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Effects of the In-Situ Upgrading Project in Afghanistan: A Case Study on the Formally and Informally Developed Areas in Kabul

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***Abstract*—**Cities in Afghanistan have been rapidly urbanized; however, many parts of these cities have been developed with no detailed land use plan or infrastructure. In other words, they have been informally developed without any government leadership. The new government started the In-situ Upgrading Project in Kabul to upgrade roads, the water supply network system, and the surface water drainage system on the existing street layout in 2002, with the financial support of international agencies. This project is an appropriate emergency improvement for living life, but not an essential improvement of living conditions and infrastructure problems because the life expectancies of the improved facilities are as short as 10–15 years, and residents cannot obtain land tenure in the unplanned areas. The Land Readjustment System (LRS) conducted in Japan has good advantages that rearrange irregularly shaped land lots and develop the infrastructure effectively. This study investigates the effects of the In-situ Upgrading Project on private investment, land prices, and residents' satisfaction with projects in Kart-e-Char, where properties are registered, and in Afshar-e-Silo Lot 1, where properties are unregistered. These projects are located 5 km and 7 km from the CBD area of Kabul, respectively. This study discusses whether LRS should be applied to the unplanned area based on the questionnaire and interview responses of experts experienced in the In-situ Upgrading Project who have knowledge of LRS. The analysis results reveal that, in Kart-e-Char, a lot of private investment has been made in the construction of medium-rise (five- to nine-story) buildings for commercial and residential purposes. Land values have also incrementally increased since the project, and residents are commonly satisfied with the road pavement, drainage systems, and water supplies, but dissatisfied with the poor delivery of electricity as well as the lack of public facilities (e.g., parks and sport facilities). In Afshar-e-Silo Lot 1, basic infrastructures like paved roads and surface water drainage systems have improved from the project. After the project, a few four- and five-story residential buildings were built with very low-level private investments, but significant increases in land prices were not evident. The residents are satisfied with the contribution ratio, drainage system, and small increase in land price, but there is still no drinking water supply system or tenure security; moreover, there are substandard paved roads and a lack of public facilities, such as parks, sport facilities, mosques, and schools. The results of the questionnaire and interviews with the four engineers highlight the problems that remain to be solved in the unplanned areas if LRS is applied—namely, land use differences, types and conditions of the infrastructure still to be installed by the project, and time spent for positive consensus building among the residents, given the project's budget limitation.

***Keywords*—**In-Situ Upgrading, Kabul, Land Readjustment, Land value, Planned areas, Private investment, Resident satisfaction, Unplanned areas.

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I. Introduction

THE urban population in Kabul, the capital of the Islamic Republic of Afghanistan, has grown rapidly on average, with an increase of 10% per annum from 1999 to 2008, growing from 1.78 million to 4.22 million, due to an influx of returning refugees, conflict, and drought-induced migration [2]. Fig. 2 shows the location of Afghanistan and its province boundary map. The total urban area in Kabul is 48,493 hectares. Fig. 1 shows the percentages of land types, only 13.5% or 6,520.12 hectares are formal settlements, 69.5% (33,725.57 hectares) are informal settlements due to a lack of viable formal alternatives and under-investment in basic urban services, and about 6.4% are grabbed lands (3,108.84 hectares), 6.5% are governmental lands and 4.1% are vacant lands. Approximately 90% of the unplanned settlements are on flat land [4], [1], [2].

In this study, "planned areas" refers to formal developments where the development has been facilitated by the legal acquisition of land and construction is in compliance with a detailed land use plan and building regulations; moreover, the landlords own title deeds (Official document). "Unplanned areas" refers to those informal developments that are not based on the official acquisition of land and are not in compliance with the 1978th Kabul Master Plan or were developed without a detailed land use plan, where persons simply subdivided their lands and built houses without permission of the municipality [9], [19]. The area is characterized by irregular street and plot layouts, narrow street patterns, poor dwelling conditions, and basic services (lack of drinking water and standard road pavement) [1]. The occupants own only customary deeds (private transaction document) [6].

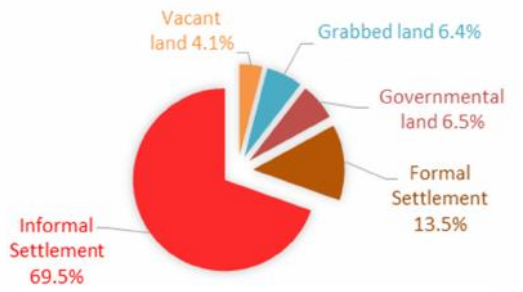

Fig. 1 Urban land types in Kabul and their percentages [4]

Land tenure security and freedom from the threat of eviction are fundamental for positive urban development and for households to invest in their dwellings. The absence of tenure security has been shown to exert downward pressure on an area's productivity, as households and businesses are unwilling to invest in upgrades and new activities in their area [1].

Governments commonly utilize one of four policy approaches in unplanned areas, namely, forced evictions, clearance and relocation, clearance and on-site redevelopment, and upgrading in place (Hereinafter "In-Situ Upgrading"). In-Situ Upgrading (ISU) is usually preferred by communities over other approaches as it consists of improving the existing infrastructure and facilities to a satisfactory standard, while often addressing issues of tenure—again, mostly to guarantee that the intended beneficiaries remain the actual beneficiaries [14]. Accordingly, since the establishment of a new government in Afghanistan, the In-Situ Upgrading Project (ISUP) has sought to minimize the disruption to social and economic networks by reducing the number of households that must be relocated to another site, which is indeed a preferred alternative [12] for unplanned areas. It involves providing or improving basic infrastructure and services on the existing road layouts (both planned and unplanned areas) with the financial support of international agencies [5], [7]. Although the responsible organization for unplanned area upgrading is the respective municipality, it cannot provide title deed certificates of occupancy, and a Safahee book (sanitation tax document) is not availed as an ownership document [6]. The extent that such ownership is illegal, non-conforming to a master plan, or imperfect creates a deep sense of insecurity in the users—one of the worst consequences of social exclusion [10]. Meanwhile, this approach has been implemented in many areas of Kabul to improve the physical conditions and encourage residents to undertake housing reparation or reconstruction and small-scale businesses [15] already negatively affected by further improvements and investments.

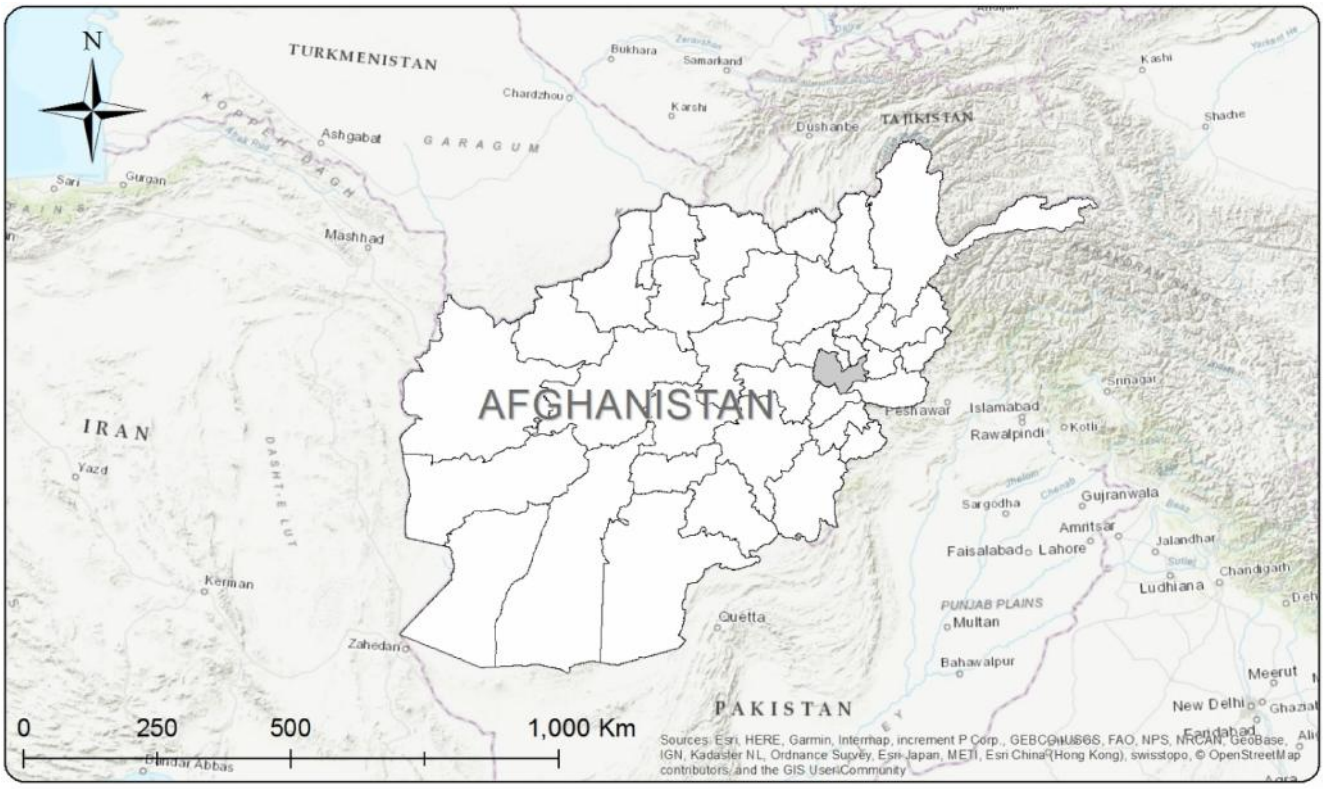

Fig. 2 Afghanistan Province boundary. Source: Ministry of Urban Development and Housing. Base map source: Esri, Digital Globe [25]

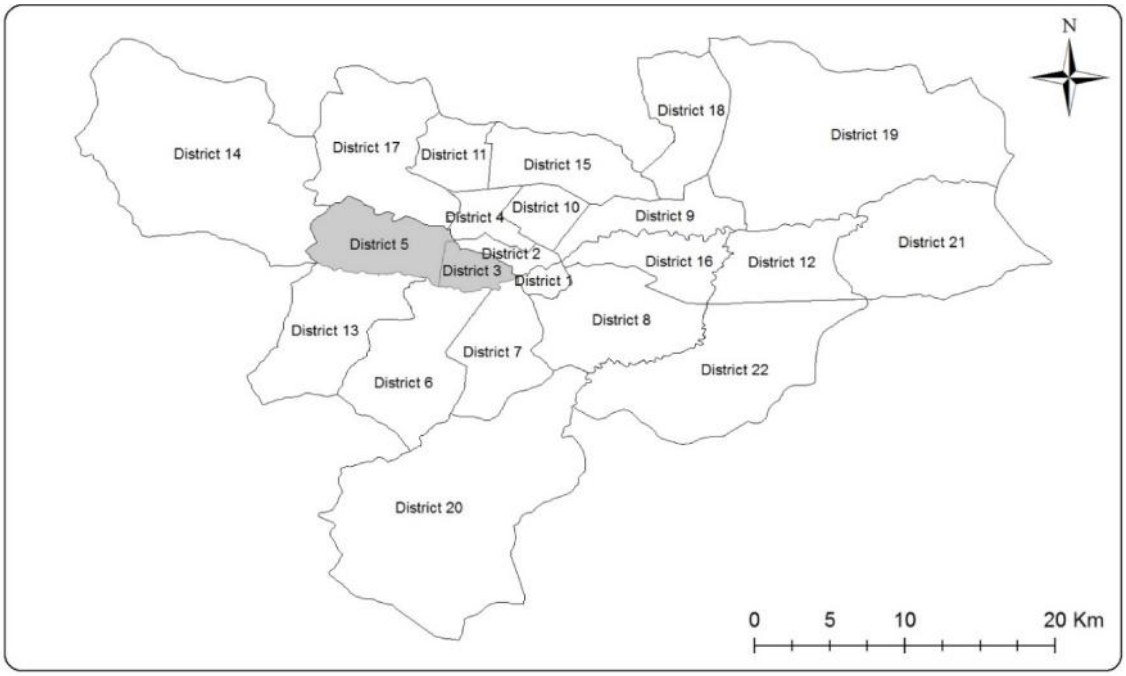

Fig. 3 Location of Districts 3 and 5 on the Kabul City district map. Source: Ministry of Urban Development and Housing [20]

This study evaluates the different impacts of ISU in a planned area and an unplanned area based on the level of private investment, land value increment, and resident satisfaction with the existing conditions. Such impact are significant for city leaders when considering better techniques to revitalize and reorient those profitable areas so as to modernize them further and make them more attractive to businesses and residents in addition to managing the densities for the good minimization of urban sprawl [11].

Land Readjustment (LR) has been developed and implemented as an urban development tool in Japan for several important reasons: 1) acceleration in the construction and provision of infrastructure; 2) increased capacity of land utilization through arrangement of its use and tenure; 3) reduced government expenditures for land and the cost of construction of public facilities; 4) increased land value; 5) avoidance of the removal of settlers; 6) creation an environment for the city dweller participation in urban development, thereby avoiding social unrest due to imbalances in housing conditions; 7) accelerated proper land administration and support of a just and taxation system; and 8) induced self-financed construction of houses by participating land owners with or without credit from a bank [13].

Accordingly, although land sales and leaseholds may generate initial capital to defray the first-time costs of infrastructure investments, in the long run, other instruments, such as property taxes and similar levies, must exist to pay for the maintenance and expansion of public facilities. The problem is the low tax collection rate in developing countries. Despite land sales being a one-time income flow, not a long-term flow, it appears to be a simpler solution than considering levies, taxes, and exactions as the financing sources for infrastructure investment [11]. Land-based infrastructure financing delivers the biggest payoff wherever there is rapid urban growth, because land prices will also rise rapidly, thereby creating an opportunity to generate even more significant revenue.

To consider the situation discussed herein and identify appropriate solutions, this research conducted an interview with four experts experienced in ISUPs and with knowledge of LR to define the strengths of LRS for resolving the main issues of unplanned areas—namely, making changes in land use, addressing the adequate infrastructure provision not based on current need, even if for a long life and future, and eventually using LR as a self-financed technique to recover project costs through the reserve land and reserve floor. This means the use of financial aid will decrease dramatically and the urban redevelopment projects can be financially self-supported, thereby creating a smooth path toward strong positive consensus building.

II. In-Situ Upgrading Projects in Afghanistan

The Kabul Municipal Development Program (KMDP) (2013–2020): One component of this project is the Infrastructure Upgrading Program, toward which a significant portion of the project fund (around 65%) has been dedicated for the provision of essential municipal services through either the development or rehabilitation of basic infrastructures in selected neighborhoods in Kabul. Those small-scale civil works can be access roads, footpaths, drain improvement, street lighting, water supply network systems, community parks, and community solid waste management points. To integrate unplanned settlements into the fabric of the city, the project also rehabilitates trunk roads and drains within the existing rights of way. Planned areas totaling 27% and

unplanned areas accounting for 73% of 1376 hectares are being upgraded through this project [4].

UN-HABITAT (mid-2002–2019) [17]: This project has contributed to the implementation of the National Solidarity Program by supporting overall design and implementation in five provinces of the government's flagship community development program. Key investments have included sanitation and solid waste management in four cities, shelter and water supply projects in three cities, and the Emergency Municipal Public Works Program in six cities. Property recording efforts and urban upgrading investments have also been undertaken in several cities, including Kandahar, Lashkar Gah, and Kabul [5].

Land Reform in Afghanistan (LARA) (Jan. 2011–Nov. 2014): This project was financially supported by USAID; of its three components, "informal settlement upgrading" was the first activity for Component 1 to "strengthen land tenure security through formalization and upgrading of informal settlements." In the project, an upgrading workshop was organized for more than 140 participants from upgrading organizations, agencies, institutions, and companies to develop a manual for land rights formalization and upgrading. Consequently, the upgrading of two informal settlements in Jalalabad was completed through manual applications [3].

Kabul Urban Reconstruction Project (KURP) (2004–2011): This project was funded by the World Bank and implemented through the Ministry of Urban Development and Housing [4]. It upgraded 19 Gozars (sub-districts) or 357 hectares of planned and unplanned settlements in central Kabul [5]. The project had six components. One was area upgrading (planned and unplanned areas), which improved basic tertiary and trunk infrastructures, such as road pavement and staircases for steep slopes, surface water drainage, solid waste management, water supply, sanitation, and street lighting. Another component was land tenure regularization; however, this was then eliminated during project restructuring due to the Land Tenure Technical Committee's slow progress in appointing international consultants [7].

Land Titling and Economic Restructuring in Afghanistan (LTERA) (2004–2009): This project, funded by USAID, focused on improving the management of property records, formalization of land tenure, and implementation of modern land mapping and surveying methodologies. LTERA also worked at the policy level to improve the legal and regulatory framework for property rights, registration, and economic restructuring. The physical upgrading and property recording efforts focused on District 6, District 7, and District 13 in Kabul and formalized 54,000 houses for the informal settlers of these districts [9].

Turquoise Mountain Foundation (TMF) (2006–2009): This project has undertaken a range of upgrading work in Murad Khane, a historic area to the north of the Kabul River, which has included street upgrading, investment in the restoration of housing, the water supply, and sanitation improvements [5].

Agha Khan Trust for Culture (AKTC) (2003–2009): This extensive urban rehabilitation project was undertaken in the southern section of District 1 (the old city, south of the Kabul River) and District 7 (mainly the areas of Gozar Gah and the steep hillside behind Baghe Babur). It included access roads, sanitation, and environmental upgrading [18].

Kabul Area Shelter and Settlement (KASS) Project (2006–2007): This project was funded by USAID/OFDA and implemented by CARE International. The project performed integrated shelter activities for an overall total of 6,625 houses in seven districts of Kabul, including safe water supplies, sanitation, road graveling, ditch drainage, and other capacity-building activities. A memorandum of understanding was signed with the Kabul municipality for the project beneficiaries to ensure their stability for five years [8].

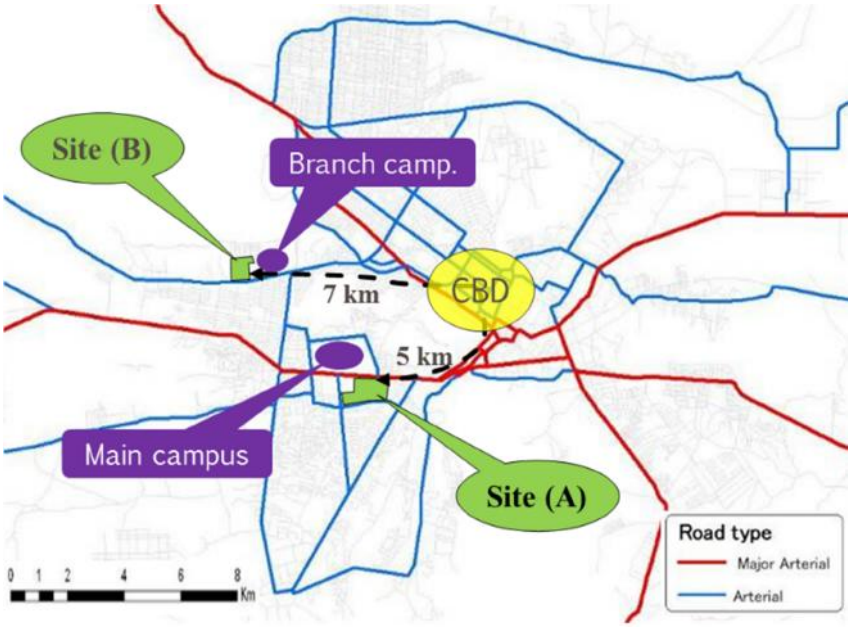

Fig. 4 Locations of study areas. Source: adapted from Kabul Metropolitan Area Urban Development Master Plan, JICA [2]

III. Case Study Areas

Fig. 4 shows the case study areas—namely, Site A and Site B. Both were built in a flat area and upgraded through the same organization and same project implementation period of 2013 to 2014. They are located close to the central business district area of Kabul, within a distance of 5 km (Site A: Kart-e-Char) and 7 km (Site B: Afshar-e-Silo Lot 1). Site A is along a major arterial road (50 meters wide) and next to Kabul University's main campus. Site B rests along an arterial road (60 meters wide) and adjacent to Kabul University's branch campus.

A. Site A

The first case study area is a planned area located in the 3rd district of Kabul (see Fig. 3). Site A is next to Kabul University's main campus and two graduate or teachers' schools. The Kabul Zoo is also near the area and can be reached in only 10 minutes by walking. From the major arterial road (50 meters wide) on the north side, it is 100 meters to the inside area, which is defined as medium rise high-density residential with a building coverage ratio (BCR) ≤ 50% and floor-area ratio (FAR) ≤ 500%. The remaining areas are defined as low rise medium density residential areas with BCR ≤ 50% and FAR ≤ 200% according to the Kabul Master Plan (2012–2026), as indicated in Fig. 5 [19], [23]. The Kabul Municipal Development Program (KMDP) implemented ISUP in a specific boundary for one year (2013–2014); Table I shows the ISUP overview. The project covered 59.5 hectares, consisting of 524 house plots with a population density of 149 persons/ha for detached and 2121 persons/ha for multi-story plots, as well as a dwelling density of 12 dwellings/ha. Table II notes the existing land use of Site A, and Table III shows the ISUP outline.

B. Site B

The second study area is located in the 5th district (see Fig. 3), which is around 500 meters in width along an arterial road (60 meters wide). As with Site A, it is defined in the Kabul Master Plan (2012–2026) as including two land use categories: medium rise high-density residential (100 meters inside the area) with BCR ≤ 50% and FAR ≤ 500% and low rise medium density residential area with BCR ≤ 50% and FAR ≤ 200%. See Fig. 8 [19], [23].

Site B was developed after the civil war by immigrants and returnees from other provinces or countries. Therefore, the residents of this area have lived there for 18 years on average. More than 60% of the houses are built from traditional construction materials (adobe brick with a timber roof) [15].

Table II shows the existing land use for Site B. This area has an academic neighbor, a Kabul University branch campus, to the east, and a national organization, the Afghan Red Crescent Society, to the west. Site B has an area of 26.49 hectares, and basic infrastructures for 670 house plots were upgraded during one year (2013–2014) via the KMDP (Table I shows the ISUP overview). Population density is 237 persons/ha, and dwelling density for this site is double that for Site A, with 26 dwellings/ha (see Table III for the ISUP outline).

TABLE I
Overview of ISUPs[a]

No.	Description	Site A	Site B
1	Project Name	Kart-e-Char	Afshar-e-Silo Lot1
2	Project Area (ha)	59.53	26.49
3	Responsible Agency	KM[b]	KM
4	Implementer	KMDP[c]	KMDP
5	Financing Source	ARTF, WB[d]	ARTF, WB
6	Number of House plots (per project approval)	524	670
7	Number of House plots (per project completion)[e]	646	678
8	Land ownership type	Title deeds	Customary Deeds
9	Total Expenditure (Million)	92.44 AFN (1.68 USD)	67.18 AFN (1.22 USD)
10	Community Contribution (%)	18.1%	31.9%

[a] ISUPs = In-Situ Upgrading Projects, [b] KM = Kabul Municipality, [c] KMDP = Kabul Municipal Development Program, [d] ARTF, WB = Afghanistan Reconstruction Trust Fund, World Bank, [e] Counted by authors as of 2014. Source: KMDP, World Bank [27], [4]

TABLE II
Existing Land Use of Study Areas

No.	Land use type	Site A			Site B		
		No. of plots	Share (%)	Area (ha)[a]	No. of plots	Share (%)	Area (ha)[a]
1	Residential	601	60	35.7	644	72	19.0
2	Commercial	49	6	3.6	4	3	0.9
3	Institutional	20	8	4.5	3	0.3	0.1
4	Vacant plots	10	2	1.1	23	7	1.9
5	Mixed use	35	4	2.2	11	2	0.6
6	Roads/Streets		21	12.4		15	4.1
Total			100	59.53		100	26.49

[a] ha = Hectare. Source: Ministry of Urban Development and Housing [22], Case study land use modified by authors, Mar. 2017.

TABLE III
Outline of ISUPs[a]

No.	Description	Site A	Site B
1	Project period	2013–2014	2013–2014
	Community Contribution		
2	Construction of Septic Tank (Number)	17	450
3	Drain connections (Percentage connected)	100%	100%
4	Lighting (On-door lamp)	70%	90%
5	Drain cover slab (Percentage used)	50%	62%
6	Latrine cap (Percentage installed)	42%	0%
7	Sidewalk (percentage constructed)	100%	90%
8	Street pavement by community (Meter)	0	104
9	Land donation (Area)	0	78.6 m2
10	Greenery (Tree planting; No of trees)	300	500
	Project support		
11	Drain construction (Meter)	11499.3	6816
12	Concrete drain cover slab	43	13
13	Steel drain cover (Meter)	0	219
14	Road construction (Meter)	6381.13	6334
15	Solid waste management (Necessary tools and wear)	2 labor	2 labor

[a] ISUPs = In-Situ Upgrading Projects. Source: KMDP [27]

IV. Analysis Methodology

Site A as a planned area and Site B as an unplanned area

were upgraded during the same period, and their security, economic, and political conditions were thus the same. GIS used an aerial imagery from 2011 [20], Google Imagery 2011 [21] (before the project in 2011) and an aerial imagery from 2014 [20], Kabul land use 2014/2015 [22], and house counts [22] (during the project, 2011–2014), and geotagged photos (after the project in 2017) for a comparison analysis of private investment.

Both areas are categorized as three land value types: 1) housing lots without garage door or located along a one-lane road as "off-road" plots; 2) housing lots having access to a two-lane road as "sub-main road" plots; or 3) housing lots with direct access to the major arterial or arterial road as "main road" plots. A comparison analysis of land value changes was conducted from 2003 to 2016.

Questionnaire surveys were distributed to residents of 110 houses to explore and analyze their satisfaction with the existing conditions of their living area in Site A and Site B.

The interviews were then executed with four experts with more than 10 years of experience with the ISU system in order to identify the advantages of LRS utilization.

V. Research Findings

A. Effects of In-Situ Upgrading on Private Investment

The effects of ISU at Site A, where the residents have tenure security and regularized street layouts from the aspect of private investment, or interest in construction of medium–rise (five- to nine-story) residential and mixed-use buildings, were considered as a comparative method to demonstrate that the ISUP through infrastructure improvements have made a significant impact on site vitalization. The results show that the most investment (construction of apartments and mixed–use medium-rise buildings) occurred in the low-rise medium-density zone (see Fig. 5). There was only one six-story mixed-use building before the project, as shown in Fig. 6 (a). Five residential and eight mixed-use buildings were then constructed during the project. Fig. 6 (b) illustrates a sample of these residential and mixed-use buildings. After the project, five residential and seven mixed-use buildings were built. Fig. 6 (c) presents a sample of these residential and mixed-use buildings. Fig. 7 shows the total number of investments for three different periods.

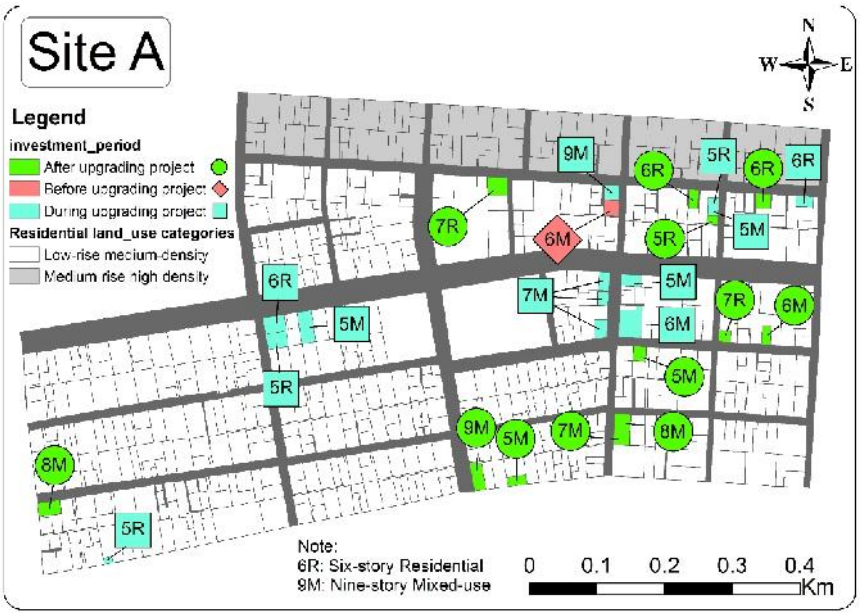

Fig. 5 Medium-rise buildings at Site A. Source: Authors, Land-use categories adopted from Kabul Master Plan [28]

Fig. 6 (a) Private investment (six-story mixed-use) before ISU at Site A

Fig. 6 (b) Private investments (nine-story mixed-use and six-story residential) during ISU at Site A

Fig. 6 (c) Private investments (nine-story mixed-use and residential) after ISU at Site A (Authors' own photo 2017)

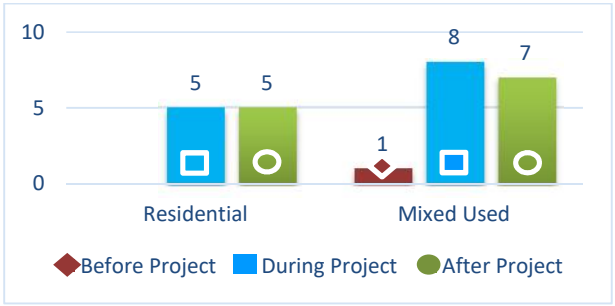

Fig. 7 Private investment in the construction of residential and mixed-use buildings (medium-rise) at Site A (source: Authors)

At Site B, the effect of ISUP was not significant for private investments, which may be due to the irregular street layout, lack of a drinking water supply network and public facilities, and tenure insecurity. The research found that there were no medium-rise buildings or apartments, and most investments were in detached residential houses as multi-story (four- and five-story) buildings, as shown in Fig. 8. In particular, before the ISUP, there were only two four-story houses in the entire area, as shown in Fig. 9 (a). During the project, more than eight buildings were constructed. Fig. 9 (b) shows two samples of these four-story buildings. After the project, another eight buildings were constructed. Fig. 9 (c) offers a sample of four- and five-story buildings. Fig. 10 shows the total investments for the three different periods. These results show that landlords did not invest on a medium or large scale in the unplanned area even after ISUP due to a lack of clarity of their ownership. In other words, most of the residents are not eager to invest in properties because of the master plan or future governmental plans for the unplanned areas. Meanwhile, ISU investments in the planned areas have had a multiplier effect on private investments in residential and business properties and the community's sense of belonging [16].

B. Effects of In-Situ Upgrading on Land Value

The land transaction database has not yet been established by the government. Therefore, the Ministry of Justice introduced two older real estate agencies: one in the 3rd district (Site A) and another in the 5th district (Site B) of Kabul.

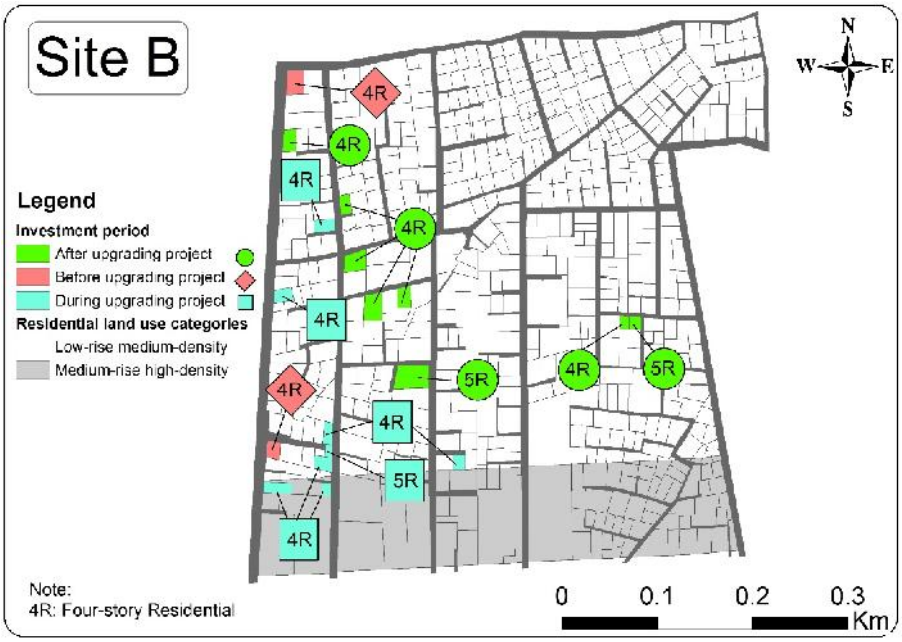

Fig. 8 Four- and five-story buildings at Site B. Source: Authors, Land use categories adopted from Kabul Master Plan [28]

Fig. 9 (a) Private investments (four-story) before ISU at Site B

Fig. 9 (b) Private investments (four-story) during ISU at Site B

Fig. 9 (c) Private investments (four- and five-story) after ISU at Site B

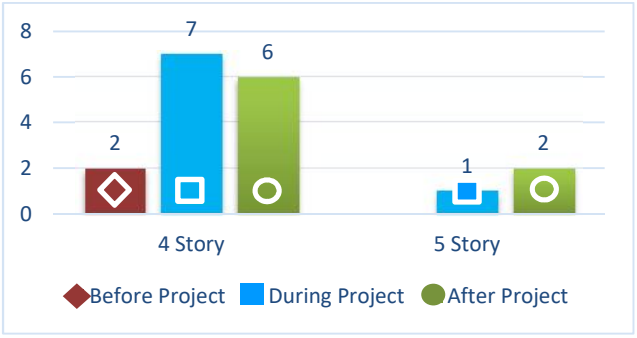

Fig. 10 Private investment in residential building construction (four- and five-story) at Site B

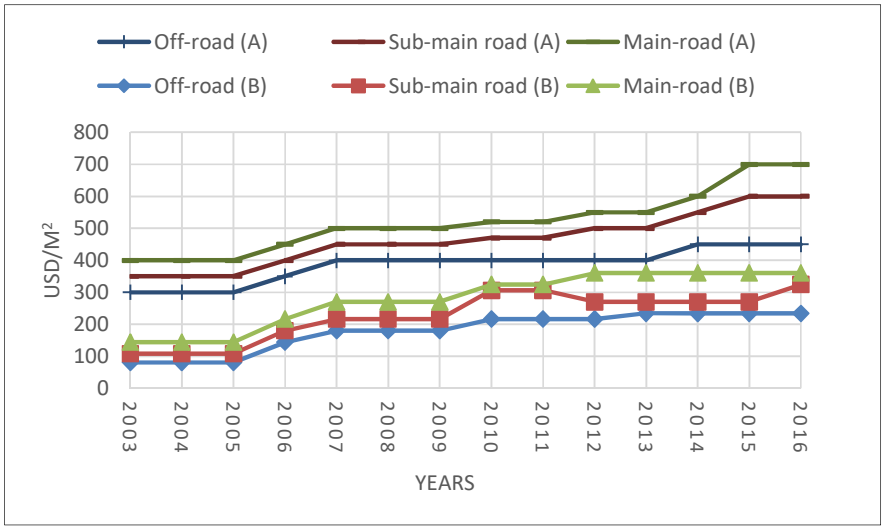

Fig. 11 Land value increments in both sites. Source: Real estate agencies [29]

TABLE IV
EFFECTS OF ISUP[a] ON LAND PRICES

	Categories	Price before ISU 2011 (USD/m²)	Increment (%)	Price after ISU 2016 (USD/m²)	Windfall on 1 ha (USD)
Site A	Off-road	400.0	13%	450.0	$ 500,000
	Sub-main road	470.0	28%	600.0	$ 1,300,000
	Main road	520.0	35%	700.0	$ 1,800,000
Site B	Off-road	216.2	8%	234.2	$ 180,359
	Sub-main road	306.3	6%	324.3	$ 180,266
	Main road	324.3	11%	360.4	$ 360,628

[a] ISUP = In-Situ Upgrading Project. Source: Modified from Policies and Tools for Urban Development [26]

Fig. 11 shows the changes in mean land values obtained by exploring the previously sold/bought land transactions per annum since 2003 (the most available transaction book) until 2016. Fig. 11 shows that land prices in Site A almost doubled

Site B's land price in each category and for each year. The figure also shows that, before the ISUP, there was an almost similar increase of land value in Site A and Site B until 2011, but then the land value in Site A dramatically increased by 13% in off-road plots, 28% in sub-main road plots, and 35% for main-road plots. Meanwhile, the land value increments at Site B were only 8% in off-road plots, 6% in sub-main road plots, and just 11% in main-road plots. These well-priced increments and windfalls from investments in urban infrastructure on the one-hectare area are calculated and shown in Table IV. In short, the increment rate obtained was 3.04, which demonstrates a crucial land value increment gap between the planned area and unplanned area.

C. Comparison of Residents' Satisfaction with Results of Questionnaire Survey

To investigate residents' satisfaction with ISUP-related factors, existing amenities, and other aspects that somehow developed with infrastructure improvements indirectly, a satisfaction survey was conducted among 55 households per area. According to the residents' culture, all the respondents were male. The survey findings show a big difference in land tenure, house type, and plot area between Site A, a planned area, and Site B, an unplanned area. Fig. 12 shows the results of this questionnaire, the inside of the circle shows the results for Site A, and the outside shows the results for Site B. Fig. 12 shows that, at Site A, 40% of the residents are living in rental houses while the rest have ownership (with title deeds). In this regard, 68.5% are living in single unit houses, 18.5% in duplex houses, and 13% in apartments; their plot sizes are mostly less than 200 m^2 (59%) and 200–400 m^2 (19%) although 22% have plot areas greater than 400 m^2. Meanwhile, at Site B, only 8% are rental residents, and the rest have ownership (with customary deeds); 75% live in single unit houses while the rest live in duplexes. Approximately 16% of residents are living in a plot area less than 200 m^2, 54% in a plot area of 200–400 m^2, and 30% in a plot that is greater than 400 m^2.

Fig. 13 shows the questionnaire results related to residents' satisfaction in Site A and Site B. Possible answers for satisfaction were "very bad," "bad," "good," "very good," or "excellent."

Table V shows 13 factors for p-value obtained through a t-test at 5% significance level to verify the differences of residents' satisfaction. An asterisk (*) means residents' dissatisfaction at Site B, and a double asterisk (**) means dissatisfaction at both sites. Factor numbers (#'s) 1,2,3,4,6 and 8 are related to ISUP whereas factor #'s 5,7,9,10,11,12 and 13 are related to a site's amenities and alterations (unrelated factors with ISUP). Factor #'s 1, 6 and 8 have a p-value less than 0.05, which means there is a significant difference between Site A and Site B. Site B's residents are mostly dissatisfied, especially with factor # 6, which refers to no drinking water supply network at the entire Site B. In the other three ISUP-related factor #'s 2, 3 and 4, there are no significant differences, which means the residents of both sites were satisfied.

TABLE V
COMPARISON RESULTS FOR RESIDENTS' SATISFACTION

No.	Factors
1	Provision of paved road*
2	Appropriate contribution ratio
3	Land value
4	Provision of Drainage system
5	Provision of electricity supply**
6	Provision of Water supply*
7	Provision of Public park**
8	Project implementation duration*
9	Mosque (Masjid)*
10	School*
11	Sports facility**
12	Residential buildings*
13	Commercial buildings*

As for the unrelated factors with ISUP, factor # 5 has a p-value less than 0.05. This is an exceptional case in that the residents at Site A are dissatisfied; and Site B's responses show an almost similar dissatisfaction, as shown in Fig. 13. The p-values for factor #'s 9, 10, 12, and 13 are less than 0.05, meaning dissatisfaction among Site B's residents. Factor #'s 7 and 11 have p-values greater than 0.05, meaning there was no significant difference—namely, the residents of both sites were mostly dissatisfied and still lacked a public park and sports facility.

D. Land Readjustment as an Appropriate Tool

The above research reveals a low impact of ISU in unplanned areas. Interviews on the applicability of land readjustment (LR) were conducted with four ISUP expert engineers at KMDP. All four engineers indicated the most importance of 1) land use differences in unplanned areas; 2) types and conditions of infrastructure to be installed by the project; and 3) time spent for consensus building among the residents. However, one respondent marked "time spent for consensus building among the residents under projects' budget limitation" as being relatively important with LR application. The descriptive interview outcome for land use change in unplanned areas was expressed as LR and should be used to plan enough space for public facilities (education facility and religious amenity), parks, and other urban functions (commercial area). Again for the second factor, the type and quality of infrastructure in the planned areas were based on municipality norms and regulations; in the unplanned areas, construction norms (typical norms and regulations) were considered for infrastructure design with narrow roads and the non-existence of life lines (i.e., totally substandard with a short life of 10–15 years). Therefore, LR is an option for road widening with sidewalks, drinking water supply, and standard road pavement. Eventually, the third factor's result revealed a budget limitation that ISUPs suffered for any consensus building, particularly regarding compensation costs. LR with a self-financed ability, specifically via reserve land and reserve floor, is an appropriate/acceptable redevelopment tool for these residents as long as LR can compensate through a real budget source and the replotting or resettlement of residents

inside the project site [24].

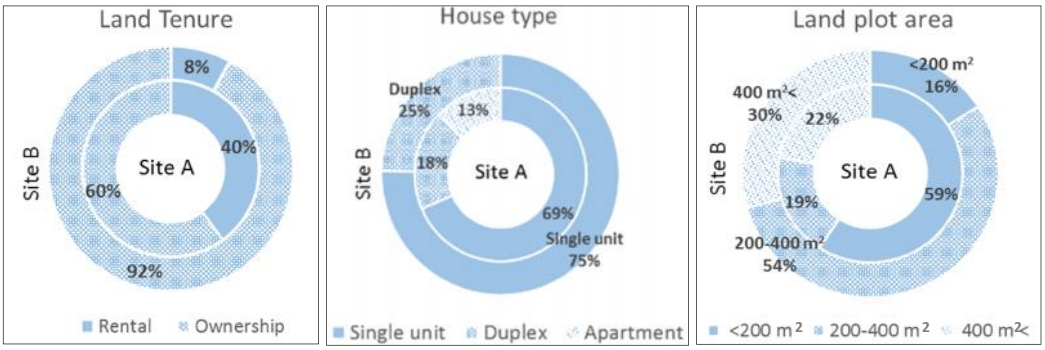

Fig. 12 Characteristics of land tenure, house type and land plot area at Site A and Site B (source: Field Survey by authors, 2017)

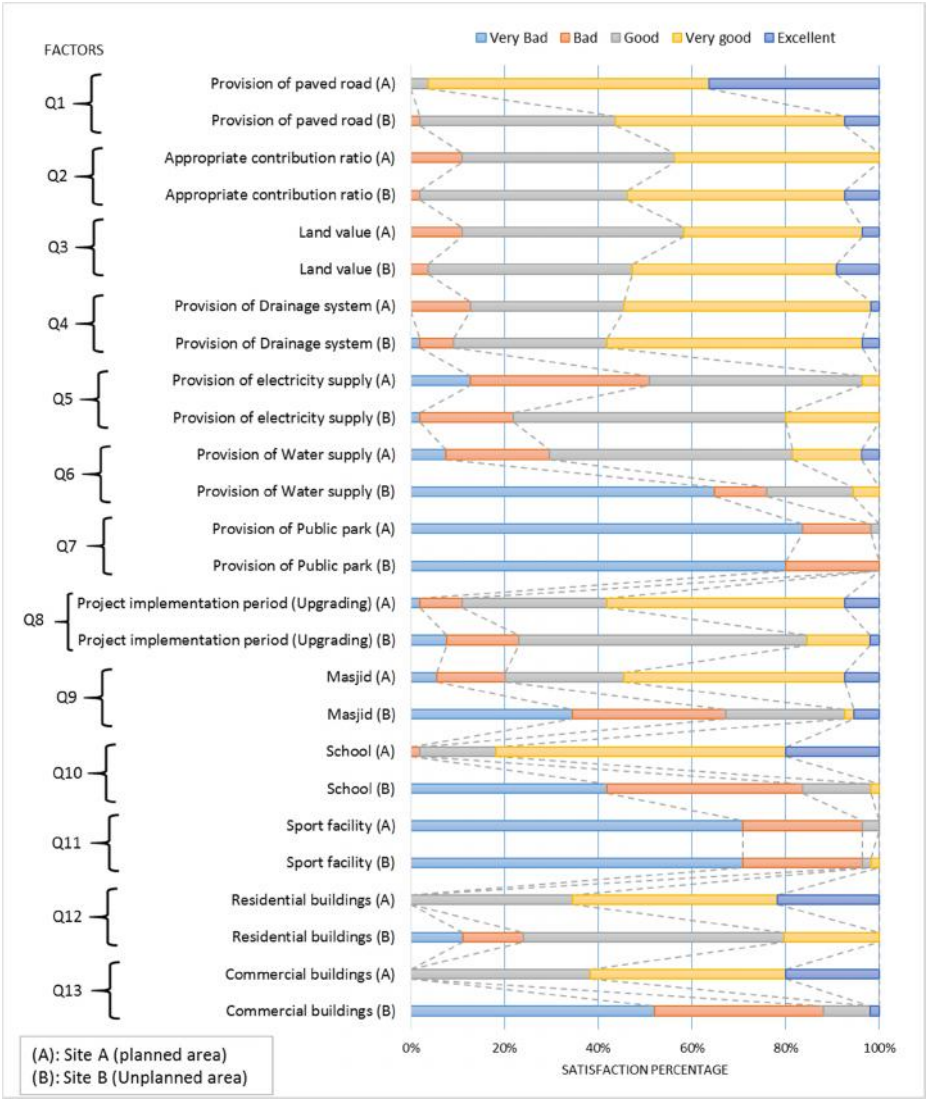

Fig. 13 Questionnaire results for residents' satisfaction with 13 factors of the existing living conditions

VI. Summary

This study assessed three basic indicators of the In-Situ Upgrading impact on a planned area (Site A) and unplanned area (Site B) in Kabul as well as the superiority of Land Readjustment utilization through interviews with ISU expert engineers.

The results revealed private investment in the construction of medium-rise (five- to nine-story) buildings at Site A,

consisting of ten apartments and fifteen mixed-use buildings. Nonetheless, there is no medium-rise (apartment or mixed-use) buildings being constructed at Site B. The investments are in multi-story detached houses (four- and five-story) in 16 buildings. On the other hand, the land value increment ratio obtained was three, which demonstrates the existence of serious limitations for the increase of land value at Site B.

Concerning the survey results, the residents of Site A were dissatisfied with only three facilities (i.e., electricity, public park, and sports facility) and satisfied with all other factors. The residents of Site B were mostly dissatisfied by the lack of facilities and regulations—namely, road pavement, water supply, public park, mosques, school, sports facility, and residential and commercial buildings indicating that these residents desired public space, standard basic facilities, and medium-rise buildings.

Correspondingly, the expert engineers of KMDP considered land readjustment to be a desirable or appropriate urban redevelopment tool, as collecting and replotting into one large-scale lot with a higher floor area ratio (FAR) along an arterial road can accelerate private investment and also provide enough space and budget for more public facilities.

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