the apartments in the area, and it will give us the apartment size allocated for an individual landowner. We have considered compensation with money for landowners with smaller land sizes instead of apartments.

The average unit cost for land acquisition is 100 dollars per square meter except for the lands near the main road, which is 200\$/m<sup>2</sup>, twice the land value than the area inside. It is the average land market value in the district. Master plan road passes over this project site. After the land acquisition, almost 1/4<sup>th</sup> of the land area is sold for master plan road, this will act as a subsidy for the project, in which the project's cost will decrease, but it has a demerit also- the size of the project area will decrease. Hence to fit the relocated landowners and cover the construction cost, we had to increase the height of the buildings.

**Table 6. Total Cost of Apartment Building Construction**

Total Cost of Mix Use Mid-Rise Urban Renewal (USD)					
Expenditure	Sub-Type		Unit cost	Quantity	Total (\$)
	Building	Compensation			
			\$/m <sup>3</sup>	34107	470,000
Land and Building Compensation	Land Purchase		\$/m <sup>2</sup>	17585	1,985,000
	Land Developing	Land Developing	10 \$/m <sup>2</sup>	21000	210,000
	Sub-Total				2,665,000
Subsidies	Park Land		100	1500	150,000
	Master Road	Plan	200	4690	938,000
	Sub-Total				1,088,000
	Total				1,577,000
Construction Cost	Building 1		200 \$/gross area	9728	1,945,600
	Building 2		200 \$/gross area	9728	1,945,600
	Building 3		200 \$/gross area	9728	1,945,600
	Building 4		200 \$/gross area	9728	1,945,600
	Building 5		200 \$/gross area	9728	1,945,600
	Sub-Total			48640	9,728,000
	Road and Parking		70 \$/m <sup>2</sup>	11100	777,000
Exterior Construction Cost	Greenery		50 \$/m <sup>2</sup>	1500	75,000
	Sub-Total				852,000
Relocation Rent Cost	Two years		150 \$/month	108	388,800
Total Construction Cost					10,580,000
Total Land and Construction Prime Cost					\$ 12,157,000

The park is also public land; the government subsidies will pay the land price money. The maximum completion time of the project is estimated to be two years. The rent for two years will be paid for the landowners. An overhead cost of 10% of the total cost is considered and a 20% rate of return, which is common among Kabul real estate builders. The Financial plan is shown in Table 7.

### 7.2 Organic Residential

The organic residential typology is supposed to be primarily developed residential, followed by commercial and institutional. The maximum number of floors allowed for this typology is eight floors, and an average population density of 160/ha.

The area is at the top left corner of the case study block, with an area of 1.5 ha. The procedure for land acquisition and building compensation is calculated as explained in the mixed-use area calculation. Five apartment buildings of 608 m<sup>2</sup> each are proposed for the area. A park of 600 m<sup>2</sup> will be constructed. 5846 m<sup>2</sup> of the area, which is almost 1/3 of the total area, will be part of the masterplan road; hence, the government will pay the compensation.

After calculating land acquisition and building demolition compensation, we exchange the total compensation of landowners to the apartment floor area. The total apartment floor area is 24320 m<sup>2</sup>, the Landowner’s floor area is 3846 m<sup>2</sup>, and the remaining 20680 m<sup>2</sup> will be the financial floor area. By selling this, we can cover the cost of our project. The project cost is around 9.1 million dollars, and the total sales value is around 10.3 million USD. After covering the cost of the urban renewal project, we will have a 1.2 million USD net profit, earning after paying out total expenses. The location of the organic residential area can be seen in Figure 11, and Table 8 shows the financial analysis of the organic residential.



Fig 10. Mixed-use Mid-Rise Urban Renewal plan

Table 7. Mixed Use Mid-Rise Urban Renewal Project Financial Plan

Financial Analysis of the Mixed-Use Mid-rise UR Project		
	Unit	Amount
Landowners Total Plot Area	(m <sup>2</sup> )	17586
Exchangeable Floor Area	Net (m <sup>2</sup> )	4,900
How much will Reserved Floor remain?		
Total Net floor Area	(m <sup>2</sup> )	44,400
Landowners floor Area	(m <sup>2</sup> )	4,900
Reserved Floor Area for Sale	(m <sup>2</sup> )	39,500
Unit Price of sale	\$	550
Amount of Sale		\$ 21,725,000
Total Prime Cost without Purchasing land	\$	11,580,000
Building Compensation Cost and Land Value - Public Land Sale	\$	1,577,000
Relocation rent cost	\$	388,800
Total Cost of the Project	\$	12,157,000
Small landowners Compensation		210,000
10% Overhead Cost		1,200,000
20% Projects Rate of Return of the project	\$	2,000,000
Total Cost of the UR Project		\$ 15,567,000
Difference Between the amount of Sale and total Cost (Net Income of the Project)	\$	\$ 6,158,000

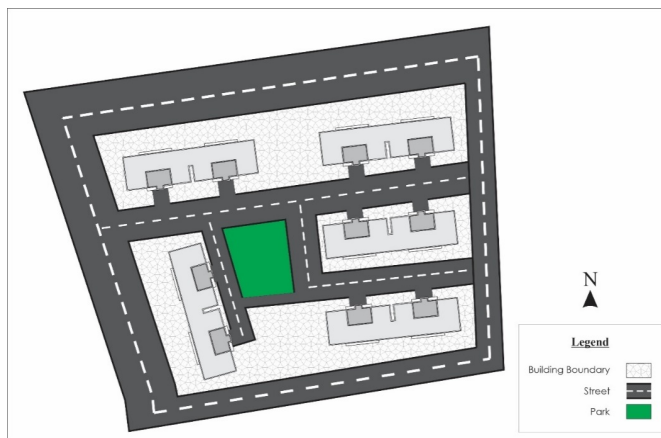


Fig 11. Organic Residential Urban Renewal Plan

Table 8. Financial Analysis of UR in Organic Residential

Financial Analysis of the UR in Organic Residential Area (USD)		
	Unit	Amount
Landowners Total Plot Area	(m <sup>2</sup> )	17565
Exchangeable Floor Area	(m <sup>2</sup> )	3,640
<b>How much will Reserved Floor remain?</b>		
Total Net floor Area	(m <sup>2</sup> )	24,320
Landowners floor Area	(m <sup>2</sup> )	3,640
Reserved Floor Area for Sale	(m <sup>2</sup> )	20,680
Unit Price of sale	\$	500
<b>Amount of Sale</b>		<b>\$ 10,340,000</b>
Total Prime Cost without Purchasing land	\$	5,244,000
Building Compensation Cost and Land Value - Public Land Sale	\$	1,380,000
Relocation rent cost	\$	390,000
Total Prime Cost of the Project	\$	7,014,000
10% Overhead Cost		700,000
20% Projects Rate of Return of the project	\$	1,400,000
<b>Total Cost of the UR Project</b>		<b>\$ 9,114,000</b>
<b>Difference Between the amount of Sale and total Cost (Net Income of the Project)</b>	\$	<b>\$ 1,226,000</b>

### 7.3 High Rise Residential

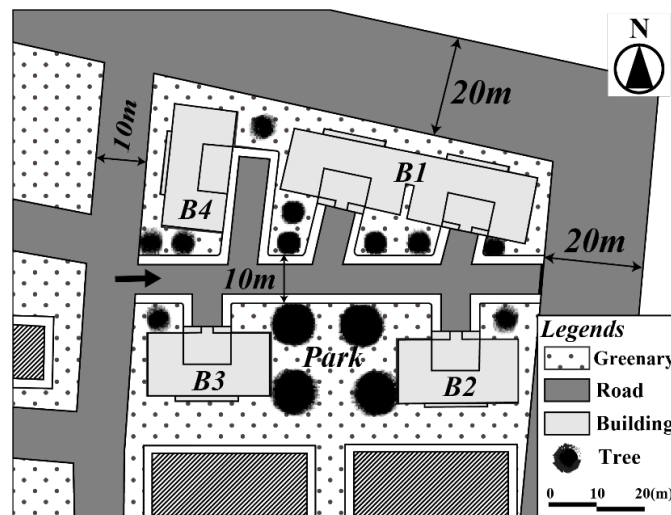
High-rise residential is primarily for residential purposes followed by commercial uses. The industrial and agricultural use of the land is prohibited in the area. The average population density can be around 300/ha. The current land use of the area is mainly residential, with just one plot of commercial land. It is developed informally throughout the years. The current land use is shown in Figure 8.

The total area is almost 1 hectare and is planned as a high-rise. Moreover, two sides of the area are surrounded by a 3300 m<sup>2</sup> master plan road. The built-up area of the project will be 5300 m<sup>2</sup>. The new building layout is proposed based on the north direction to have maximum sunlight during the day. A road of 10-meter width is built on the left-hand side of the project for

better mobility. A park of 500 m<sup>2</sup> is also proposed in the plan. Table 9 and Figure 12 shows the financial plan of high-rise residential.

**Table 9. Financial Analysis of UR in High-rise Residential in USD**

<b>Financial Analysis of the UR Project in High-Rise Residential (USD)</b>		
	<b>Unit</b>	<b>Amount</b>
Landowners Land Area	(m <sup>2</sup> )	8706
Exchangeable Floor Area	(m <sup>2</sup> )	2,070
<b>How much will Reserved Floor remain?</b>		
Total Net floor Area	(m <sup>2</sup> )	29,600
Landowners floor Area	(m <sup>2</sup> )	2,070
Reserved Floor Area for Sale	(m <sup>2</sup> )	27,530
Unit Price of sale	\$	500
		<b>\$</b>
<b>Amount of Sale</b>		<b>13,765,000</b>
Total Prime Cost without Purchasing land	\$	8,290,000
Building Compensation Cost and Land Value - Subsidy of Public Land Sale	\$	730,000
Relocation rent cost	\$	260,000
Total Cost of the Project	\$	9,280,000
10% overhead cost	\$	930,000
20% Projects Rate of Return	\$	1,855,000
		<b>\$</b>
<b>Total Cost of the UR Project</b>		<b>12,065,000</b>
<b>Difference Between the amount of Sale and total Cost of the UR Project (Net Income)</b>	<b>\$</b>	<b>1,700,000</b>



**Fig 12. High-rise Residential Urban Renewal Plan**



## 7.4 Comparison of the three Typologies of Master Plan for UR applicability

Table 10. Urban Renewal Suitability Analysis

MP Typologies UR Suitability Analysis				
No	Type	Mixed-Use Mid-Rise	Organic Residential	High Rise
1	Case Study Area (ha)	2	2	1
2	Project Cost (Million USD)	16	9	12
3	Financial Land (Million USD)	22	10	14
4	Project Cost Recovery	Yes	Yes	Yes
5	Interest in Investment (Million USD)	6	1	2
6	Cost (Million USD/ha)	8	5	6
7	Land Purchase Value (USD/m <sup>2</sup> )	200	100	100
8	Post-Project Land Price	High	Less	Less
9	Project Investment Possibility	High	Less	Less
10	Demolition	More	Less	More
11	Building Compensation (USD)	470,000	64,000	164,000
12	Demolition's Compensation (\$/m <sup>2</sup> )	24	4	16
13	Landowners Relocation	Yes	Yes	yes
14	Maximum Floor Number	15	8	20
15	Contribution to MP Road (m <sup>2</sup> )	4,705	5,846	3,330
16	Proximity to (BRT) Node	Yes	No	No
17	Park Size (m <sup>2</sup> )	1,500	600	500
18	After Population Density	High Increase	Less Increase	High Increase
19	Post-Project BCR (%)	30	25	30
20	Post-Project Floor Area Ratio (%)	440	200	650
21	Pre-Project Road (m <sup>2</sup> )	3241 (16.2%)	2918 (19.4%)	1183 (11.8%)
22	Post-Project Road (m <sup>2</sup> )	30%	30%	30%
23	Max Existing Buildings Material	Concrete	Mud	Mud
24	Pre-Project Vacant Land (m <sup>2</sup> )	843	4,790	2,440
25	Pre-Project Vacant Land (%)	4.20%	34%	24.40%

As seen in Table 10, the land price is high in mixed-use mid-rise compared to the other two. Furthermore, there are more empty plots as we get away from the Mazari road. In mixed-use mid-rise, only 4.2% of the land is covered by the empty plot. High-rise and organic residential typologies are 24.4% and 34%, respectively. If the number of empty plots is high, it will help minimize the destruction of buildings in implementing the projects. However, the land price after the projects will not increase compared to the mixed-use mid-rise area as the area is near the main road.

After developing apartment buildings, the population in the area will increase. Therefore, the area must be near public transportation. The mixed-use area is near the Bus Rapid Transit (BRT) node, the only public transportation available shortly for Kabul residents. The project cost can be recovered in almost three of the typologies. However, in the organic residential area, the amount is less. When calculating the contingencies, it probably will not cover the initial investment cost. The mixed-use area is near the main road, and according to KUDF, the Mazari road will be changed to a corridor connecting Kabul to Maidan Wardak and Ghazni provinces, resulting in an increased land price. The investment opportunities will be much higher in mixed-use mid-rise compared to other typologies. Implementing urban renewal in mixed-use areas will also help construct the main road master plan of the Mazari corridor, which will also help construct the BRT node of the KUDF plan.

After careful analysis of all the three typologies, we recommend prioritizing urban renewal projects to be given to mixed-use mid-rise areas. Hence, we will construct the housing in a mixed-use mid-rise area and relocate the affected landowners to these apartment buildings. The construction of the new buildings in the area will also increase the population density and availability

of affordable housing.

### 8 Final Proposed Development Plan of the Project

The final proposal plan is shown in Figure 13. The local roads are widened to 4m, 6m, 8m, and 16m, respectively. A new park, a primary school, clinic, and kindergarten is proposed for the area. Landowners affected by the destruction of the area will be relocated inside the same masterplan block by developing part of the mixed-use area by urban renewal. The public and open spaces have increased from 14% to more than 35%. The land use of the proposal is shown in Table ??.

The total cost of upgrading the roads for an area of 28 ha is 13 million USD. This cost also includes the land purchase price for facilities and land acquisition of the main road master plan in the urban renewal area.

The initial investment for the 2 ha of the UR project site is 12 million USD. This cost is mainly for apartment buildings' land acquisition and construction. After completing the UR project and giving the Landowner's floor area, a total of 39500 m<sup>2</sup> of reserve floor area remained. This financial floor will cover the 12 million dollars cost of the project. There will still be 6 million dollars remaining after covering the cost as an income of the UR implementation. We can use this money to upgrade the roads and carve out the facilities for the area. The final proposal plan is shown in Figure 13.

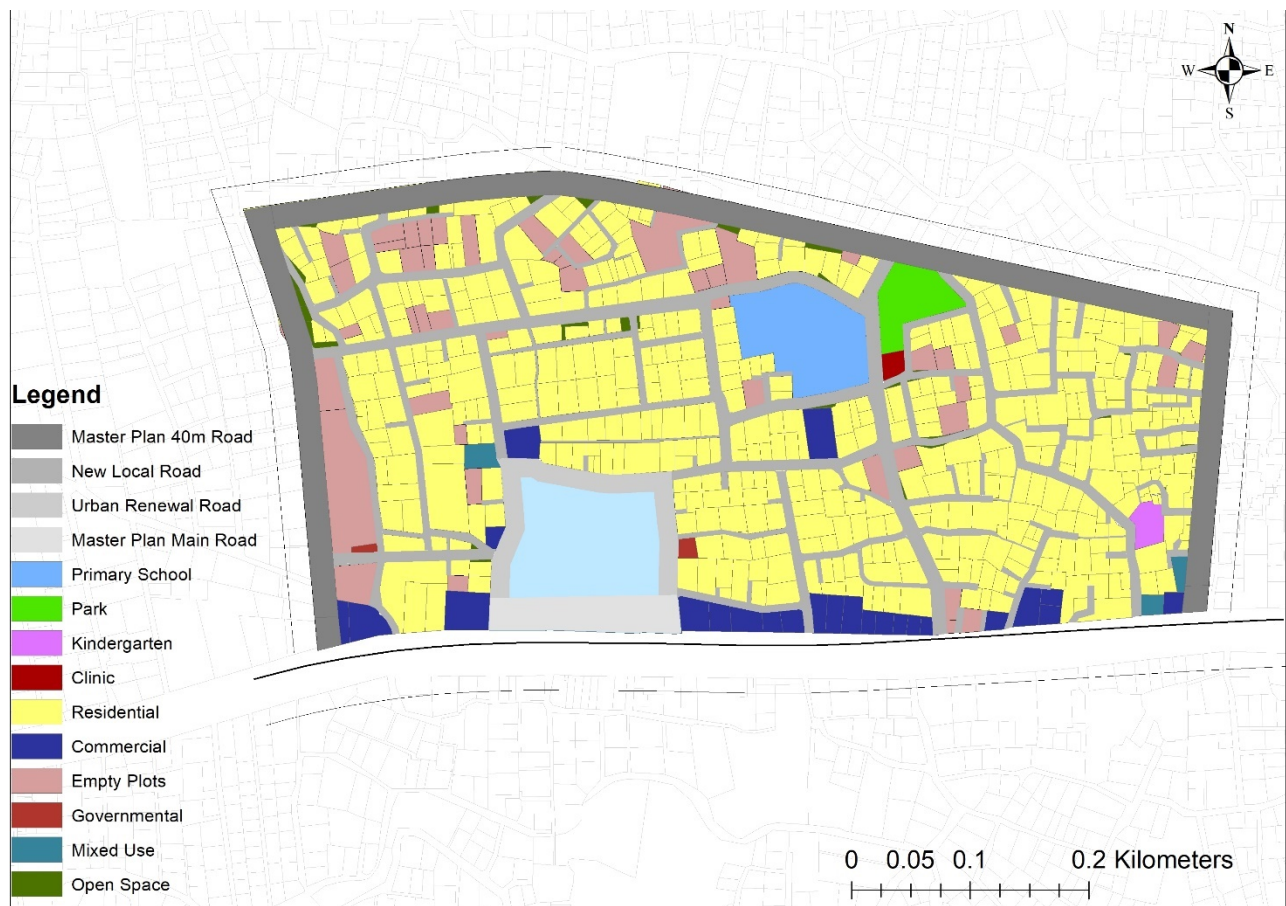


Fig 13. Final Development Plan

Table 11. Land Use After the proposed plan

	Land Use After	Existing Situation	
	Park	Area (m <sup>2</sup> )	Proportion (%)
		3,000	1%
	Primary School	8,000	3%
	Clinic	400	0.1%
Public Land	Kindergarten	800	0.3%
	Master plan Road	32,400	12%
	Inner Road	38,000	14%
	Urban Renewal Area Park	1,500	1%
	Urban Renewal Area Open Space	10,000	4%
	Residential	142,000	52%
	Commercial	11,000	4%
Private Land	Mixed-use Buildings	1,300	0.5%
	Empty Plots	22,100	8%
	Sub-total	176,400	65%
		270,500	100%

## 9 Conclusion

Informal settlement upgrading with a better policy can boost commercial activities and encourage private sector investment in an area. Upgrading has many significant merits; the method does not destroy the community's social fabric and existing commercial activities. It will avoid gentrification in the area. However, conventional upgrading will not bring too much facility and mobility in the area; it will also not help encourage the private sectors to invest more than other urban development methods. Hence, As mentioned in the UN-Habitat report, we need a twin-track approach for upgrading an area; it will be much more effective. <sup>(2)</sup>

Urban renewal is an excellent method favored by politicians and investors. The method will bring a completely new identity to the area. The UR will boost private investment, economic activities, high mobility, and better quality of life in the area. Moreover, the sale of the financial floor can recover the cost of the project.

The questionnaire results revealed that the majority of the respondents prefer to have their new houses in the same area and district after the urban redevelopment. Hence, we recommend upgrading and relocating the affected landowners inside the project area. We also found that most residents are willing to help the government in urban redevelopment of the slum area. Furthermore, people are divided almost equally for exchanging the lands to apartment floor areas or detached houses.

Upgrading is a public-funded project. It is also often funded by other organizations such as UN-Habitat and Aga Khan Agency for Habitat, to name a few. Research in Kabul has shown that urban upgrading significantly increases the value of the land. It also revitalizes the area and encourages people to invest in their land. The past upgrading in Kabul city has been the lack of public facilities like parks and clinics. We propose constructing public facilities in empty plots and abandoned agricultural lands. For relocation of affected landowners, the housing projects are preferred to be implemented in the mixed-use area of the master plan.

Combining these two methods will bring a better result. By upgrading, we can cover large informal settlements with minimum capital. Moreover, the landowners affected by the destruction can be relocated inside the project area. A combination of both two methods can also help implement the master plan roads, and the landowners will not lose their community by living inside the area. A park, clinic, school, and kindergarten are also built in the area. Part of the main road master plan is developed using this method, and the cost is covered by public money. In addition to that, the Private sector will be encouraged to invest in housing construction in the area. Hence, a single method approach is not encouraged. We propose a combination of both methods in developing the informal settlements in Kabul city.

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