

## **BUILT ENVIRONMENT PROBLEMS IN INFORMAL SETTLEMENT: EVIDENCE FROM DISTRICT 13 OF THE KABUL CITY, AFGHANISTAN**

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**Abstract:** Afghanistan witnessed rapid urbanization in recent decades. Kabul city which is the capital of Afghanistan affected more than other cities by the rapid urbanization and population growth. The rapid urbanization, and population growth impacted on Kabul city with the manifestation of informal settlement. Informal settlement in Kabul city refers to the housing and settlement which built up in violation of the master plan of Kabul city. The problems of the informal settlement are considerable challenges to the informal residents and government. This paper has two objectives; i) to identify the most prominent and influential built environment problems posed by informal settlement and, ii) to examine the factors behind the growth of informal settlement leading to above built environmental problems in District 13 of Kabul city. In order to reach the aim of the research, field survey interview has been conducted with 22 Afghan government officials, and questionnaire survey has been conducted with 200 residents of District 13 of Kabul city. The gathered data includes both qualitative data and quantitative data. The content analysis has been used to analyze qualitative data and the frequency analysis has been used to analyze the quantitative data. The finding on the built environment problems posed by informal settlement in District 13 are lack of drainage system and sewage system, lack of solid waste management, unpaved narrow street, lack of open spaces, recreation and greenery, lack of water supply and pollution of underground water. Moreover, different factors leading to growth of informal settlement are rapid increase of population and limited capacity of government.

Keywords: Environment, drainage system, government, greenery, sewage system.

### **Introduction**

In developing and developed countries, cities are facing rapid urbanization. Rapid urbanization is accentuating urban challenges, mostly leading to urban sprawl, uncontrolled and unmanaged development of cities and development of informal settlement. The rate of urbanization in developing countries is higher than the developed countries. Afghanistan witnessed rapid urbanization in recent decades, where the rate of population growth is faster than the economic growth (Ranjbar & Mizokami, 2015). The growth of population in Kabul changed the Kabul to the fast-growing city in the region with many problems including the manifestation of informal settlement which has become an inevitable action (Fazli, 2016). Population growth in Kabul city is outpacing the city's capacity to provide infrastructure, basic services

and public amenities. In addition, the limited capacity of the government to provide the plots for the residents and lack of enough budget for urban sector and urban management have led to the growth of informal settlement in Kabul city. Most residents informally provided the shelter for themselves, thus, 80% population of Kabul city is now living in informal areas, which includes 69% of the entire of Kabul city (Fazli, 2016).

The informal settlement is not without problems, the informal settlements do not have proper physical condition then, physical and social problems of informal settlements are considered huge and serious challenges to informal residents which negatively impact and treat the inhabitant's health and happiness. The absence of proper basic services and infrastructure affect the health condition of

informal residents. In addition, in most cases, the property right violates then, insecurity land tenure is another challenge because the illegal grabbed land without official permission and approval, is prone to the threat of eviction and displacement.

In terms of governance, it is hard and difficult for urban authorities to make the progress in the rehabilitation and improvement of informal settlement because of weaknesses in Afghan urban skill financial capacity, lack of proper urban tools to deal with the Kabul city's challenges. Kabul Municipality areas divided into 22 Districts Informal settlements differ in size and other characteristics from District to District, and includes different setting, feature and accommodate a wide range of social and economic group of people. Most proportions of Kabul city can be studied for this research, but in many Districts of Kabul city researches have been conducted regarding informal settlement. But no previous research has been done to study the problems of informal settlement in District 13 of Kabul city as well as District 13 is one of the District which did not include in the similar previous researches and has been chosen for this research. Then, this paper aims to identify the most prominent and influential built environmental problems posed by informal settlement in District 13 of Kabul city and to examine the factors behind the growth of informal settlements leading to above built environmental problems.

### ***Informal Settlement***

According to Ackelman and Andersson (2008) from 1960 in developing countries, cities confronted the rapid urbanization which caused the development of non-planned. The land has been taken illegally and shelter constructed poorly where people live in improper housing and with improper living facilities. Through the history variety of name have been called to these areas but the common names are shantytown, squatter settlement, spontaneous settlements, pirate towns, autonomous settlement and slum as well as informal settlement which is the most appropriate concept. According to Nazire (2016),

slum had been acknowledging as (bad and poor shelter) mostly refers to settlement which considered to be substandard and inhabited by poor. Thus, the most appropriate concept which has been used for above-mentioned areas is informal settlement. Different scholars have different definition for informal settlement. According to Ackelman and Andersson (2008), the UN-Habitat defines the informal settlement with two definitions. First, "the residential areas where groups of housing units have been constructed on land to which the occupants have no legal claim or which they occupy illegally." Secondly, "unplanned settlements and areas where housing is not in compliance with current planning and building regulation."

Ackelman and Andersson (2008) indicates that the UN-Habitat defines these kinds of areas as unauthorized housing where no land titles, leases or occupancy permits have been granted, moreover, the basic services and infrastructures are not provided in the areas and residents are suffering deteriorative environment. Apart from that, the shelter constructed under condition of informal land tenure. Then, informal settlement is the area where people have poor life condition such as poor housing, lack of basic services, water supply system, sewage system as well as the structure of informal settlements are irregular, have insecure property tenure, and lack of registration as part of urban fabric.

### ***Informal Settlement Problems***

Informal settlement is not without problems, the problems of informal settlement refer to low-quality housing, overcrowding with high health and environment threats, shortage of basic services and infrastructure, insecure land tenure, improper physical condition of neighborhood, shortage or lack of greenery and recreation. The residents of informal settlement suffer social, spatial and economic exclusion from the benefit and opportunity of urban environment (Abebe, 2011; Un-Habitat, 2015). The informal settlement which located to unsuitable areas such as steep slopes, prone to flooding and approach to river are possible to be contaminated and pose the natural disaster for the residents. And, these

areas do not have enough circulation and access to public facilities and residential units, which can make challenges for provision of services like firefighting and garbage collection (Nazire & Kita, 2016).

### ***Factors behind the Growth of Informal Settlement***

Habitat III (2015) indicates that informal settlements growth because of variety of interlaced factors, including increasing of urban population, migration from rural to urban areas, absence of affordable houses for poor resident. Weak governance of government in terms of (making policies, planning, implementation of planning, monitoring, land management as well as urban management which cause land grabbing by people). Weak economic, marginalization, discrimination against specific people, corruption, climate change, conflict which causes the displacement in the region and natural disasters (Habitat III, 2015). Abebe (2011) indicates that the factors behind the growth of informal settlement are lack of proper land management and urban planning, absence of affordable housing and land for low-income people, and rapid growth of urban population. Other factors are migration to urban areas and displacement because of social and economic conflicts, lack of specific policies for social integration of poor people, lack of responsibility of private landowners in land division as well as absence of rules and regulation in urban areas due to the weak governance.

### ***Informal Settlement in Kabul Afghanistan***

Bismill (2014) indicates that different factors caused the manifestation of informal settlement in Kabul city. The war which took place during 1978 until 2001 prevented the implementation of master plan. After the preparation of third master plan, structure plan and detail plans have been prepared for implementation of master plan. However, unstable political situation in Afghanistan constrained the implementation of the master plan, residential areas, and housing also have been expanded among the areas of master plan informally.

Social disruptions and conflicts in Afghanistan led to the displacement and migration to Kabul. Apart from that, after 2001, most refugees return back to country from neighboring countries. According to Ranjbar and Mizokami (2015), more than three million people returned to Afghanistan in recent years, majority of them have been residing in urban areas mostly in Kabul the capital of Afghanistan, which changed the Kabul to one of the fast-growing city and increased the urbanization rate. However, the lack of government ability to deal with high demand for housing, preparing the shelter in the formal way of application, lead to the growth and developing of informal settlement. Because of limited government capacity, it was huge challenges for them to deal with high population and provide formal settlement, then, the government did not prevent the growth of informal settlement. Thus, 80 % of the population in Kabul city live in informal areas, which account for 69 % of the entire Kabul city (Fazli, 2016). Figure 1 shows the formal and informal areas in Kabul city.

Gebremedhin (2005) indicates that based on the mode of land acquisition, four types of informal settlement can be found in Kabul city. First, the informal settlement which developed on public land. Second, informal settlement which developed on privately-owned land. Third, informal settlement in which most houses have been developed on lands which are grabbed directly or bought from land grabber. Fourth, informal settlement in which there is murky legal situation.

Informal settlement which developed on public land refers to settlement which developed on public land without official permission. During the war and political conflicts, absence of powerful central government, public land, and bare land on hillsides and steep slope areas have been grabbed by the people and constructed the housing plots informally. Apart from that, in the plain and flat areas which have been allocated for public facilities, many displaced people constructed the houses with absence of lawful access to land. This kind of informal settlement

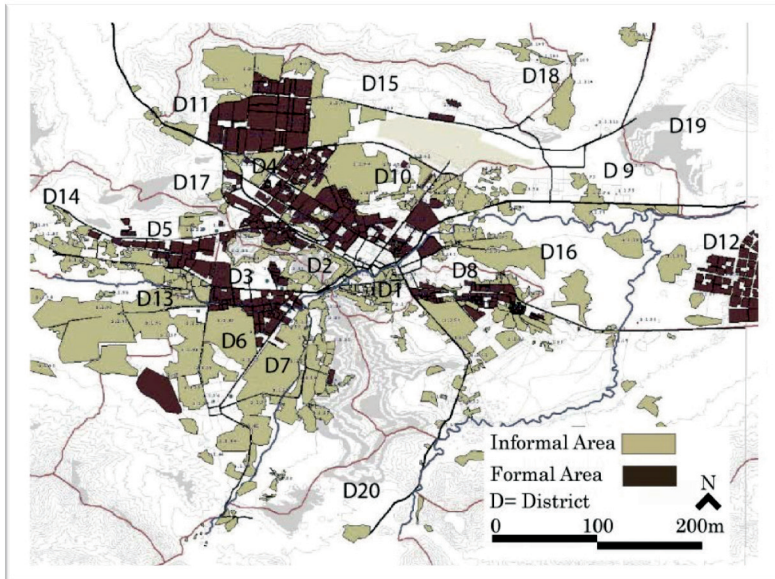


Figure 1: Kabul formal and informal areas. Source: Nazire and Kita (2016)

is the most common type of informal settlement in Kabul city. And the settlements which built up in barren and public land did not recognized by the government authorities as part of urban fabric.

Second, informal settlement which developed on privately-owned land refers to informal settlement which built on *de facto* privately-owned land. The informal settlement which developed on *de facto* privately-owned land constitute the noticeable part of informal settlement in Kabul city. Privately-owned land in Kabul city refers to the land which the people claim on that based on customary deed, traditional ownership or formal ownership (Gebremedhin, 2005). Significant proportion of informal settlers in flat and plain areas hold the customary deed for their land ownership. The residents who hold the customary deeds for their ownership acquired the *de facto* ownership of their lands through purchase of the land from customary or traditional owners of land. The customary or traditional owners of the lands are the organic owners of the land. The people who are the organic owners of lands and villages, developed their lands and villages as residential settlements, without government permission

and registration as well without compliance with Kabul's master plan.

Third, settlement on grabbed land refers to the land which has been grabbed by the powerful men and occurred when the Communist government fell in 1992 (Gebremedhin, 2005). The powerful armed men appropriated the land both for themselves to build houses and to distribute the land for consideration. They took the large size of land more than their own necessity in order to sell the remaining to other residents. Then, the significant portion of public land in Kabul have been illegally taken by powerful people and without prior government permission. The grabbed lands have been sold and distributed among people and informally developed by the people.

Fourth, according to Gebremedhin (2005), the houses with the murky legal situation divided into two types. First, the housing developed on land which has bought by the owner from legal owner but with absence of formal document and did not fulfill legal formalities in order to legalize the ownership. The land transaction occurred with the agreement of the seller and buyer without obtaining the legal deed from the competent court. The reason is to not pay

transaction taxes to government officials. Second, the housing which developed on land whose owner inherited the land and occupied the land for a long time. Most proportion of this kind of land has been located in the village. However, because of many reasons such as social changes, drought, more benefit in market, urbanization and the lands of villages have been sold informally and developed to informal settlement, without compliance with Kabul’s master plan.

As a result, the definition of informal settlement according to Kabul development is: (a) the housing and settlement which built up in violation of the master plan of Kabul, (b) settlement which developed without meeting formal requirement for access to the land as well as the land developed with lack of basic services and infrastructure (Gebremedhin, 2005). The peculiarity of Kabul informal settlement is that in some cases, the plot size in informal settlement is not smaller than the plot size at formal settlement. In most cities of other countries, the size of the plot in informal settlement is much smaller than the plot size at formal areas. In addition, in some cases, the buildings have been

constructed with high quality and with proper external visual view, but with the absence of basic services and infrastructure.

**Methodology**

**Study Area**

Kabul province is one of the 34 provinces of Afghanistan. The capital of the province is Kabul city, which is also Afghanistan’s capital. Kabul province has a total of 4585 km<sup>2</sup> areas. Kabul province shares borders with Parwan province in Northwest, Kapisa province in Northeast, Laghman province in East, Nangarhar province in Southeast, Logar province in South and Maidan Wardak province in Southwest (Javed, 2013).

Kabul city which is the capital of Afghanistan located in Kabul province known as the largest city of Afghanistan located in the Eastern part of the country (Ahmadi & Kajita, 2017). “Kabul city is located between latitude 34°31’ North and longitude 69°12’ East at an altitude of 1800 m (6000 feet) above sea level (Ahmadi & Kajita, 2017)”. Figure 2 shows the location of Kabul city in Kabul province.

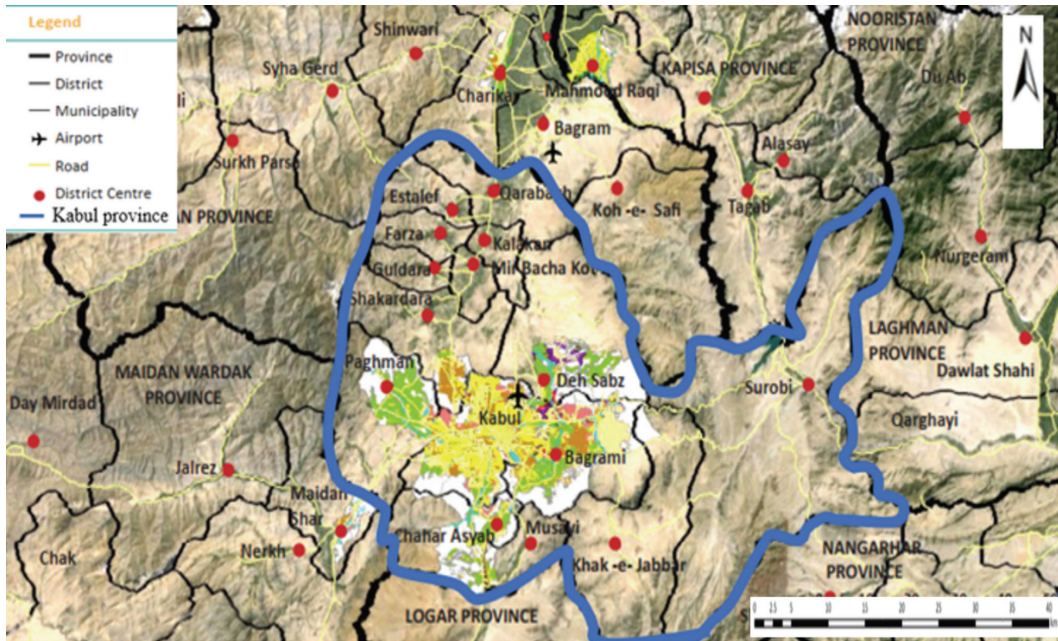


Figure 2: Location of Kabul city in Kabul province. Source: MUDH *et al.* (2015)

Kabul Municipality is including 22 Districts, with areas of 103,049 hectares with the almost 396,095 dwellings, despite a large number of dwellings the barren land count about 41% of the total area of Kabul Metropolitan Areas (MUDH et al., 2015). Figure 3 shows Kabul Metropolitan areas.

Districts 13 of Kabul city contains the western peripheries of the Kabul city, the District 13<sup>th</sup> Western side makes the whole

Kabul city boundary, in Southward, it extends to the mountain areas also constitutes the city boundary, District 5 located to North part of District 13, and District 6 located to its East part. (JICA et al., 2011). Figure 4 shows the location of Districts 13 in Kabul Municipality area.

Districts 13 divided into 11 zones, and the number of households in each zone are different from 8,000 to 10,000 households (MUDH et al., 2016). Figure 5 shows 11 zones of District 13.

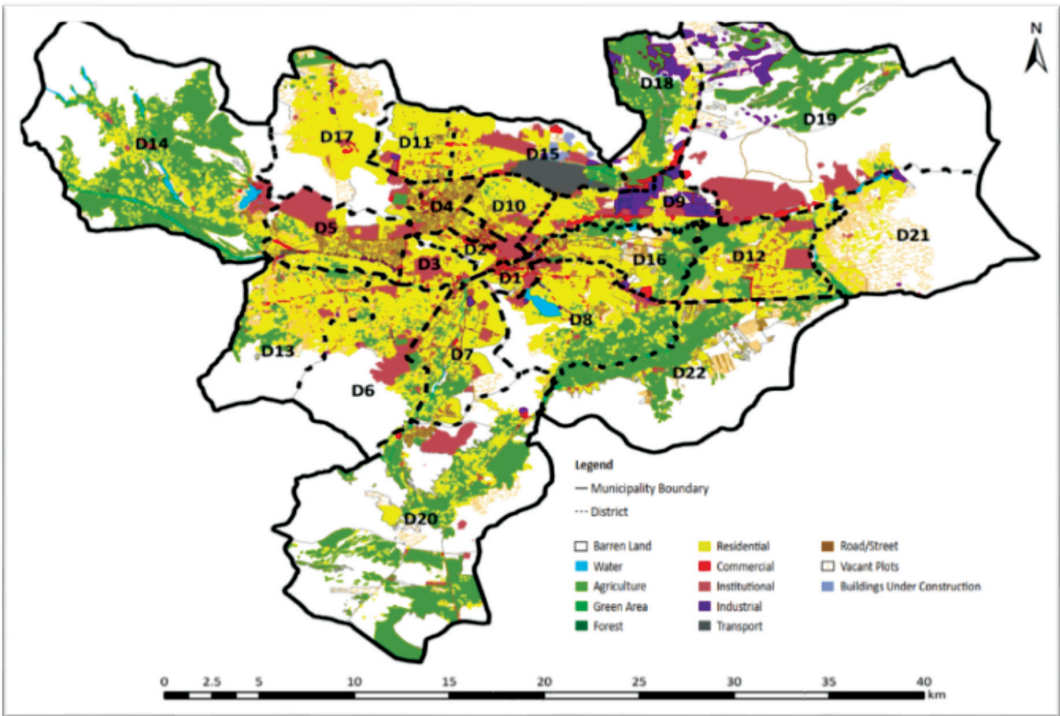


Figure 3: Kabul Metropolitan areas. Source: MUDH et al. (2015)

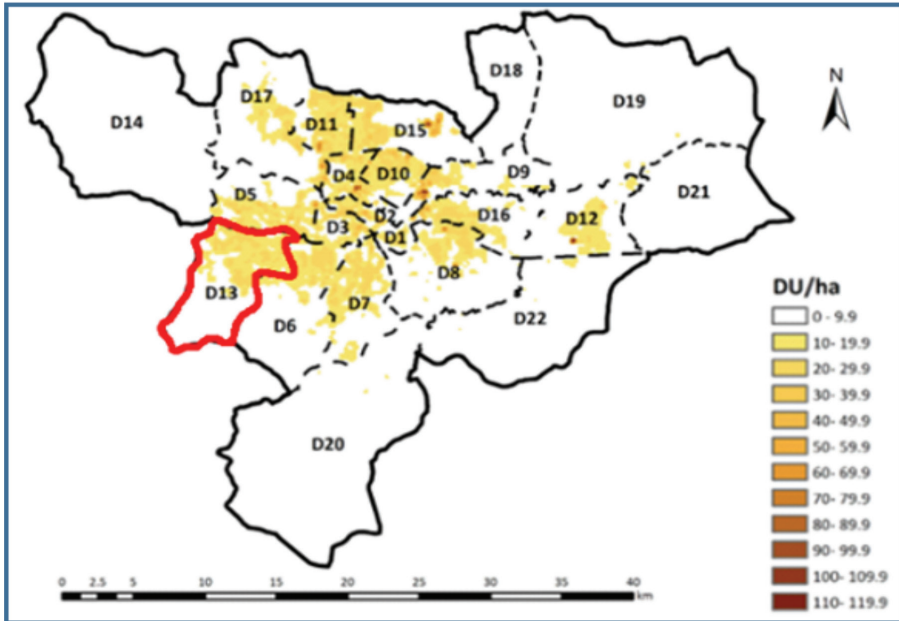


Figure 4: Location of District 13 in Kabul Municipality area. Source: JICA *et al.* (2011)

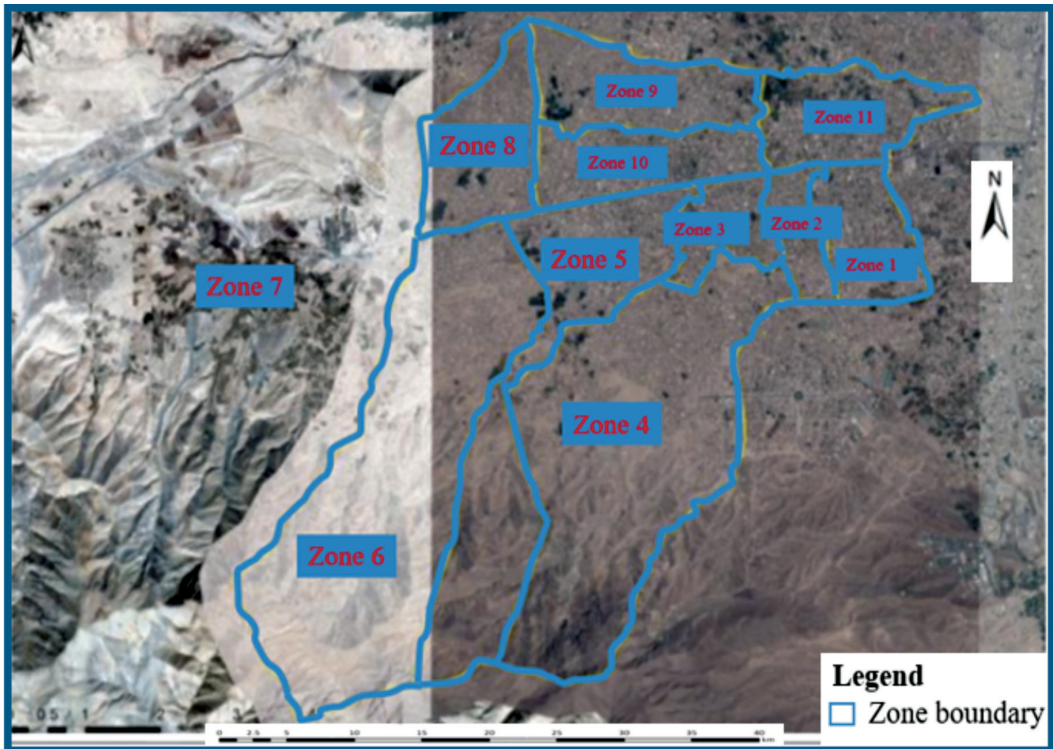


Figure 5: 11 zones of District 13. Source: MUDH *et al.* (2016)

### **Data Collection and Analysis**

This research includes the preliminary understanding, data collection, data analysis, result and finding, conclusion and recommendation. In the preliminary, understanding background of the informal settlement in Kabul Afghanistan has been identified and the research aims have been admitted. In data collection, the mix mode research method which includes the qualitative and quantitative data collection based on primary data and secondary data have been the methodology for this research. In primary data collection, the site observation, and people perception have been the methodology. In the site observation, the areas have been visited and the questionnaire has been used for evaluation of its built environment condition. In the people perception, the interview and questionnaire survey have been conducted with government officials and local residents. In interview with government officials, the interview has been conducted with 22 government officials from Ministry of Urban Development and Housing, Kabul Municipality, Capital Region Independent Development Authority (CRIDA), official from District 13 directorate, member of JICA Project Team (Japan International Cooperation Agency), and members of UN-Habitat. In interview with government officials, the printed preset open-ended questions have been used to know their idea towards informal settlement problems and factors behind the growth of informal settlement.

In questionnaire survey with local residents, the printed survey questionnaire has been used and randomly distributed among the residents to know their idea towards informal settlement, their challenges, needs, preferences, demand, and the most influential problems on their daily activity as well as the factors behind the growth of informal settlement. 200 respondents from different group of people including young, old, male, female, low-income, high-income, medium income, different ethnic group of people, the people with different education level and people from different parts of District 13 randomly have been chosen for this research.

In secondary data collection, the source from local authority, government record published data and electronic data have been used to know the built environment problems which have posed by informal settlements, the factor behind the growth of informal settlement leading to above built environmental problems. After data collection, content analysis and frequency analysis have been used to analyze the gathered data. In the content analysis, the data was divided into two themes, firstly, the theme which is relevant to informal settlements problems and secondly, the theme which is relevant to factors behind the growth of informal settlement.

In frequency analysis, the SPSS (Statistical Package for Social Science) has been used to measure the result properly and prioritized informal settlement problems and factors behind the growth of informal settlement. In content analysis, NVIVO software has been used to simply manage the qualitative data (the data which has been gathered from interview) and makes handling of them easier. The result and finding which come up after measurement by SPSS and content analysis and finding has shown in the smart chart and diagram for better understanding. Figure 6 shows the flowchart of this research.

## **Results and Discussion**

### **Demographic Background**

The demographic background of this research includes two parts, first the demographic background of the interviewees. Second the demographic background of the respondents of questionnaire survey. The first part refers to the age, gender, job and education level of interviewees. The interviewees with different position have been chosen for this research. Table 1 shows the interviewee's position.

It must be mentioned that the Ministry of Urban Development and Housing and Land Independent Authority of Afghanistan recently merged together by name of Ministry of Urban Development and Land, and Urban Research



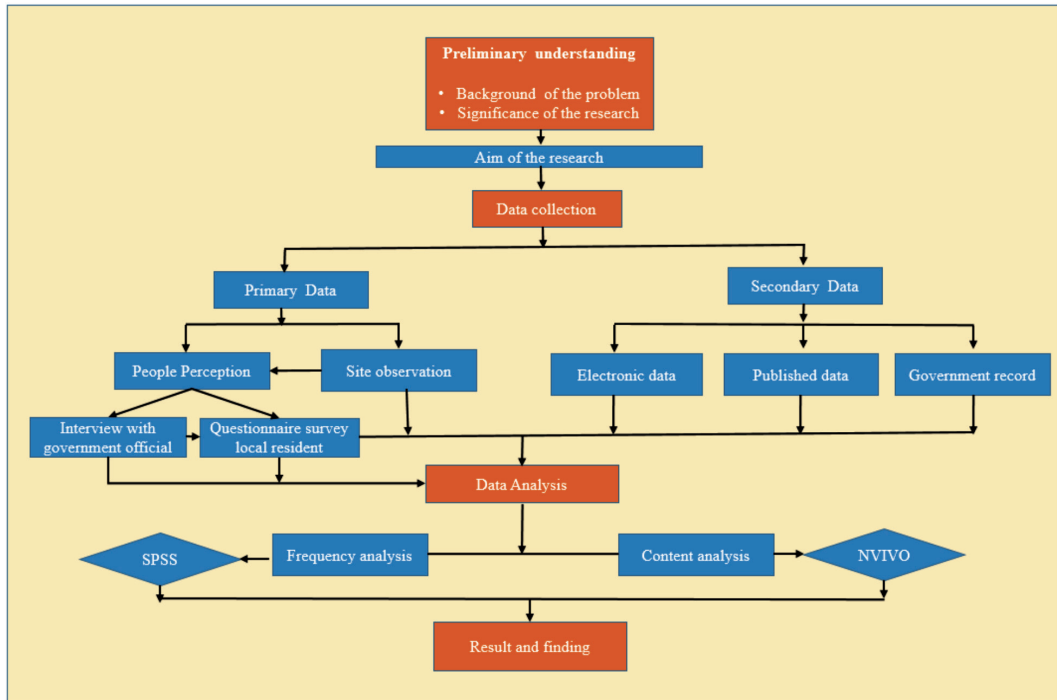


Figure 6: Research flowchart

Table 1: Interviewee’s position

Number	Position	Name of Agencies	Total
1	National Urban Advisor	Ministry of Urban Development and Housing	3
2	Director of Upgrading of Unplanned Settlement Directorate		
3	Director of Urban Research and Development Center		
4	Head of Land Readjustment and Urban Redevelopment Division	Kabul Municipality	4
5	3 members of Land Readjustment and Urban Redevelopment Division		
6	Director of Technical Planning	Capital Region Independent Authority	8
7	Head of Upgrading and Renovation Program Division		
8	6 members of Upgrading and Renovation Program Division		
9	Member of Japan International Cooperation Agency Project Team	Japan International Cooperation Agency	2
10	Member of Japan International Cooperation Agency Project Team		
11	Head of District 13 Division	Un-Habitat-Afghanistan	3
12	2 members of District 13 Division		
13	Director of the Directorate of the District 13	Directorate of District 13	2
14	Head of Engineering Division		
Total			22

and Development Center also has been canceled. In terms of age, the interviewees were divided into 3 categories, including the 18-24 years old, 25-34 years old and 35-44 years old. The participants of this research include 1 person (18-24 years old), 18 persons (25-34 years old) and 3 persons (35-44 years old). Table 2 shows the interviewees age groups.

Table 2: Interviewee’s age

Age Group (years)	Number of Interviewees	Gender	
		Male	Female
18-24	1	0	1
25-34	18	18	0
35-44	3	3	0
Total	22	21	1

The interviewees of this research have different education level including Diploma level, Master Degree and Ph.D. Therefore, 15 interviewees have Diploma, 6 interviewees have Master Degree and 1 interviewee has Ph.D. Table 3 shows the interviewee’s education level.

Table 3: Interviewee’s education level

Education Level	Number of Interviewees
Diploma	15
Master Degree	6
Ph.D.	1

The second part of demographic background includes the demographic background of participants of questionnaire survey referring to the age, gender, job and education level. The total respondents in this research are 200 respondents including 30 females and 170 males. In terms of age, the participants were divided into 6 categories including 18-24 years old, 25-34 years old, 35-44 years old, 45-54 years old, 55-64 years old, and elder than 64 years old. The participants of this research include 42 persons (18-24 years old), 77 persons (25-34 years old), 30 persons (35-44 years old), 24 persons (45-54 years old), 15 persons (55-64 years old), and 12

persons elder than 64 years old. Table 4 shows the respondent’s age.

Table 4: Respondent’s age

Age Group (years)	Number of Respondents	Gender	
		Male	Female
18-24	42	30	12
25-34	77	63	14
35-44	30	27	3
45-54	24	23	1
55-64	15	15	0
>64	12	12	0
Total	200	170	30

People with different jobs have been chosen for this research, including government employee, private employee, self-employment, businessman and others. The government employee includes the official from Supreme Court, Ministry of Mining, Mistry of Interior Affairs, Ministry of Public Health, Ministry of Higher Education, Ministry of Agriculture, Districts employee, policeman, teacher at public schools and university lecturer. Private employee includes the employee of private hospital, teacher at private schools, private language education center and US Embassy employee. Self-employment includes the diver, shopkeeper, tailor, carpenter and, other includes the students and non-employment. Table 5 shows the respondent’s job.

Table 5: The respondent’s job

Number	Job	Number of Respondents
1	Government employee	32
2	Private employee	42
3	Self-employment	46
4	Agriculture	10
5	Business	40
6	Other	30
	Total	200

The participants with different education level have been chosen for this research including uneducated, primary school, secondary school, high school, religious school, Diploma level, Master Degree and other (students and degree level). Table 6 shows the respondent’s education level.

Table 6: The respondent’s education level

Number	Education Level	Number of Respondents
1	Master degree	8
2	Diploma level	74
3	High school	22
4	Secondary school	30
5	Primary school	13
6	Religious School	15
7	Uneducated	18
8	Other	20

**Site Observation Finding**

From the site observation, it has been found that the informal settlement in District 13 has different characteristics, some areas are in better condition than other areas. The areas like Sharak-Erfani which located in Zone 1, Shahrak-12 Emam which located in Zone 1, Pol-E-Khushk, Sharak-E Rasul Akam which located

in North part of Zone 5, some parts of Dasht-E bist Hazari which located in Zone 2 are in better condition than the areas like Qala-E, which now located in Zone 6, Jabrkhan located in Zone 2 and Asia Bini which located in Zone 8 and in bad condition. The street’s width differs in size from 3 meters to 8 meters but in many areas like Sharak-E Erfani, the streets have 12 meters width and are more regular. But the most common width of street is 4 to 6 meters. Mostly the local streets are not paved and are in bad condition. Just in some parts of the district, the streets have paved by different development agencies such as Kabul Municipality Development Program and UN-Habitat.

In terms of housing quality, the housing is divided into three categories. First category includes the constructions of housing made of raw material, timber roof, sun-dried brick walls and covered with mixture of mud and stew as plaster. Second category includes the construction of housing made of mud with timber roof. The third category includes the construction of housing made of concrete with burned brick walls. The proximity of high rise building to single-story housing broke the private privacy and prevents the access of single-story housing to sunlight. Figure 7 shows the housing and street condition of different parts of the District 13 of Kabul city.



Figure 7: Housing and street condition of different parts of District 13 of Kabul city. Source: Field survey (2019)

### **Key Finding of Interview**

The key finding from interview includes the built environments problems of informal settlements and factors behind the growth of informal settlement leading to above built environmental problems. According to content analysis, the qualitative data is divided into two themes. First theme is relevant to the built environment problems posed by informal settlement. Second theme is relevant to the factors behind the growth of informal settlement which leading to above built environmental problems.

#### ***Theme 1: Built Environmental Problems of Informal Settlement***

The first theme is relevant to the built environment problems posed by informal settlement in District 13 of Kabul city, the interviewees indicate that different built environmental problems posed by informal settlement in District 13 of Kabul city.

Interviewee 4 (Table 1) indicates *“that the problems such as water pollution, air pollution, lack of solid waste management exist in District 13”*. Interviewee 2 indicates that *“shortage of water supply system, the lack of paved and proper street and absence of street hierarchy which creates problem for the residents to have normal vehicular traffic, housing developing with low quality are the current built environmental problems of informal settlement in District 13”*.

Interviewee 6 indicates that *“urban sprawl or horizontal development of the city, absence of open space, green areas and recreation, shortage of government healthcare facilities, proximity of high rise building to neighbor houses which violated the private privacy are the built environment problems of informal settlement in District 13”*. Interviewee 10 indicates that *“lack of water supply system and the water pollution of underground water which impact on the health condition of the residents, and construction of unsaved housing in hills, mountain and steep slopes areas which are prone to natural hazard are the built environmental problems posed by informal settlement in District 13 of Kabul city”*. And interviewee 13 indicates that *“lack of*

*drainage system and sewage system as well as lack of pedestrian are the problems of informal settlement in District 13 of Kabul city.”*

Concluding from interview with governmental officials, the finding on the built environment problems posed by informal settlement in District 13 are the lack of paved and proper street and absence of street hierarchy which creates problem for the residents to have normal vehicular traffic, and narrow streets which make problem regarding access to the main road. Lack of solid waste management pollutes the environment. Lack of water supply and the water pollution of underground water which impact on health condition of the residents. Absence of drainage system and sewage system pollute the underground water and environment. The absences of planned nature and proximity of the housing plots to each other. Absence of open space, green areas and recreation. Shortage of government healthcare facilities. Proximity of high rise building to neighbor houses which violated private privacy. Housing development with low quality. Horizontal development of the city or urban sprawl. Air pollution. Traffic congestion. And construction of unsaved housing in hills, mountain and steep slopes areas.

#### ***Theme 2: Factors behind the Growth of Informal Settlement***

In terms of factors behind the growth of informal settlement which lead to above built environmental problems in District 13 of Kabul city, according to interviewees variety of factors have been leading to the emergence and growth of informal settlement. For example, interviewee 1 (Table 1) indicates that *“lack of effective urban development plans or budget to implement them and migration to Kabul city are the factors behind the growth of informal settlement”*. Interviewee 4 and interviewee 5 believe that *“security problems, absence of rules and regulation in urban areas due to weak governance, incoordination of local residents and lack of responsibility of private landowners in land division, rural-urban migration and*

displacement because of social and economic conflicts are the factors which have been leading to the growth of informal settlements in District 13 of Kabul city”. Interviewee 7 indicates that “corruption in government, government inability to control the development of informal settlement and rapid urbanization are the factors behind the growth of informal settlement in District 13 of Kabul city.

Interviewee 12 indicates that “lack of specific policies for social integration of poor people in District 13, rapid growth of urban population, absence of affordable housing and land for low-income people, lack of proper land management and urban planning are the factors behind the growth of informal settlement in District 13”. Interviewee 10 indicates that “factors behind the growth of informal settlement can be divided into three categories, first, social and political disorder; second, rapid increase of population, and third, limited capacity of government.

Concluding from interview with governmental officials, the factors behind the growth of informal settlement can be divided into four categories. First, social and political disorder, second, rapid increase of population,

third, limited capacity of government and fourth, the incoordination of local residents.

**Key Finding of Questionnaire Survey**

The key finding of questionnaire survey shows the perception of the respondents towards resident’s satisfaction level with built environmental condition of the areas, most prominent and influential problems posed by informal settlement and most influential factors behind the growth of informal settlement lead to the above problems.

Most of the residents are not satisfied with the built environmental condition of District 13. According to field survey, 64.5 % of the respondents indicated that they are dissatisfied with the built environmental condition of District 13. 21 % of the respondents responded that they are satisfied with the built environmental condition of District 13. 1.5% of respondents said that they are very satisfied with physical and built environmental condition of District 13 and they are the persons who live the western part of Omid-E-Sabz township. Figure 8 shows the satisfaction level of residents with the built environmental condition of the area.

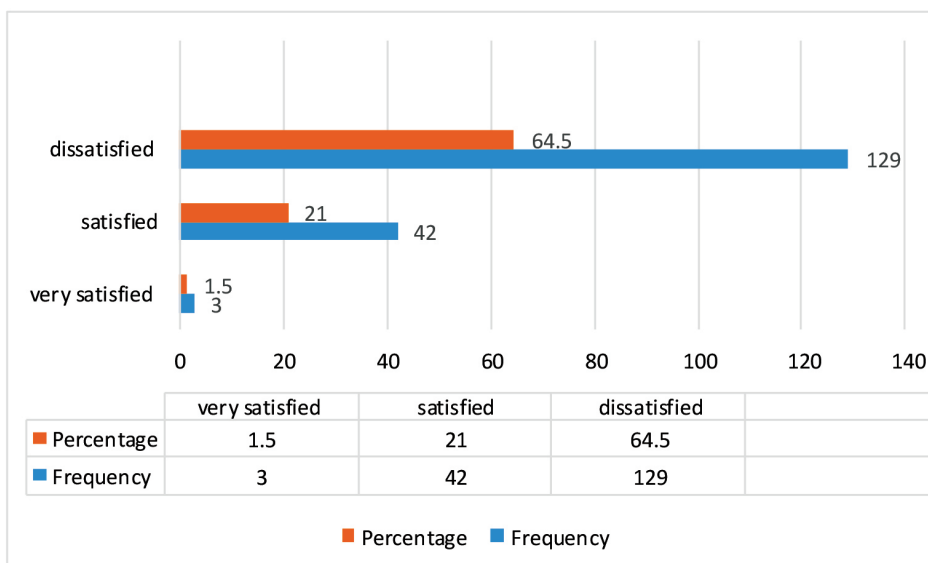


Figure 8: Satisfaction level of residents with the built environmental condition of District 13. Source: Field survey (2019)

Since majority of the residents are dissatisfied with the built environmental condition of District 13, then this research aims to find the problems which have been posed by informal settlement and leading to above dissatisfaction. In interview with the governmental official, the problems of informal settlement in District 13 have been found, however, questionnaire survey have been conducted to identify the most prominent built environmental problems of informal settlement from the perception of the residents. Table 7 shows perception of residents towards the built environmental problems posed by informal settlement in District 13 of Kabul city.

Concluding from the column of challenges with high impact in Table 7, it can be found

that lack of solid waste management system is a challenge with high impact on 54% of the respondents. Absence of drainage system and sewage system is a challenge with high impact on 83.5% of the respondents. Absence of open spaces, green areas and recreation is a challenge with high impact on 76% of the respondents. Unpaved narrow streets and access to main road is a challenge with high impact on 67% of the respondents. Lack of water supply, pollution of underground water is a challenge with high impact on 59% of the respondents. Absence of planned nature and proximity of the housing plot which broke private privacy is a challenge with high impact on 46% of the respondents. Development of housing with low quality is a challenge with high impact on 16.5% of

Table 7: Perception of residents towards the built environmental problems posed by informal settlement in District 13 of Kabul city

No.	Built Environmental Problems	Likert Scale		
		1 Challenge with High Impact	2 Challenge with Mid-Impact	3 Challenge with Low Impact
1	Lack of solid waste management.	108 (54%)	56 (28%)	36 (18%)
2	The absence of drainage system and sewage system.	167 (83.5%)	20 (10%)	13 (6.5%)
3	Absence of open spaces, green areas and recreation.	152 (76%)	33 (16.5%)	15 (7.5%)
4	Unpaved narrow street and access to main road.	134 (67%)	44 (22%)	22 (11%)
5	Lack of water supply and pollution of underground water.	118 (59%)	55 (27.5%)	27 (13.5%)
6	Absence of planned nature and proximity of the housing plot which broke the privacy.	92 (46%)	75 (37.5%)	33 (16.5%)
7	Development of housing with low quality.	33 (16.5%)	110 (55%)	57 (28.5%)
8	Housing prone to natural hazard.	8 (4%)	83 (41.5%)	109 (54.5%)
9	The shortage of pedestrian.	126 (63%)	44 (22%)	30 (15%)
10	Shortage of government healthcare facilities.	104 (52%)	77 (38.5%)	19 (9.5%)

the respondents. Housing prone to natural hazard is a challenge with high impact on 4% of the respondents. Shortage of pedestrian is a challenge with high impact on 63% of the respondents. Shortage of governmental healthcare facility is a challenge with high impact on 52% of the respondents. Figure 9 shows the built environmental problems of informal settlement with high impact on District 13 of Kabul city.

Based on Figure 9, it was required to examine factors behind the growth of informal settlement leading to above built environmental problems. Factors behind the growth of informal settlement have been found in interview with government official. However, this research examines the most influential factors behind the growth of informal settlement in perception of residents of District 13 of Kabul city. Table 8 shows perception of residents towards the factors behind the growth of informal settlement in District 13 of Kabul city.

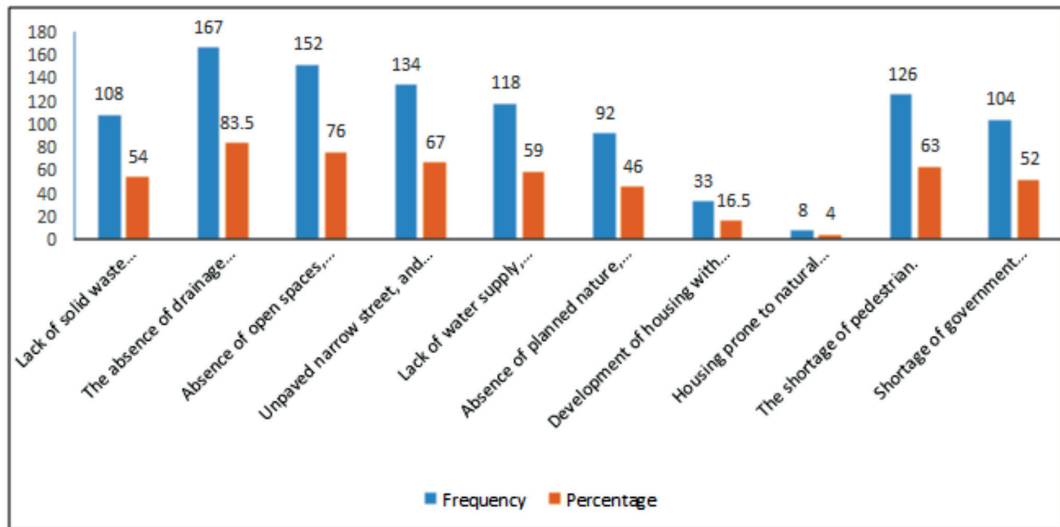


Figure 9: Built environmental problems of informal settlement with high impact on District 13 of Kabul city. Source: Field survey (2019)

Table 8: Perception of residents towards factors behind the growth of informal settlement in District 13 of Kabul city

No.	Factors	Likert Scale				
		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	Social and political disorder	48 24%	95 48.5%	13 6.5%	25 12.5%	17 8.5%
2	Rapid increase of population	75 37.5%	89 44.5%	6 3%	19 9.5%	11 5.5%
3	Limited capacity of government	139 69.5%	54 27%	4 2%	3 1.5%	0 0%
4	Incoordination of local residents	16 8%	37 18.5%	11 5.5%	93 46.5%	43 21.5%

Concluding from the column of strongly agree in Table 8, 24% of the respondents strongly agree that social and political disorder is the factors behind the growth of informal settlement. 37.5% of the respondents strongly agree that the rapid increase of population is the factor behind the growth of informal settlement. 69.5% of the respondents strongly agree that the limited capacity of government is the factors behind the growth of informal settlement. 8% of the respondents strongly agree that the incoordination of local residents is the factors behind the growth of informal settlement. Figure 10 shows the most influential factors behind the growth of informal settlement in District 13 of Kabul city.

**Discussion**

The finding on the built environment problems posed by informal settlement in District 13 are lack of drainage system and sewage system, lack of solid waste management, unpaved narrow streets, lack of open spaces, recreation and greenery, lack of water supply and pollution of underground water, shortage of healthcare facilities and shortage of pedestrian. However,

for collection of garbage and solid waste due to lack of solid waste management, there are specific private companies which contract with the people of specific areas to collect the garbage and solid waste. However, some respondents indicated that the government must categorize the garbage and solid waste to differentiate between usable and unusable garbage. The absence of drainage system and sewage system are the most influential problems that most of the respondents indicated that the lack of sewage system polluted the underground water. The areas which have been upgraded by the Un-habitat did not include the provision and improvement of drainage system and sewage system. Particularly the rainy season lack of drainage system is the most influence challenge for the residents of this district. And in terms of greenery and recreation, there are no parks in District 13, the people mostly go the hillside of the Qorogh Mountain, Kochi Abad Mountain and Chehil Dokhtran Mountain for weekends and picnic. In most areas, the streets are irregular and narrow, in many cases, there is no street hierarchy. Thus, most of the respondents indicated on land rearrangement, besides the upgrading. It is not effective and

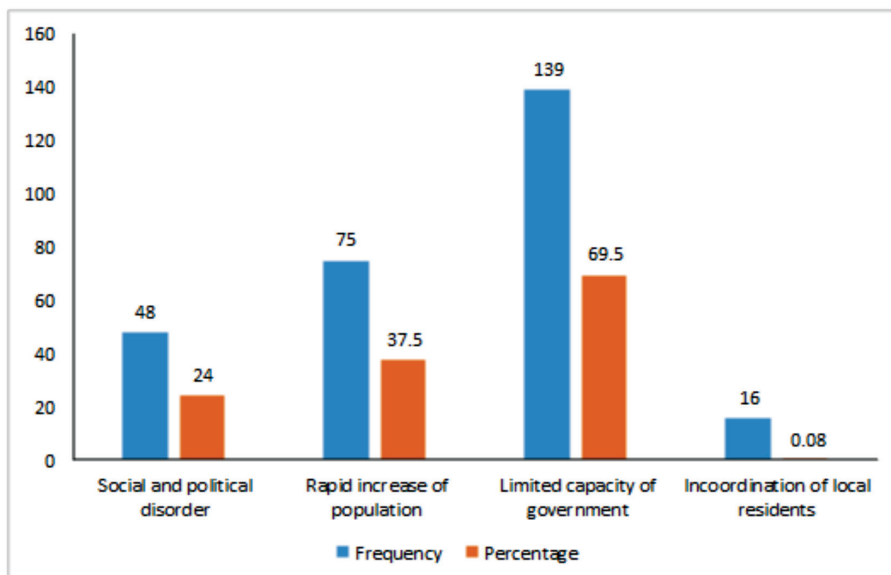


Figure 10: Most influential factors behind the growth of informal settlement in District 13 of Kabul city.

Source: Field survey (2019)



proper governmental water supply system in this district, however, there are private companies which provide the water for the small specific areas. However, besides private companies which have contraction with the residents of specific areas to provide the water, some of the families have their personal water wells but drilling the well is costly, the owners of all houses are not able to drill the well. In addition, most of the respondents indicated that the water of well polluted due to lack of sewage system in the areas. Moreover, in Afghanistan due to cultural matter, the residents prefer to have private privacy, but the development of high rise building near to low-level building broke this privacy. The residents of Kabul prefer to have sunlight inside their houses, the high rise building in front of low-level housing prevent entrance of sunlight to low-level houses. Most respondents indicated this problem reduces the price of low-level housing and it can be economic harm for the owners of low-level housing. The education facilities have good condition in this district, the residents of this district prefer to send their children to private schools, and then, there is no shortage and deficiency of education facilities. Shortage of government healthcare facilities is a serious problem in this district, the government healthcare facilities do not have the capacity to cover all patients. Therefore, most patients go to the hospital in the city center, there are many private hospitals but most respondents indicated that referring to private hospital is costly for the patients. Because this research has been conducted in winter season, during the winter, the residents are suffering air pollution, even the air pollution subject does not include in this research. During the field survey, every respondent mentioned this problem spontaneously and indicated that air pollution is a problem with high impact on them. The researcher agrees with the respondents that air pollution is the most serious challenges in District 13, which forms greater threat to life of residents.

The informal settlement can be direct or indirect cause for this air pollution because there are no heating facilities for cooking and heating,

resident's burn coal and wood for heating and in some cases for cooking. If the government facilitates the people with proper electricity, heating facilities and the people use electronic tools instead of burning coal and wood, it would reduce the air pollution. Moreover, the unpaved street also can be the reason behind this air pollution, when the cars pass the street throw the dust in air which increases the air pollution. In terms of factors behind the growth of informal settlement according to the view of local residents, the limited capacity of the government is the most influential factors behind the growth of informal settlement in District 13 of Kabul city. The view of government officials is different; they add the aspect of non-adherence of the individuals. However, local people indicated government has failed to provide them with better living conditions or places to live. Figure 11 shows ranking of built environmental problems with impact on more than 50% of the residents of District 13 of Kabul city. The finding on the factors leading to growth of informal settlement indicates that the limited capacity of the government is the most influential factor behind the growth of informal settlement. Figure 12 shows the ranking of factors behind the growth of informal settlement in District 13 of Kabul city.

### Conclusion

Kabul which is the capital of Afghanistan witnessed the rapid urbanization and population growth in the recent decades, 80% population of Kabul city is now living in informal areas, which includes 69% of the entire Kabul city. The informal settlements which do not have the proper environmental condition are not without problem, the built environmental and social problems of informal settlements are huge and serious challenges to informal residents which negatively impacts and treats the inhabitant's health and happiness. The research finding indicated that absence of drainage system and sewage system, absence of open space, green areas and recreation, lack of paved and proper streets which have narrow width and absence

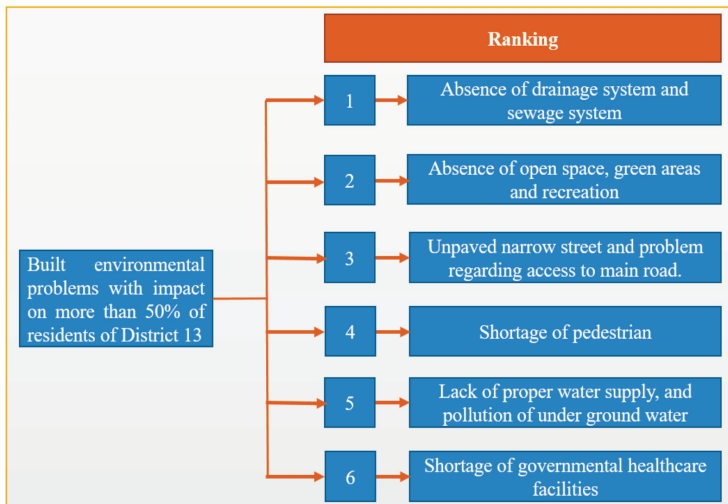


Figure 11: Ranking of built environmental problems with impact on more than 50 \% of the residents of District 13 of Kabul city. Source: Field survey (2019)

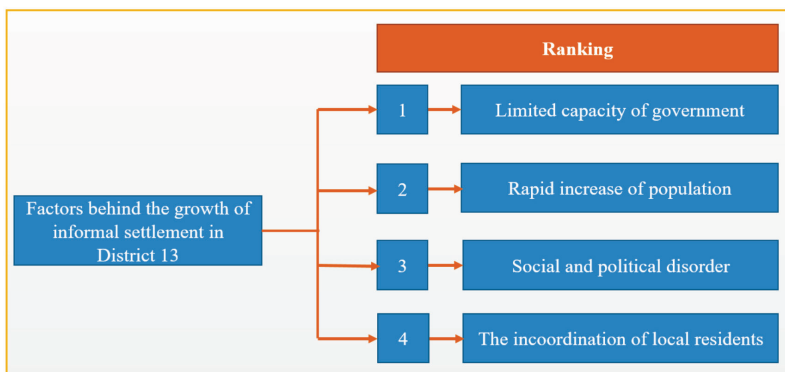


Figure 12: Ranking of factors behind the growth of informal settlement in District 13 of Kabul city. Source: Field survey (2019)

of street hierarchy. Shortage of pedestrian, lack of proper water supply, lack of solid waste management and shortage of governmental healthcare facilities are the most serious built environmental problems which posed by informal settlement in District 13 of Kabul city. To improve the informal settlement, the land property right and the legalization of informal settlement should be taken to first priority, as well as the informal settlement must register and recognize as part of urban fabric. This will generate trust and encourage the informal settlement dwellers to invest for their houses.

Apart from that, the legal land owners are responsible to pay taxes, and the tax can be invested in areas. The community leaders must participate in the process of improvement; the leaders should be chosen as the persons who have the most influence on the residents. In project implementation, the participation and involvement opportunity should be given for local resident, it will improve the relationship between local residents and urban authorities, moreover, it will provide job opportunity for local residents. The settlement upgrading should be taking into consideration for improvement

of the areas with provision of all basic services, infrastructure, and public amenities. As well as the improvement of drainage system and sewage system should be taken in first priority.

### Acknowledgments

I would like to sincerely thank and extend my sincerest and most heartfelt appreciation to Journal of Sustainability Science and Management and the anonymous reviewers for improving the quality of this paper.

*Abbreviations:* MUDH (Ministry of Urban Development and Housing), KM (Kabul Municipality), IDLG (Independent Directorate of Local Government)

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