YAŞAR UNIVERSITY

GRADUATE SCHOOL

MSC. IN ARCHITECTURE

THE SQUATTER SETTLEMENTS IN LAHORE,PAKISTAN:

AN URBAN RENEWAL RESEARCH FOR BETTER HOUSING DEMAND

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PRESENTATION DATE: 02.012.2021

BORNOVA / İZMİR
DECEMBER 2021

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ABSTRACT

THE SQUATTER SETTLEMENTS IN LAHORE, PAKISTAN:
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December 2021

The demand for housing in Lahore continues to rise at an unprecedented rate. As a result, unplanned expansion is occurring in the city. Sprawl in the city attempts to create a balance between the different classes despite the growing income disparities. Due to in-migration from the interior of Punjab, the demand for housing is also increasing, so that the sprawl is increasing day by day. The city is facing major and complex challenges in managing its physical infrastructure due to unplanned expansion of housing estates in the outskirts of the city. The demand for housing in Lahore is high, but unfortunately there is not enough quality housing for all. As a result, people are forced to live in unacceptable conditions, colloquially known as Katchi Abadis. Since there is not enough space in the city to build new houses using traditional methods, other methods are needed. The aim of this research is to explore the region Katchi Abadi and critically examine the emerging problematic factors.

The aim of this research is to investigate the role of Katchi Abadis in the urban fabric of Lahore. In this research, the unplanned built-up settlements are examined using different approaches. The whole study consists of two parts. The first part focuses on the study of Katchi Abadis, and the attitudes of the local people are determined through a survey. The second part will propose a model for housing construction adapted to local economic conditions. The second part will also include the situation of affordable cost, relevant recommendations and guidelines for the proposed solutions for the area Katachi Abadis based on the process of this research. In this research, all tangible and intangible factors that determine the physical morphology of Katchi Abadis are identified and presented. In reviewing the urban planning views of the Katchi Abadi

system of Lahore, households and neighborhoods are considered as active and resonant elements of the urban fabric.

keywords: katchi-abadi, housing demand, squatter housing, vertical housing, government policies, affordable housing, historical Lahore,

ÖZ

PAKİSTAN, LAHOR'DAKİ GECEKONDU YERLEŞİMLERİ: DAHA İYİ KONUT TALEP İÇİN KENTSEL YENİLEME ARAŞTIRMASI

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Aralik 2021

Lahor'daki konut talebi eşi görülmemiş bir oranda artmaya devam ediyor. Bu durumun bir sonucu olarak, şehrin çevresinde plansız bir genişleme meydana gelmekte. Kentsel yayılma, çeşitli sınıflar arasındaki yükselen gelir uçurumu sayesinde denge bulmaya çalışıyor. Ayrıca, Pencap'ın iç kesimlerinden gelen göç de bir konut arzını arttırıyor ve dolayısıyla şehrin çevresindeki yayılma her geçen gün genişlemeye devam ediyor. Şehir, çevre bölgelerindeki konut topluluklarının plansız genişlemesi nedeniyle fiziksel altyapısını yönetmek için büyük ve karmaşık sorunlarla karşı karşıya. Lahor'da konut talebi var, ama ne yazık ki, herkes yetecek kadar nitelikli konut bulunmamakta. Sonuç olarak insanlar, halk dilinde Katchi Abadis olarak adlandırılan bölgede zor koşullarda yaşamak zorunda kalıyorlar. Şehirde geleneksel mezheplere göre yeni evler yapmak için yeterince alan olmadığı başka yöntemler gerekmekte. Bu projenin amacı, Katchi Abadi bölgesini araştırıp, ortaya çıkan sorunlu faktörleri eleştirel bir yöntemle incelemektir.

Bu çalışmanın amacı, Lahor'un kentsel dokusunda Katchi Abadis'in rolünü araştırmayı amaçlamaktadır. Bu çalışma, farklı yaklaşımlarla plansız olarak inşa edilmiş yerleşim birimlerini incelemektedir. Çalışmanın tamamı iki bölümünden oluşmaktadır. Birinci bölümde Katchi Abadis bölgesinin araştırmasına odaklanacak, yerel halkın yaklaşımları anket çalışması ile ölçülecektir. İkinci bölümde ise yerel ekonomik koşullarına uygun konutları için bir model önerilecektir. Ayrıca ikinci bölüm de bu araştırmanın sürecine dayanarak Katachi Abadis bölgesi ile ilgili önerilen çözümler için uygun olacak karşılanabilir maliyet durumu, ilgili öneriler ve yönergeler

içerecektir. Bu çalışma, Katchi Abadis'in fiziksel morfolojisini belirleyen tüm somut ve somut olmayan faktörleri ortaya koyacak ve sunacaktır. Lahore'un Katchi Abadi sisteminin kentsel tasarım görüşlerinin yeniden incelemek, haneleri ve mahalleleri kentsel dokunun aktif ve yankı uyandıran unsurları olarak değerlendirmektedir.

Anahtar Kelimeler: katchi-abadi, konut talebi, gecekondu, dikey konut, hükümet politikaları, uygun fiyatlı konut, tarihi Lahor,

ACKNOWLEDGEMENTS

TEXT OF OATH

I declare and honestly confirm that my study, titled "the squatter settlements in lahore, pakistan: An urban renewal research for better housing demand" and presented as a master's thesis, has been written without applying to any assistance inconsistent with scientific ethics and traditions. I declare, to the best of my knowledge and belief, that all content and ideas drawn directly or indirectly from external sources are indicated in the text and listed in the list of references.

Yazdaan Haider Khan

December 02, 2021

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ABBREVIATIONS

ABBREVIATIONS:

NPHS	Naya Pakistan Housing Scheme
CBO	Community-based organization
DHA	Defense Housing Authority
KIP	Katchi Abadi Improvement Program
HBFCL	House Building Finance Company Limited
ISAL	Informal subdivision of agricultural land
ISD	Informal subdivision of government land
LDA	Lahore Development Authority
WASA	Water and Sanitation Authority
TEPA	Traffic Engineering & Transport Planning Agency
UU	The Urban Unit Lahore
PECCA	Punjab Energy Efficiency & Conservation Agency
MNAs	Members of the National Assembly
MPAs	Members of the Provincial Assembly
NGO	Non-governmental organization
OPP	Orangi Pilot Project
PDOCHS	Pakistan Defense Officers' Cooperative Housing Society
PPP	Pakistan People's Party
PTI	Pakistan Tehreek-e-Insaf party
URC	Urban Resource Centre
WAPDA	Water and Power Development Authority
PHP	People's Housing Process

CHAPTER 1

INTRODUCTION

Many of the countries are rapidly contributing a lot to the world's population and Pakistan is one among them. At the time of independence, the proportion of the urban population was about 15%, while today urban migration from rural areas is on an unprecedented scale and so far more than way more than half of the population lives in urban areas (United, 2018).

British India was partitioned in 1947 followed by a political turmoil. The August of that year witnessed two independent countries on the world map, Pakistan, and India respectively. At the time of independence, the population of West Pakistan was about 33.7 Million. This figure only increased in subsequent decades. Population increment and its allied challenges were always a matter of grave concern to the housing demeaned in the country; however, it has been very recent that the housing industry has started facing the super saturation. The demand-and-supply deficit of housing is increasing exponentially. Many allied factors also exacerbate this phenomenon. Migration of masses from towns to cities, increased buying capacity, job opportunities in cities are few of these factors.

The population increments of past decades have widened the social brackets as well. The country holds the Middle-income working class as its largest social strata, whereas previously low-income strata were the largest denominator of the country. With more people earning in a household has increased the capacity to buy new housing units. But unfortunately, the cities are running out of space.

The dawn of these millennia witnessed the model of introducing new housing settlements onto the peripheries of cities. These settlements were, in terms of urban development, were satellite towns and thrived onto the outskirts of the cities. The approach to these cities was proudly praised to be vehicle-centric. However, this model had multiple flaws. The cities and its roads were not designed to accommodate such a vehicular load and the infrastructure within the city started suffering due to

unprecedented congestion on roads. Secondly, this model did not truly address the housing demand, but rather focused more on gentrification. It provided single family, low density, town houses at the cost of agricultural and botanical land. These communities are often gated and encapsulated behind boundary walls, and are designed to be approached be single occupancy vehicles. Colloquially all residential typologies resembling this model are referred to as 'Societies'.

The societies have played a significant role in gentrification, and while it may be true that they have provided the housing to many, but seldom affordable or sustainable. The clever marketing techniques and flashy promises of non-depreciating investment made the prices of such land skyrocket. These housing units are far from affordable now and are considered to be a symbol of upper-class dwells.

While the middle-income class had seen their buying capacity increased, the inability to afford a house in theses 'societies' made people look for alternate solution. Hence the informal settlements, as we know it. The working class started to sub-divide the existing residential units where they grew up. Purchasing the land in outskirts proved to be expensive, in terms of capital cost, as well as due to the cost of services, amenities, and transportation. Settling and establishing a household in 'informal settlement' seemed more viable than moving to a gentrified area.

This model also poses huge challenges, as the infrastructure of these settlements is not design to deal with increased population density. Often these areas face huge neglect due to disputed legal status and in absence of urban, building & zoning regulation, this phenomenon exacerbates only. This thesis will critically observe these factors which constitute and give rise to informal housing settlements and will seek to propose improvement in this model and also this research provides an insight into the various methods and programs launched by the Government of Pakistan at different times period to address the housing problem of low-income people. It also offers some useful recommendations for the housing of low-income people settled in urban areas of Pakistan.

1.1 History of the Population of Pakistan

Pakistan is a federal country of four provinces in South Asia, which came into existence due to the partition of British India in 1947. It has bordered by China to the

north, India to the east, Afghanistan to the northwest, and Iran to the southwest. It also has a coastline that is very important in terms of trade and connects it with many countries through the Arabian Sea and the Gulf of Oman. Sindh, Punjab, Khyber Pakhtunkhwa (formerly called the North-West Frontier Province) and Balochistan are the provinces that make up the country.

As it is already mentioned that the creation of Pakistan was due to the Partition of British India. This partition resulted in the exchange of Population from both sides. Around 7 million Muslims migrated to Pakistan from India and about 6 million Hindus and Sikhs migrated there and it all happened in a short period of three months (QASMI, 2019). The population of many towns in Punjab and Sindh increased by 50% as a result of this migration, while the population of Karachi alone increased by more than 100% (Arif Hasan, 2018). It was a difficult time for a newly born country. By the census of 1951, it was brought to light that more than 48% of Pakistani urbanites have migrated from India.

Initially, the refugees settled in all open-air public places, including schools, parks, etc. Most of these public places were evacuated from refugees and were relocated into what was called homeless people's colonies (Jalal, 1995; QASMI, 2019). In order to provide services in these colonies and to facilitate all other social matters, organizations known as the Improvement Trust were formed. Two of these well-known trusts were the Karachi Improvement Trust or the Lahore Improvement Trust (Gilmartin, 1998). The entire management of these trusts was handled by the provincial bureaucracy. Many of these colonies were given the status of permanent settlements when most of their residents acquired tenure rights.

Shortly after the creation of Pakistan (the early 1950s), the government of Pakistan began building basic housing for refugees. Particularly in the case of Lahore, where the program was started very ambitiously, and in the first phase, 40,000 houses were planned to be built. However, due to lack of funds and administrative reasons, the program was discontinued only after the completion of 10,000 housing units. Following this failure, the government launched the Plot Township Scheme. In this scheme, the government was responsible for providing plots in society, water through water tankers, and a service road connecting to the society. Responsibilities for all work related to housing and access to other services were left to the residents. (Jalal,

1995). These towns were insufficient to meet the actual demand. And in the 1950s and 1960s, there was a rapid growth in the pace of internal migration, leading to a dramatic increase in demand for housing in urban areas.

To meet the growing demand for housing by the urban population of the country, two informal processes have come out through which the majority of Pakistani citizens have acquired their homes (Arif Hasan, 2018; Mustafa, 2019).

- Informal possession and reclassification of state's land (IPRS)
- Informal subdivision of agricultural land (ISA)

Both phenomena are very different from each other. The IPRG came to be known as Katchi Abadis whereas the ISA came to be known as slums in official documents. Although the slums are informally developed and the resident of these slums possess tenure security, whereas the residents of Katchi Abadis do not have any security. In Table 1, the comparison of both the phenomenon has been made.

Table 1: Comparison of IPRS and ISA	
Informal possession and reclassification of state's land	Informal subdivision of agricultural land around the city
On state's property	On private property which was for agricultural purpose
There was no security regarding the tenure's duration.	Can get tenure
Large schemes	Small schemes (avg. 60 plots)
Larger plots, proper infrastructure, other facilities	Comparatively small plots, no proper infrastructure
A large bribe to the middle man	A minimal bribe to the middle man

1.2 Urbanization Trends

One of the main factors of urbanization is the overpopulation of rural areas and the expansion of large cities to such an extent that the surrounding villages merge into it. During the years from 1961 to 1998, the number of urban areas in the country had increased from 337 to 538, among which 102 were increased in Punjab province only (A. H. Khan & Soomro, 1998). This is mainly due to the uncontrolled natural growth

of the population of enormous villages which have become urban areas over time (Kugelman, 2014).

From the very first day of its existence, Pakistan has been facing an unprecedented urban housing crisis. According to (Population Census Pakistan, 2017), its population has grown to 207.7 million which was around 132.4 million till 1998. Compared to the 1998 population, this is the increment of 57% at an annual rate of 2.4%. Its urban population, on the other hand, has grown by 2.7 percent per year during the period from1998 to 2017 and is now estimated at 75.5 million. However, the majority of economists and relevant professionals believe that in the recent census, the share of the urban population was deliberately undercounted (S. Khan & Adeel, 2017). A noted Karachi-based economist (Zaidi, 2017) firmly believes that only around one-fifth of Pakistan's population is now living in rural areas. Figure 1 below showing the urbanization trends of the largest cities of Pakistan.
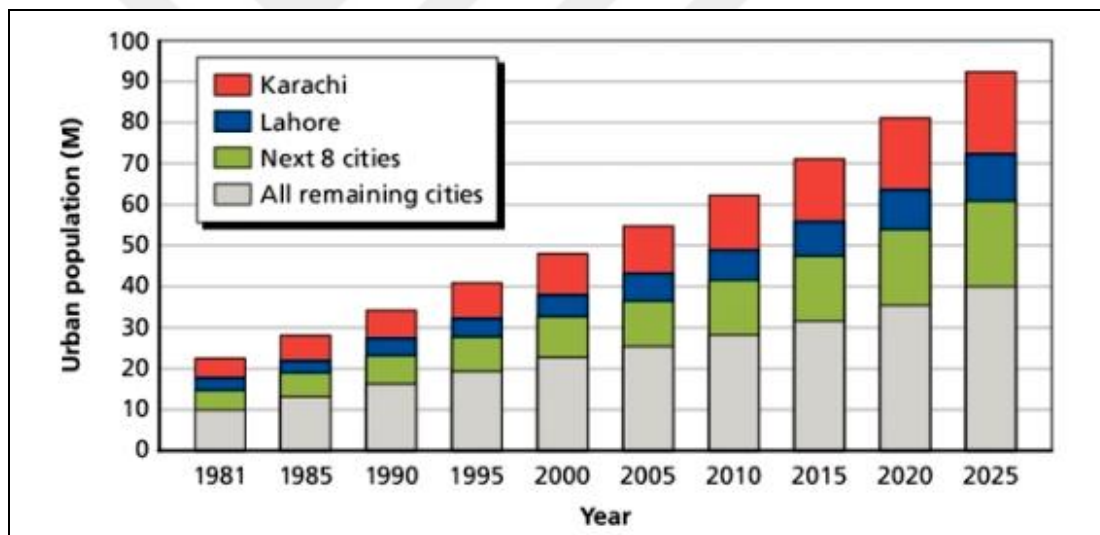
Figure 1: Urbanization trends in Pakistan's largest cities
Source: (Blank, Clary, & Nichiporuk, 2014; A. H. Khan & Soomro, 1998;
'Population Census Pakistan', 2017),

If the current census (Population Census Pakistan, 2017) is considered to be true then, the urban population grew by 2.7% annually between 1998 and 2017 and is now estimated at 75.5 million. As far as the demand for urban housing is concerned, it is estimated around 350,000 units per year, among this 62 percent, 25 percent, and 10 percent are respectively for lower, lower-middle, and upper-middle-income groups (Population Census Pakistan, 2017). Figure 2 below giving an idea about the annual demand, supply, and deficit of housing in Pakistan.

Figure 2: Annual demand, supply, and deficit of housing in Pakistan

Source: ('Population Census Pakistan', 2017; Tirmizi, 2007)
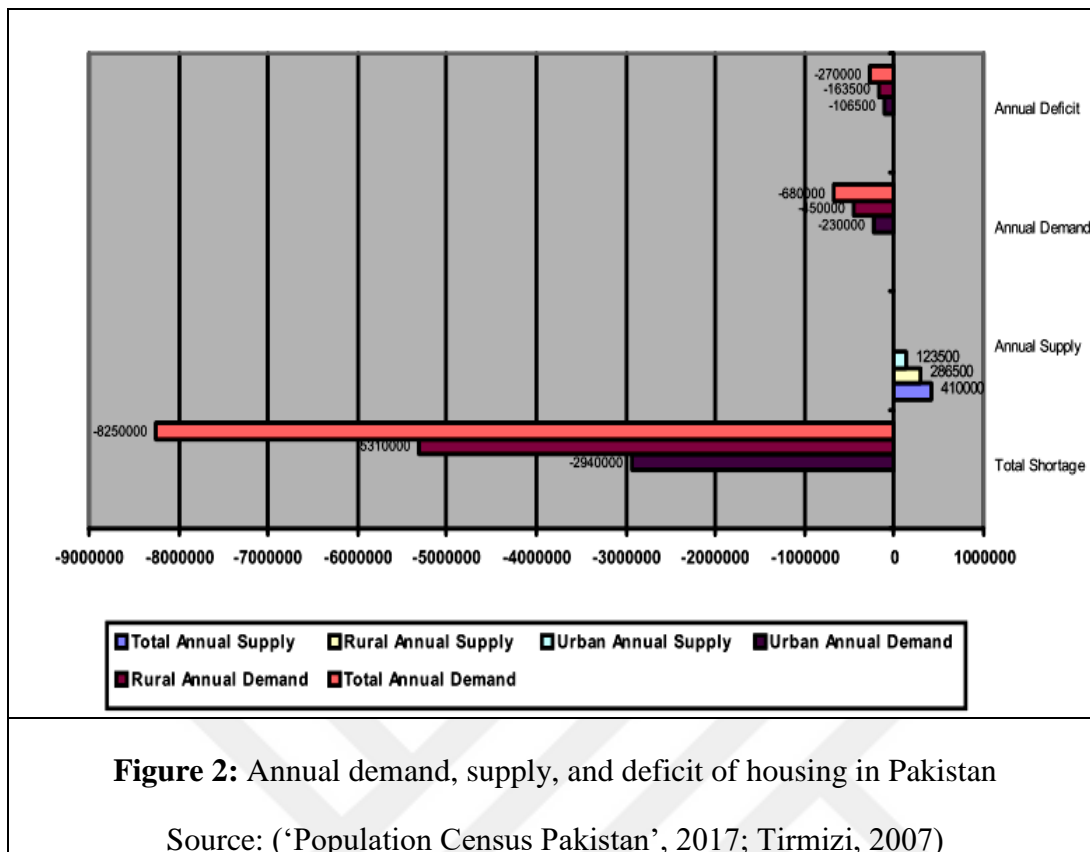
Unfortunately for that much housing demand, the formal supply according to national data is only 150,000 units/ year and the rest of the demand is met by two types of informal settlements (Khalil & Nadeem, 2019). The first one is IPRS for Katchi Abadis and the second one is ISA within the urban settlements. Both the settlements have been explained in the previous section. However, over the past two decades, the demand has been increasingly met by the current density of low-and middle-income settlements.

1.3 History for the Housing of Poor Urban Population

Even for 21st-century planners, providing housing for the poor urban population is still a difficult task (Glaeser & Henderson 2017). The key issues according to Corburn (2017) are the availability of affordable locations for planned and decent housing as well as the country's lack of a culture of planned development. As a result, uncertified planners build unauthorized illegal colonies or houses which are of low-quality, and environmentally unsafe, commonly referred to as slums, and in local dialect as 'Katchi Abadis' (Arif & Kipfer, 2015). Various solutions have been sought to address the problem of housing for low-income citizens in Pakistan. Some of these solutions are sites and services schemes, clearance of Katchi Abadis, and relocation of their

squatters to new residential areas, where basic housing was built. The squatters can get full control of the allotted house on easy installment (Tasneem Siddiqui, 2014; Zafar, Waheed, & Javaid, 2019). However, all these endeavors have failed in sorting out the problem of providing housing to the urban poor, who make up three-quarters of the total urban population of the country. Other than all these efforts, some good and appreciated practices have also been initiated in Pakistan. For example, to improve the living conditions of the largest Katchi Abadis of two neighboring cities, Karachi and Hyderabad, the Orangi Pilot Project (OPP) and the Khuda-Ki-Basti (KKB) project respectively were initiated (Nadeem Muhammad, Muhammad Asim, Ahmed Muiz, 2020). These projects were launched by various development authorities in Pakistan in response to various issues related to public sites and services (based on land banking) schemes. It was found that existing sites and the projects were inadequate so had not been able to provide housing to all low-income people who needed housing. Moreover, in public housing schemes, the people of the high-income group have took-over on plots earmarked for low-income people. As a result, a major part of low-income people have been left behind by public housing schemes and have been forced to live in *Katchi Abadis* (Malik, Roosli, Tariq, & Yusof, 2020).

Later, in the mid-1980s, the private sector was allowed in the development of housing schemes. The decision showed that private developers did not have any intent in providing housing for low-income or poor people. They intended to develop some planned and beautiful housing schemes for targeted income people which were the upper-middle and high-income people. Thus, the separation of the public sector from the housing sector further exacerbated the housing situation for low-income people (Malik, Roosli, & Tariq, 2020; Malik, Roosli, Tariq, & Yusof, 2020).

1.4 Housing in Pakistan

Currently, the state does not have any plans for addressing the migrants from rural to urban areas, nor can it provide them with housing (Arif Hasan, 2018). In the absence of land available near growing urban centers, the choices of living in Katchi or ISA are becoming more difficult. The reasons for this include the daily commute to work and additional daily expenses involve in it (Usman, 2019). Whereas the low-income settlements near workplaces or town centers are converting informally into high-rise buildings without considering the socio-physical issues of unplanned density. To make

it affordable for more people, the per unit area is also becoming smaller. Now, it is happening for the first time in Pakistan's urban areas that people have been forced to sleep under bridges, roundabouts, and sidewalks under the open sky (Arif Hasan, 2018).

On the other hand, real estate developers are laying the ground for a different concern. They are creating gated communities or closed wall housing societies for the upper and middle-class people. These sorts of communities or societies further dividing cities based on their income level. These types of divisions increase the likelihood of civil strife and endangering the peace of the city. These real estate developers collaborate with politicians to occupy public places and turn them into housing societies. International financial institutions provide large loans for homes that have pushed housing out of the reach of the middle-income class. Through various national and multinational banks and the House Building Finance Company Limited (HBFCL), credit facilities are also available to low-income people living in informal settlements, but these facilities cannot meet even a fraction of the demand (Arif Hasan, 2018).

1.5 Current Trend and Housing Situation

The idea about the current trend and housing situation can be obtained from the following paragraph.

During the 18-year period, from 1980 to 1998, the number of housing units increased by 2.47 million, which is an increase of about 70%. But the number of people/room decreased from 3.2 to 2.6 (Arif Hasan, 2018). The houses of one-room have declined from 42.58 percent to 30.38 percent while there is an increasing trend in the houses of 2-4 rooms from 13.68 percent to 19.11 percent (Arif & Kipfer, 2015; Zafar, Waheed, & Javaid, 2019).

This shows an overall improvement in the housing and living conditions in the country. However, this situation is very different between the provinces. For example, in Balochistan and Khyber Pakhtunkhwa, the per capita housing unit increased from 7.6 to 7.8 and 7.9 respectively while the national average is 7.3. Punjab has 7.0 while Sindh stands at 6.8 which is the lowest in all (Population Census Pakistan, 2017). The current supply and demand conditions of housing in Pakistan can be seen in Table 2

Table 2. Current supply and demand (units per year) conditions of housing	
Total demand	700,000
Urban demand	350,000
Rural demand	350,000
Lower-income group	62 %
Lower middle-income group	25 %
Higher / upper-middle-income group	10 %
Formal supply	250,000
Urban supply	150,000
Rural supply	100,000
Source: (Arif Hasan, 2018; Jabeen, Xi Sheng, & Aamir, 2015)	

According to (Jabeen, Xi Sheng, & Aamir, 2015), around 25% of the remaining or unmet urban housing demands are accommodated through settling Katchi Abadis, 60% through the ISA, and 15% through densifying the urban areas. In addition to that, there is an annual housing backlog of around 605,000 houses in total. Among this total backlog, around 50% is for urban housing. As a result of these backlogs along with a low supply of housing units per year, the Katchi Abadis are keep growing. See Table 3 for the Katchi Abadis' population in Lahore from 1985 to 2017.

Table 3. Population of Katchi Abadis (Lahore)				
	1985	1998	2006	2017
Population	2,000,000	2,600,000	4,901,067	8,540,000
Number of houses	227,000	356,000	700,152	1,200,000
Population (in %)	55%	43%	50%	61%
Source: ('Population Census Pakistan', 2017)				

1.6 Problem Statement

Nowadays, Pakistan is facing a housing backlog of about 9 million units and this number is escalating rapidly every year (World Bank, 2016; Mustafa, 2019). And according to national statistics, 58% of Pakistan's urban population lives in some sort of slum, and this percentage has been escalating over the years. These slums, which in common parlance known as "Katchi Abadis" can be defined as a densely populated urban area (legal or illegal) that does not include anything like standard living,

infrastructure, services, and security of tenure, etc. According to (UN-Habitat, 2019), there are at least 550 million "Katchi Abadis" in Asia alone, while in Pakistan, there are more than 3000 Katchi Abadis whose populations were about 7 million till the year 1985 which is now around 9.9 million. Out of all these 3000 Katchi Abadis, only 2302 are governmentally recognized having a current population of around 6 million. The expansion of these informal Katchi Abadis has been particularly extensive in the two megacities, that are Karachi and Lahore. There are at least 539 and 297 Katchi Abadis that are settlers in Karachi and Lahore respectively.
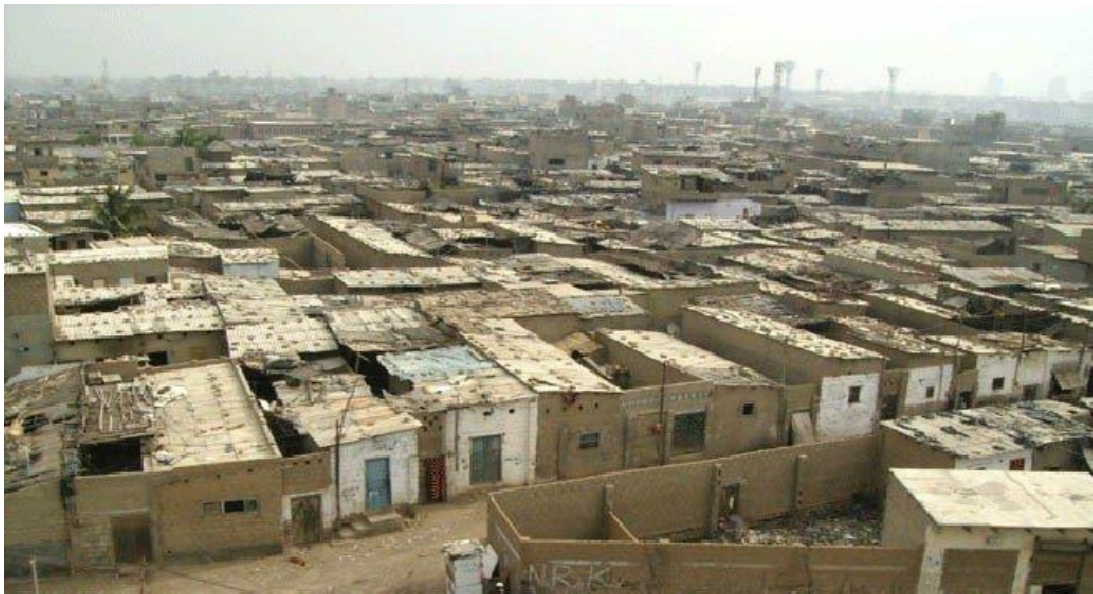
Figure 3. Katchi Abadi Lahore
Source: https://www.thenews.com.pk/tns/detail/556133-editorial-home-called-katchi-abadi

The photo shown above gives a generic idea about the Katachi Abadi's (Squatter Settlements) in the city of Lahore.

The Punjab province is the largest one among the other three provinces, having 55.6% of the total population of Pakistan according to the 2019 census report. There are at least over a thousand such informal settlements in the province where people have been living in squatter settlements. There are about 500 such areas in Lahore where major socio-economic uplift is required.

1.7 Aims and Objectives

To reexamine urban design insights of Lahore's Katchi Abadi system and considering households and neighborhoods as active and resonating elements of the urban fabric, allowing the city to flourish and around them.

To argue and support an alternative development paradigm that supports affordable housing typologies in the city of Lahore.

1.8 Project Research Aspects

- **Primary Aspect:**
  - Urban Morphology of Katchi Abadi
- **Secondary Aspects:**
  - Social Context of Katchi Abadi.
  - Architectural & Spatial Context of Katchi Abadi.
  - Civic Infrastructural Arrangement of Katchi Abadi

  - **Urban Morphology of Katchi Abadi**

During the 1940s and 1950s, after the partition of India, squatter settlements (Katchi Abadis) were established on large open urban lands for settling the immigrants. Traditional institutions based on tribe, caste, and religion rapidly disintegrated. Over time, the population of the settlements increased. Political instability was a major impediment to urban planning, due to which no effective strategy could be adopted. These factors led to a rapid increase in rural-urban migration. Under the military government, all institutions of civil administration collapsed and social and political instability prevented the implementation of the new cities master plans. Lack of proper housing programs led to an increase in homelessness and informal populations, which is a major cause of density in existing Katchi Abadis.

There are two types of Katchi Abadis:
After the partition of India, unorganized settlements were established on state lands. Most of them were removed and relocated to some other places or regularized during the 1960s.
Illegal possession and reclassification of government land (IPRG), further divided into:

I. Formal Katchi Abadis: These are permanent settlements recognized by the state and regularized with a 99-year lease. The infrastructure facilities in these settlements are much better than other types of slums. Refugees from India are usually living here. Figure 3 will demonstrate the formal Katchi Abadis; and

II. Informal Katchi Abadis: These are the temporary settlements that cannot be regularized. The reason for this is either they are settled on valuable land needed for development, or on some unsafe land. These are temporary residences without infrastructure facilities. Usually, nomads and Afghan refugees are inhabited here. Figure 4 will demonstrate the formal Katchi Abadis

Figure 4: Formal Katchi Abadi of Lahore	**Figure 5:** Informal Katchi Abadi of Lahore
Source: (Islam, Mustafa, & Kabir, 2016; Mustafa, 2019)	

Above mentioned Figures 4 and 5 show normal living conditions in formal and informal Squatter Settlements in Lahore.

o **Social Context of Katchi Abadi.**

The Katchi Abadis settlers migrate to the city for improving their livelihoods by escaping the unemployment or seasonal employment of the rural areas. They usually live on insecure public lands which are near railway tracks, riverbanks, and green belts. One of the main problems, especially with the informal Katchi Abadis, is that the residents of these settlements lack basic amenities like safety, drainage, water, and electricity. As far as formal Katchi Abadis are concerned, they are managed by informal sector operators. These operators provide paid facilities for all the services such as land, electricity, water, drainage, etc. But due to corrupt and unorganized

arrangements or operators, most of the services that local people pay for are either not provided to them at all or are not provided properly.

The Katchi Abad becomes the only viable home for low-income citizens as there is no any legitimate model of affordable housing in Pakistan. Because of this, the Katchi Abadi become the only option for the poor because neither the system nor the law is on their side. But it should not be forgotten that these people do not live free in these Katchi Abadis.

Figure 6. Social activities within the neighbors

Source: Taken by Yazdaan Haider Khan

The above photo shows how normally neighbors in these live and have daily basis social interactions with each other. Another angle of this photo shows the side of dominant working family members with in the families. This photo represents the issue of majority of male members being the working members and most of females staying at homes being house wives and have various issues to become a working member in the society due to financial and cultural barriers provide less opportunities for females.

Since 1985, Pakistan has had a national Katchi Abadi policy which defines Katchi Abadi as a settlement of 40 or more residential units on government land (Ezdi, 2015). The policy gives Katchi Abadi dwellers the right to apply for regularization which leads to the occupation of government lands. This is followed by legitimate government investment in development work, such as water and sanitation. But unfortunately, many settlements are constantly neglected and do not have proper development work.

o **Architectural & Spatial Context of Katchi Abadi.**

Due to the inability of the government to providing urban housing to the poor, Katchi Abadis have sprung up in urban areas. Citizens start sitting on poor vacant land and then settlements begin to form from there. The houses of these settlements especially informal Katchi Abadis were mostly made of land and temporary roofing materials (Hashmi, 2016). The residential units of these settlements were temporarily seen in the concrete urban fabric.

During the 1998 Pakistan Census Survey, housing units were classified as Pakkaa houses (made of bricks and mortar) and Kacha houses (made of mud)(Usman, 2019). Currently, these Katchi Abadis have access to water and electricity through legal and illegal sources, but the sewerage and drainage infrastructure is in dire straits. Privately run NGOs provide educational and health facilities and services in these areas. Some private companies have invested in concrete roofs and spent private money to provide water and sewerage at the neighborhood level.

Meanwhile, the government is investing in open drains, water lines, and road access through the slums improvement and regularization program (KAIRP) but due to lack of government funds and other similar issues, the investment fails to meet its proper work objectives (Hashmi, 2016).

o **Civic Infrastructural Arrangement of Katchi Abadi**

There are two types of Katchi Abadis all over the country in general. One of them is regularized Katchi Abadis and the other ones are unregularized Katchi Abadis. The quality of life in regularized Katchi Abadis is relatively better as compared to unregularized Katchi Abadis. In unregularized Katchi Abadis people always have a fear of eviction, they lack mental relief regarding their residence in that area. But when they get legal status of their dwellings, they start to improve their dwelling and the whole area as well, as the ratio of good condition houses in regularized Katchi Abadis is greater than in unregularized Katchi Abadis. The government provides infrastructural facilities in regularized Katchi Abadis, so residents have easy access to all these basic services at minimum cost. These infrastructure facilities provided by the government are efficient and are on a broad spectrum; on the other hand, residents of unregularized Katchi Abadis obtain these facilities on a self-help basis. The provisions of these infrastructural facilities are expensive and unsustainable also as

residents themselves arrange these facilities for the time being only, they neglect its sustainability. After regularization and development of any illegal area by the government, residents themselves started to participate in the improvement of their area as they have ownership rights now and starting to a feeling of possession. But along with regularization and development of infrastructure facilities, the provision of basic public facilities especially for education, health, and convenience of shopping and transport modes should also be provided by the government.

1.9 Limitations & Delimitations

Limitations are the aspects that are out of the architect's context. An architect is not expected to cater to such aspects. Limitation in this thesis are the areas of study which for an architect is not expected to cater to include thoroughly such as justifying the existence of Katchi Abadi and the legalities and infrastructural placement at present, justification of current legalities and infrastructural placements. Justification of the existing economic background and sustainability. The process of gentrification towards these Katchi Abadi's. Also, the environmental impact assessments of current scenarios on the natural environment will be very limited.

Delimitations are the aspects that for an architect he/she (can do) but leaves them by choice becomes delimitations of a project and can be explored further more in future in other projects depending on the requirements of the research topics. This paper includes but are not limited to some topics such as the economic feasibility which can be worked upon in future for the betterment of locals after ideas discussed in this paper or similar idea as in this thesis have been applied on these settlements. Climatic sustainability is also another major factor which can be focused upon especially because the sites of this paper are based in Lahore city and this city was considered to be 2nd most air polluted city in the world by few international organizations in 2019. Some other areas where improvements can be done and are considered under delimitation categories are utilities and public facilities, building and other units designs and urban streetscape and urban networking of these Katchi Abadi's in years to come depending on the situation of current site areas or newly developed areas for these settlers if government takes any steps on these issues.

1.10 Scope of Work

The initial period of this thesis was divided into different research stages. Firstly, probing about the development patterns of Katchi Abadi's, studying its impact on other aspects and vice versa. Inquiring about the economic out reach of such areas and their buying capacity.

Observing in detail and analyzing the socio- cultural fabric of the Abadi's. Also observing the Architectural and spatial distribution of the street scape, including the built and void patterns, which is crucial in deriving a recommendation. Data collection, interviews and urban survey has also been conducted to get a detailed and closer look at the current scenario of these Katchi Abadi's.

After the extensive research in this time span, this thesis proposes a model for affordable and vertical units, also recommending reforms and new ideas for the building regulations.

1.11 Research Methodology

A general to specific approach has been adopted while establishing the study methodology after considering its prime importance. The specific steps which are considered in this connectivity have been enlisted and described.

First and foremost, the selection of the Research topic. Then afterwards follows an extensive literature review, through different outlets and precedent studies, which led to the selection of Case study areas.

Further moving along in the process planning & data collection which involves questionnaire designing, surveys, secondary data through formal interviews with officials and primary data through questionnaire-based interviews of dwellers of Katchi Abadi's was carried out leading to the next stage of data processing in which after analyzing the data the gaps were filled up in the provided information. Then the required corrections were made in the data after with the digitalization and interpretation of finalized data was done on Ms. Word and Ms. Excel accordingly. In the last stages the based on the analysis of the overall data conclusions and recommendations were derived resulting in the form of final documentation.

1.12 Research Framework

The research thesis is composed of five chapters. The first chapter as seen above introduces the problem followed by the literature review done on the topic. This will give the idea of what other authors have written about the topic under discussion at the international and national levels. The second chapter is objectively focusing out the issues and the repercussions of the issues in Katchi Abadis and also indicates towards the effects it has on the other parts of the city of Lahore. In this chapter after discussing the issue areas it will talk about one of the proposed solutions which are vertical and affordable housing. In this part of the chapter it will discuss the general examples taken from international researches and other similar contents. The third chapter delves into the historical and political context of Lahore and serves as a binding agent of this research. This will help the reader in understanding & contextualizing the problems of affordable housing the way it is, as well will provide a healthy resource of comparative data analysis of Regularized and Unregularized housing settlements therein. The methodology of this research has been explained in the fourth chapter. The collected information is processed using mathematical analysis methods and presented by tabular and graphical tools. While the 5th and the 6th chapters respectively discuss the results and the conclusions which are drawn from the analysis of data and the recommendations formulated by the researchers in the light of their experiences in the final chapter of the thesis.

CHAPTER 2
BACKGROUND STUDY

This chapter of background study starts with the process of urbanization in Pakistan in terms of its rapid increase in past few decades and also how different government have played their positive and negative roles in their tenures. Proceeding further the discussion will provide the information regarding basic issues and other relative aspects which are part of the important elements of the major roots of the existence of problems regarding Katchi Abadi's.

To understand the main causes of this whole topic the existing housing policies in Pakistan are very important to be disused in details when we are discussing these low-income settlements. So, some important issues will be discussed which are more relative to our topic of Katchi Abadi's. starting with the issues which are greatly connected to these low-income sectors of the city. Moreover, how these settlements are structured physically and socially discussing its characteristics and also how this scenario have its effects and repercussions on the housing demand in the city of Lahore. The drastic increase in urbanization in recent years has been a major concern with the authorities and also the local all over the country, so how this is urbanization is affecting the country and also how it is forcing a specific group of low-income people towards these settlements.

Moving along further in this chapter we will be talking about the vertical urbanism and affordable housing mechanism. Starting with the subject of vertical urbanism we will be discussing some ideas that in what ways the concept of compact city and conventional urban fabric function and how are these subjects connected to the issues discussed in this paper. We will focus by examples such as the radiant city model and then emphasize on the importance of vertical urbanism, urban land usage, benefits of zoning of the sites and other discuss relative concepts such as the regulation of the land and its legal framework procedures.

Affordable housing and also the important issue which will be discussed towards the end of this chapter along with a discussion of relative financial models which are related to this topic and this is a very important concern in this paper while talking about the low-income people of these Katchi Abadi's. We will be discussing on housing finance models and taking examples how they have been implemented in other parts of the world for such similar conditions and also in general. The part will be focusing more about the laws and services by the governments for people regarding micro financing, housing ownerships and housing financing.

2.1 Urbanization in Pakistan

According to social scientists, the rate of urbanization could be reduced. Urbanization is a global phenomenon that has affected practically every country on the planet. It's a macro-level parametric occurrence. It increased to almost 40% in 2009, and it is predicted that by 2030, more than half of Pakistan's population will be living in urban regions, with the majority of the people moving to urban areas (Qadeer, 1996). Three reasons contribute to Pakistan's rapid urbanization. In the first place, it is the natural increase in population induced by a high birth rate despite the efforts of the Family Planning or Population Welfare Departments. This feature accounts for 70% of the overall amount of urbanization.

According to UN-Habitat, "Continuation of increasing urbanization in developing countries with the least financial resources to cope with the problem of urbanization will be one of the key challenges to peoples in the twenty-first century. Cities in emerging countries are at present dealing with massive backlogs in housing, infrastructure, and services, as well as increasingly overloaded transit systems, unsustainable consumption patterns, failing sanitation, and pollution."

The housing shortage in metropolitan areas, particularly for low-income individuals, is one of the most serious problems generated by Pakistan's fast urbanization. According to the National Housing Policy of 2001, the country had a backlog of 4.3 million dwellings. By now, the backlog may have surpassed 5 million items. The majority of this housing backlog is related to low-income housing. The annual requirement for extra housing is 570,000 units, but the annual output is 300,000 units, resulting in a recurring backlog of 270,000 units (Watson, 2009).

2.2 Political Context

The Pakistan People's Party (PPP) came to power in the 1970s with a socialist ideology and launched the Ownership Rights Program, which aimed to regularize and develop Katchi Abadis on government land. However, it was not until 1978 law, the Katchi Abadi Improvement Program (KIP), was enacted, allowing provinces to regulate the institutional provisions and regularization processes. One of the governing authorities/institutions was the urban development authorities. In 1987, the Junejo government set March 23, 1985, as the deadline for regularizing Katchi Abadis in Sindh province. In the meantime, new Katchi Abadis have been made. The cut-off date was meaningless because the Katchi Abadis would continue to expand upwards, often encroaching on neighboring land if it is accessible (Nawaz Anwar & ., 2003).

The ISALs unlike the Katchi Abadis, have not benefited from a national program. Members of the National Assembly (MNAs), Members of the Provincial Assembly (MPAs) looted the money, and local government projects have all contributed to their acquisitions. Provincial governments, on the other hand, have not provided adequate funding to their local governments to continue these efforts. The house owner must fill out a lot of documentation and attend many offices as part of the regularization process. Residents get de-facto ownership of a Katchi Abadi after receiving information about its regularization.

2.3 Existing Housing Policy of Pakistan

The current official housing strategy was drafted in 2001. It highlighted resource mobilization and encouraged financial institutions to provide market-rate mortgage loans for housing. It also advocated the establishment of a housing refinancing window at the State Bank of Pakistan for long-term multilateral institutions such as the World Bank, Asian Development Bank (ADB), and Japan International Cooperation Agency. For low and lower and middle-income clients, they also provided incentives to the construction services. Besides all these through resettlement plans, also proposed additional regularization of informal housing and slums. To address the housing crisis, needs for research on building materials and constructions were also identified (Arif Hasan, 2018b).

Despite political parties' promises, few policy recommendations have been implemented. For example, except for assisting builders in obtaining loans, lowering

tolls on them, and increasing the number of informal housing settlements for regularization purposes. Consequently, many banks offered mortgage financing. The strategy also recommends that provincial governments enact legislation to enable even the smallest administrative units to properly implement the program. These programs largely assist people in the lower and middle classes.

Pakistan implemented neoliberal policies in its economic and housing sectors during the first decade of the 21st century. As a result, consumers gained direct access to the housing market, which was previously dominated by developers in major cities. Developers have more lately begun to cater to the lower and middle classes. However, to keep the product economical, the units constructed are far too small to adequately accommodate a family of five. The developers purchase property from private owners or government-run schemes and acquire loans granted for their clients via the House Building Finance Company (HBFCL) also lowering the cost. Developers such as the Defense Housing Authority (DHA) have recently begun to appeal to the lower-middle classes. However, to keep the product economical, the units constructed are far too small to adequately accommodate a family of five.

The developers and their customers have a dreadful working relationship. Clients accuse developers of lying to them. Consequently, clients usually create associations that eventually assume responsibility for the maintenance of the housing complexes. House ownership has been out of reach for middle-class couples due to the property market's exponential growth over the last three decades. However, a recent judgment by Pakistan's Supreme Court prohibiting developers from selling or allocating land after determining that the land was acquired illegitimately.

2.3.1 Issues Related to Low-Income (Katchi Abadi) Housing

The following are the main issues of Low-Income Housing in Pakistan:

a) The cost of excellent, permitted, and planned house is significantly higher and not in the range of low-income people.

b) Low-income people's self-help potential has not been fully recognized.

c) Because of their low incomes, poor people are unable to obtain adequate accommodation. Low-income housing projects, on the other hand, never included poverty eradication through income production programs.

d) Previously, the government took no tangible actions to enable, control, or help low-income housing. As a result, the gap between low-income housing demand and supply could not be bridged. Similarly, no research was sanctioned for finding out solutions for resolving the issue of low-income housing.

Figure 7. Garbage conditions on the site
Source: Yazdaan Hiader Khan

Figure 8. Drainage issues on the site
Source: Yazdaan Hiader Khan

These two photos shown above puts light towards the issues of poor management of garbage management, sewerage system and sanitary problems in the areas. This is the direct result of ill managed and under funded management by higher departments.

2.3.2 Characteristics of Squatter Settlements

There are fundamentally three distinguishing qualities that contribute to the comprehension of informal settlement.

- **Physical Characteristics**: Because of its illegal status, a squatter colony lacks minimal or sufficient services and infrastructure which includes water supply, sanitation, electricity, health centers, roads and drainage, schools, and marketplaces.

- **Social Characteristics**: The majority of informal settlement households are low-income and their house members work as wage labor or in a variety of informal businesses.

- **Legal Characteristics**: The lack of ownership of the land parcel on which they have built their home is the most distinguishing feature of a squatter community.

2.3.3 Repercussions of Demand on Housing in Lahore

Lahore's annual housing need is 120000 units having approximately 42000 and 32000 units of formal and informal (Katchi Abadis) respectively. The remaining demand is met by increasing the density of existing dwellings. Lahore created 1.7 million households between 2005 and 2020, at a rate of 100,000 units each year (Arif Hasan, 2018a). Because the government's current resources and policies cannot meet this need, Katchi Abadis will continue to develop more and more. Another problem is housing location. The city in the old times was small, the land was cheap, there was no middle-class demand, and the city's outskirts were close to the city's workplaces but now day's middle-income housing developments and elite class enclaves have pushed the city periphery further beyond the city's workplaces. Traveling on daily basis from these settlements to workplaces is prohibitively expensive and time-consuming and because of this, demand for housing in low-income communities in the inner city emerged. This problem adds to formal and informal markets, resulting in very high concentrations of 1,200 to 3,000 people per hectare. Existing Katchi Abadis are being densified by converting single or double story informally built homes into multi-story buildings in various ways e.g. Homeowners build upstairs to accommodate a growing family or to provide rentals for extra revenue or usually informal developers buy property from owners and build two more apartments to the top floor only to earn money. Moreover, in the construction process, no Building Control Authority rules and regulations are observed and densification of buildings that lack cross ventilation also resulting in a substantial number of deaths (Hasan, 2015).

2.3.4 The Effects of Rapid Urbanization on Country

Low-income households are present in all the big cities of Pakistan, these Abadis comprise at least 30% of the urban population. In Pakistan reasons for the development of low-income households other than the high population growth rate, are the high rate of unplanned urbanization, unemployment, and migration into the cities from rural areas as the rural fraction of the population has been decreased from 71.7 % in 1981 to 60% in 2005 and an urban fraction of population has been increased due to concentration of facilities in a limited number of major cities but the most important, old and basic reason of development of low-income households is high migration of people from India at the time of partition in 1947 (Hasan, 2010).

The Term 'Kachi Abadi' refers to settlement on the state land without ownership rights. Under the revised Katchi Abadi act 1987 the settlement can be declared as official Katchi Abadi that is not an ecologically dangerous zone, not on areas earmarked for amenities, not required for the development needs of the cities, and having at least 40 dwelling units. This trend of settlement onto various government or private land without prior approval has led to a significant increase in population migration from the rest of the country. This trend is amplified in big cities, like Lahore. The rapid shifting and settlement of people onto various lands has created many problems, including healthcare, poor infrastructure, and urban sprawl.

2.3.5 The Reasons of Settlements of Low-Income Housing in Punjab

In the development of a Katchi Abadis, two different processes are involved. The organic and induced processes are two examples. The organic process describes the dynamics and tensions that emerge from inside the settlement and squatter camp. They establish plans and initiatives for the settlement's general development, working with broader, city-wide aims and ambitions. In the sense that they constitute a continuum, with one step or process overlapping and even running parallel to the next, these stages are definitive in their outcomes.

2.3.6 Regularization of Low-Income Settlements

Different programs have been applied to solve the problems of residents of low-income households that have been adopted by different organizations according to their specific circumstances. Households with a low income The Pakistani

Regularization/Development Program (KRDP) attempts to enhance the housing and general living conditions of low-income individuals in low-income families. The government takes steps to enhance these low-income families to meet the KDRP's aims and objectives. In this sense, land tenure is critical because individuals unlawfully occupy the property, and a lack of security inhibits locals from investing in their homes and communities, preventing growth in low-income areas (Nasreen, 2009).

2.4 Vertical Urbanism

2.4.1 Compact City & Conventional Urban Fabric

In the context of urbanism, the compact city is a relatively new notion. The credit goes to the concept to Jane Jacobs and her seminal essay "The Death and Life of Great American Cities", which says that dense and varied metropolitan centers like Manhattan are preferable to the cleanly planned Modernist City or Garden City. However, the term Compact City did not become widely used academically or professionally until the late 1980s. This is due to a growing worldwide awareness of sustainable development following the publication of the Brundtland Report in 1987, which led policymakers and professionals to reconsider the role of urban design and development in protecting and sustaining the human habitat (Drolet, 2015).

The early arguments on this idea and its implications in planning were described in Michael Breheny's 1992 article. Two government documents, both issued in 1990, were particularly noteworthy. One is the United Kingdom's "This Common Heritage" White Paper on the Environment. Both acknowledge the importance of urban design and planning in attaining environmental and urban sustainability and advocate for the 'compact city' as a solution to the issues. The Urban Task Force in the United Kingdom, chaired by Sir Richard Rogers, produced Towards an Urban Renaissance in 1999, which is perhaps the most well-known of these reports (A.J. Smith, 1991).

Nevertheless, there have been ongoing discussions over the concept of a compact city. On the one hand, proponents argue that the compact and functionally mixed urban form may neatly handle two key urban problems: the need to protect and preserve the environment and the goal to maintain the high quality of life that a healthy city delivers. Opponents, on the other hand, have pointed out many flaws in the notion. Some opponents believe the link between compact urban design and environmental benefit isn't as clear as the planners would want. Others argue that the compact city

has always been rooted in European culture, frequently alluding to medieval or early modern European urban patterns and therefore implying a set cultural identity.

2.4.2 Historical Context: Radiant City

The city is made up of a mosaic of many components that influence its appeal. These factors include anything from geographic characteristics to economic possibilities to social factors. As a result, urbanity and urban planning should be seen from several perspectives. Le Corbusier, a Swiss-French architect, wrote extensively on the subject of urbanity. His approach to urban planning principles evolved over the course of two decades in the twentieth century, and It was first published in parts in L'Espit Nouveu before being included in his 1925 book Urbanisme. (Le Corbusier, 1925).

In his work Urbanisme, Le Corbusier defined the job of conventional city planning. It was based on a reasonable examination of actual cities in Europe and North America. He despised the conventional European city plan, with its loud, convoluted, and congested streets and high-density tenement dwellings, which he believed were both harmful to the residents and impractical for future economic and technological progress. It resulted in the conventional urbanization process being stagnant, if not dead. Each city created in this manner may be considered as a single organism as shown in figure 5. (Rodríguez-Lora, Navas-Carrillo, & Pérez-Cano, 2021).
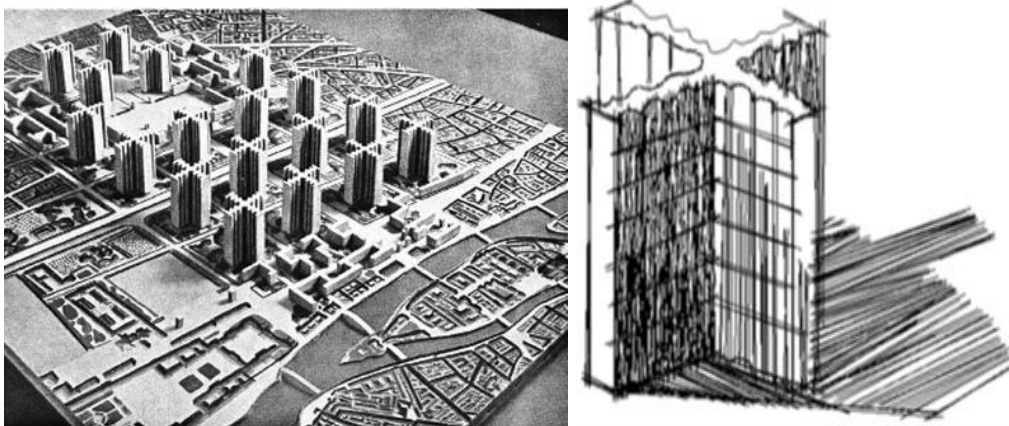
Figure 9. a)Le Corbusier's Conventional City Planning   b) Single Archetypal
Source: (Le Corbusier, 1925)

As per Le Corbusier, a complicated concept of one compact city, developed from beginning to finish by one designer, maybe the solution to a new city issue. His city planning ideas were geometric in nature and derive from his vision of architecture as

a "complex art of building." As a result, Le Corbusier's city-planning concepts were based on strict geometry and a consistent layout that included building axes, right angles, and basic square shapes. The architectural and urban planning approach taken by Le Corbusier demonstrated that creating a modern city cannot be done in isolation, that is, without an understanding of the problem's multi-scalar complexity. It was revealed in numerous city visions he had.
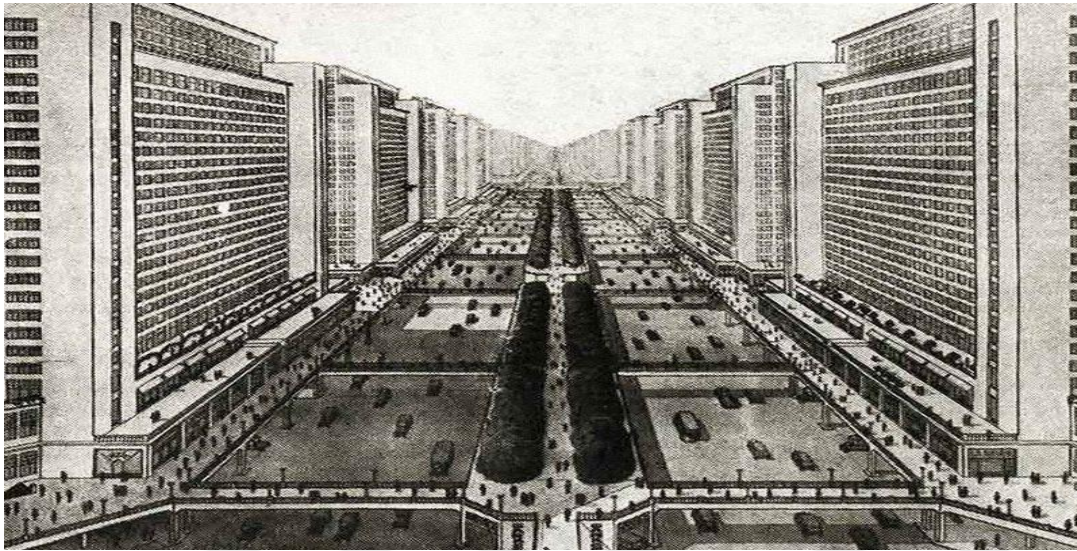
Figure 10. Model to relieve congestion on major roadways (Source: (Bailey, 1905))

Source: (Le Corbusier, 1925)

2.4.3 Vertical Urbanism

Vertical urbanism tackles design challenges in high-density urban regions supported by complex urban systems that traditional planning rules and techniques can only manage insufficiently. All components of urban planning including circulation, land use pattern, open areas, ecological system, and human activities, are dispersed in a different pattern and their interactions change when population density reaches a certain threshold and a city is driven by a vertical dimension. The floor area to plot proportions in some of the world's largest cities, such as Hong Kong, Shanghai, Tokyo, Seoul, and New York, can surpass 1:12 and residential densities can reach 400 people per acre. The planning territory is no longer only the surface, but the full built-up area as well as the prospective buildable vertical space above.

Transportation, programs, and open spaces are all tightly linked in such communities, with a system that extends from beneath to the tops of skyscrapers. Cities must look at

the city as a three-dimensional matrix for urban design solutions rather than focusing on land planning. It's worth reiterating that verticality isn't limited to regions rising from the ground; it also includes searching under the surface for underground transit, service, and purposes, as well as their connections to above-ground uses and buildings. The finest examples of such vertical linkages throughout height/depth are the districts around any major interchange metro station in places like Tokyo and Shanghai (Lin, 2016).
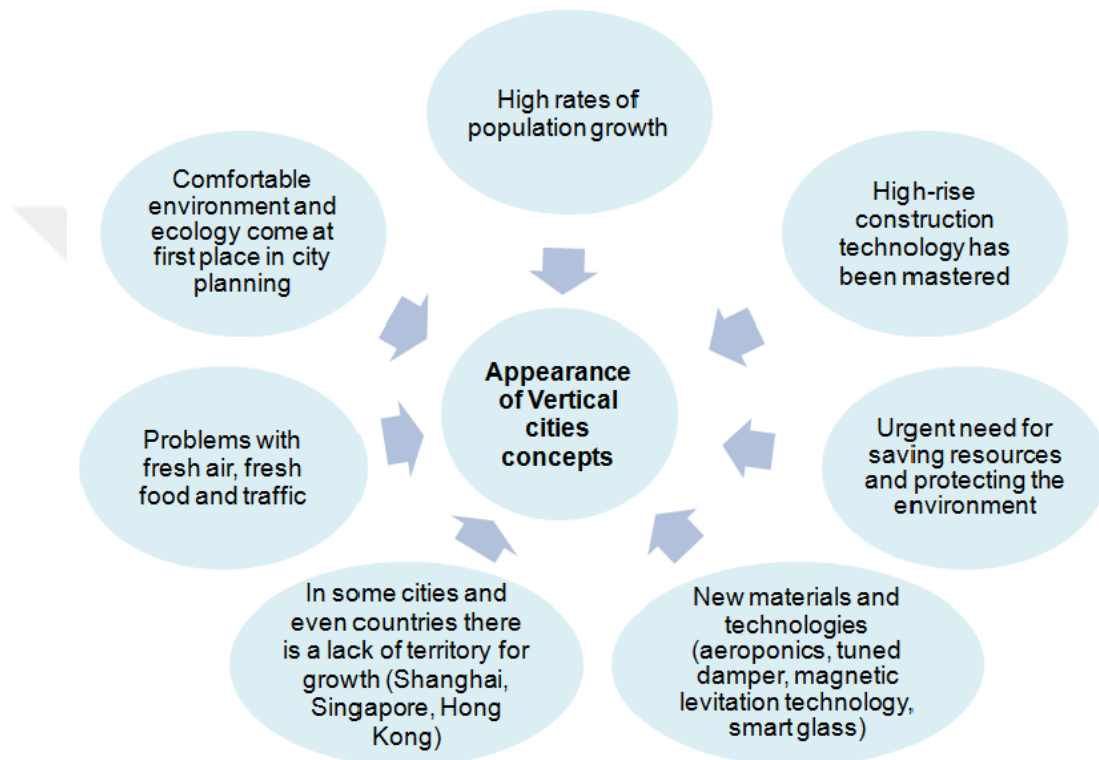
Figure 11. Appearance of vertical cities Concept

As per figure 8, Commercial development, public usage, pedestrian circulation, and parking facilities are frequently combined with an inner-city or inter-city transit hub that links to the public area and open areas above in multi-level underground spaces. Since more than a century ago, architects and planners have dreamed of urban shapes to handle rising density. Richard Rummell and other painters imagined a layered metropolis of skyscrapers connected by interconnecting bridges and served by vehicle and rail transit networks on many levels above and underneath in their drawings of future New York in the 1900s and 1910s. These early-20th-century ideas of the city as a machine are no longer popular, but the issue remains: can we build a high-density urban environment that is efficient, sustainable, and habitable while maintaining the

amenity, landscape, and way of life that we have on the ground? The urgency and urgency have only grown as cities have become larger and modern urban systems have gotten more complex.

Figure 12. Layout of 20th Century Pragmatic Cities

Source: (Bailey, 1905)

Many attempts were made in practice throughout the mid-twentieth century, both pragmatic urban strategies and aspirational utopian projects, to codify such verticality in urban architecture as shown in figure 9. Despite its restricted scope of involvement, Minneapolis' skyway system, which opened in the 1960s, was one of these important initiatives. It connected downtown buildings, enhanced public transportation, and extended pedestrian circulation and shops to the top levels. There were also a number of design initiatives, many of which were linked to the Megastructure movements that advocated for radical notions that challenged the existing quo and provoked fresh Vertical Urbanism thinking. Vertical urbanization is more of a static shape than a dynamic approach of urban development and design pursuing a synthetic answer. This concept is influenced by modern systems ranging from underground mass

transportation to the futuristic urban farm, and it strives for a three-dimensional holistic organization of infrastructure, space, and ecology. Vertical urbanism's features are described by three keywords: density, intricacy, and verticality. Density refers to the concentration of people, the size of the physical environment, and the degree of social contact. The numerous and linked urban systems that form the backbone of the operation of a modern metropolis are referred to as complexity.

2.4.4. Urban land use, zoning & Sprawl

Many communities have imposed development limits to reduce the impact on agriculture, forestry, and outdoor recreation. The market cost of housing rises as a result of such restrictions on the supply of land for construction. Housing costs are also affected by the proximity of agricultural or business zones. Densification refers to the utilization of both horizontal and vertical space to increase the number of homes in a given region. By focusing on the population and the use of mass transportation, walking, and riding cycles, these policies not only assist to prevent urban sprawl but also obtained economies of scale in providing municipal services.

TOD (Transit-oriented development) is a densification plan that entails improving urban transport infrastructure and allowing for more building rights for cheap housing near transit zones (R. Balachandran, 2018). Nevertheless, governments must adopt context-specific measures to minimize price increases that lead to gentrification and the exclusion of mass transport users. The LA County Metropolitan Transportation Authority has come up with a novel solution: MATCH is a public-private financing partnership with a policy that requires 35 percent of any homes developed on its property to be accessible to household incomes < 60% of the area's median wage. Single-use zoning, which emphasizes distinct and specialized uses of land, can be contentious if it does not completely represent a society's necessities. For instance, considerations on the kind of residential units (single-family, multi-family) and accessibility (road width vs. sidewalks) can have health (obesity rates are greater in vehicle vs. walkable communities) and safety implications (Ali et al., 2021).

Affordable homes strategies frequently focus on creating vibrant communities through guidelines for example; inclusionary zoning – which is defined as "the co-location or instant proximity of homes, workplaces, and services in buildings, neighborhoods, and districts. Blended neighborhoods are seen to be more varied and socially cohesive, as well as promoting social mobility.

a) Scattered among households participating in development's various income levels.

b) Distributed using a geographical approach that mixes various income groups.

c) In various tenure types, proportionately dispersed at varying rates (rentals, ownership, etc.).

d) Guaranteed subsidies for reduced households for a specific period (e.g. reasonable housing salvation programs).

e) Provided to low-income households instead of to those in the surrounding region.

Inclusionary zoning is used in several communities. Developers are required to create a certain number of houses, either negotiated with the planning establishments or as a percentage of the development value, under mandatory inclusionary zoning. Incentive inclusionary zoning is an option, with benefits for developers to create affordable homes including:

a) Performance criteria used to modify planning standards. Increasing site yield will

encourage affordable housing such as boarding houses, student accommodation, and retirement homes.

b) In return for the construction of specialized housing stock, promising systems that ease development regulations such as elevation, solidity, building setback13, or parking controls are implemented.

c) Costs for planning applications, infrastructure tariffs, or rates must reduce, waived, or refunded.

Mixed-use complexes contain residential, business, retail, recreational, and other sorts of spaces. which can range from a single structure to large-scale neighborhoods. Because of concerns about noise, odors, and privacy in residential neighborhoods mixed with commercial and industrial sectors, adoption of mixed-use development has been ongoing in the past, and however, this is changing as the advantages become more evident. (Alvarez, 2017).

Mixed-use developments, on the other hand, cannot guarantee affordability on their own. According to recent research in Toronto, housing in mixed-use zones in central

regions was very affordable than elsewhere in the city, given the ease of access to facilities and services, which drew specific occupational groups. The result was that housing affordability for high-income knowledge workers increased while it decreased for low-income employees in low-wage industries including social and public service, commerce, and manufacturing. According to the findings, communities should develop mixed-use zones in conjunction with laws that encourage inclusionary zoning and reasonable housing units (Markus Moos, 2018).

2.4.5 Land Regulations & Legal Framework

Smaller batch sizes, minimum lot requirements, maximum floor-to-area ratios, and the floor space index are all examples of land-use restrictions. Depending on the availability and projected housing supply in the city, as well as whether it is undergoing population expansion, stagnation, or decrease, land-use restrictions range from being very tight to being overly loose. For instance, in Mexico City, minimum parking restrictions were removed because they were hurting residential growth and putting an upward burden on rentals and home prices (Ikeda & Hamilton, 2015). Cities have attempted to boost density through land-use laws in some situations, but this has simply worsened the demand-supply gap. For example, in 2017, Toronto enacted laws aimed at encouraging the building of multifamily housing units, although demand remained centered on isolated, and single-family houses (Saminather & Scuffham, 2018).

Similarly, cities have discovered that decreasing FSI restrictions reduces "building density," but not necessarily "people density," since individuals opt to occupy smaller areas - often illegally and unofficially. Reduced height limits on key buildings can contribute to price increases and urban sprawl: This resulted in a 12 percent extension of Beijing's municipal borders and a 20% increase in home prices (Ding, 2013). Another unexpected consequence of lower FSI limitations is that it encourages developers to build fewer, bigger units in order to reduce the amount of space required for lobbies, staircases, lifts, etc. As a result, the availability of smaller flats is limited, lowering affordability. In terms of population density, Indian cities have among of the world's most restricted FSI (Chennai have FSI=1.5, Bengaluru=3.25, and Mumbai=3.5) in comparison to 20 in Tokyo=15 and Singapore=20. Mumbai delivers better FSI to developers as an incentive to rehabilitate slums and build roads and

infrastructure (*Making Housing Affordable A Supply-side Reform Agenda for Urban India*, 2018).

2.5 AFFORDABLE HOUSING & FINANCIAL MODEL

2.5.1 Housing Finance

The other component, low-cost house financing, has remained out of reach as well. The distinct demands and capacities of poorer families have been known for some time as shown in Table 4, but mainstream housing finance institutions have been unable or unwilling to change their products and procedures to accommodate them. The typical perspective is informed not just by good financial considerations, but also by the financiers' own expectations and experiences, as well as those of the customers with whom they transacted. As a result, a self-fulfilling image of what home finance is and should be has emerged. For example, consider the following: Housing financing implies that the land and house are purchased as a single unit or that the borrower already owns and has legal title to the property.

Table 4. Limitations of conventional financial institutions

Strict eligibility requirements - A defined minimum "sufficient" income, such as $6,000 - Savings at a certain minimum rate on a regular basis - A regular job and a place to live - Collateral in the form of traditional marketable assets	Constraints faced by low-income people include: - An annual income of less than $2,000 - Intermittent savings at a low rate that is frequently not deposited - Changes in residence and work on a regular basis - Small assets in a format that is rarely accepted by traditional financial institutions
Strict loan terms - Large minimum loan size - loans only for finished homes - High down payments and down payment ratios to total house price - Maturity of 25 years - Market rate interest - Regular amortization payments through banking - A total cost of housing finance that frequently exceeds 20% of income	Low-income people's needs - small yet regular loans - financing for the progressive acquisition and/or renovation of a home - Inexpensive down payments - Extremely quick maturities - Interest rates that are below market or subsidized - For cash payments, flexible lending schedules, convenient locations, and business hours are available.

	- Only allocating 8-10% of their household income to housing expenditures.

The lender has to be able to keep the land as security, thus the lender insists on the borrower owning it. Of course, the lender just owns the title documents and does not actually own the land. The capacity to re-possess is a very other matter. If the title was originally in the lender's name rather than the borrower's, and later transferred once the debt was paid off, the lender's hand may be strengthened. Of course, the documentation necessary would change, but it would not necessarily be more costly or time-consuming.

Furthermore, mortgage-based loans presume that the borrower has a well-defined career and earnings path that best corresponds to a predetermined payback plan. For the lender, this would undoubtedly reduce monitoring and accounting. Many low-income borrowers, on the other hand, are neither employed nor able to forecast their work prospects. A customizable arrangement in which repayments could be paid as and when the borrower had cash (but not later or less than promised) would be preferable, and computerized accounting systems would relieve the lender of any additional effort. Quicker loan repayments would lower earnings, but those losses would be compensated by faster loan recirculation.

2.5.2 Tweaking Housing Finance

According to the government, there is a funding shortfall and hence insufficient housing finance. It is also said that the shortage of money is due to the perceived dangers and difficulties in lending for home finance, particularly to lower-income households. The government has implemented a variety of innovations and initiatives in order to expand and improve housing financing.

If capitalists could deal with housing, in the same manner, they deal with other industries, they would be more ready to contribute financing. A 'secondary mortgage'

market, it is suggested, could keep all the complexity of home lending at bay. It would prevent having to deal with hundreds of tiny borrowers' whetting and assessments, as well as being engaged in their defaults. Households with low incomes in emerging nations were unable to increase or alleviate their access to home finance. The influx of cash into housing as speculation resulted in subprime loans and a financial crisis that threatened to destabilize the entire economy. There was a minimal direct influence on housing financing for low-income families, but there was a significant impact on economies (*Policy Responses to the Economic Crisis: Investing in Innovation for Long-Term Growth*, 2009).

2.5.3 Micro Finance & Mortgage

Table 5. shown below are distinguish parameters of micro and housing finance.

Table 5. The Difference Between Micro-Finance and Housing Finance

	Micro Finance	Housing Finance
Income Impact	Loan increases income	The loan has no impact
Loan size	Under 1 x Annual income	Over 10 x Annual income
Viability of borrowing	Lender advises	No lender advice
Borrowing expectation	Continuous series	On Loan
Credit rating	Built-up over time	No
The legal status of the borrower	Not important	Very Important
Group support	Useful	Not so useful

Source: (Policy Responses to the Economic Crisis: Investing in Innovation for Long-Term Growth, 2009).

There has been no dramatic re-design of the fundamentals, and the result has had little influence on expanding home financing lower down the income ladder. More effort is still needed to meet the various realities and requirements of low-income households. Microfinance was created to fulfill the requirements of the poorest households for financing to cover their daily necessities, especially for income-generating activities. It began as a series of small-scale learning-by-doing projects that were eventually integrated and systemized. Regardless of the fact that it went against popular belief and practice, its proven efficacy rapidly acquired widespread acceptance.

Microfinance is focused on the supply of extremely modest, short-term loans backed by a strong sense of community. Members begin at the lowest level and work their way up in terms of creditworthiness and capacity to take on larger loans. The borrowers themselves handle a lot of the costly and time-consuming aspects of lending (collecting, tracking, verifying, and whetting). Microfinance has had considerable success, particularly when home loans are made available to established borrowers, but it has not proven to be as beneficial as a stand-alone method. This is due to fundamental contrasts between the needs, opportunities, and practices of microfinance and those of home financing. One of the few positive news stories of material progress was the impact of modest savings and loans, as well as the potential and magnitude of the impact, and, not least, in proving the poor's 'bankability.'

Housing financing, unlike a normal microfinance loan, is not meant to have an immediate and beneficial influence on the borrower's capacity to repay the loan. In the medium run, it is likely to necessitate extra inputs and expenditures, reducing disposable income even further. Microfinance loans provide borrowers greater flexibility over their repayments than housing loans, which demand a longer-term commitment. Microfinance loans can be repaid more rapidly than housing finance loans because of their lesser size (usually a tenth of housing finance loans). Microfinance assists customers in establishing credit by progressively raising loan amounts to match good payback history. Lenders will not approve a second loan, even if the first one was successful, in order to assist more households.

After a member has gotten a loan and constructed a house, there is little desire or incentive to engage in group solidarity or support activities with microfinance. When it comes to housing financing, once a member of a group owns a house, there is little need for them to continue to help one another. Lenders also form groups of borrowers to give peer support, and because the loans are issued in sequential order, the rapport between group members develops into meaningful relationships based on mutuality.

2.5.4 Relationship Between Home Ownership & Mortgage

In most nations, fewer than 30% of homes have mortgages, and the loan-to-value (LTV) ratio is often less than 50%. As a result, mortgages account for a significantly smaller percentage of GDP in most nations than they do in wealthy countries. Only a few households, with a few exceptions, rely only on formal-sector financing to support their home, as seen in Fig. 13
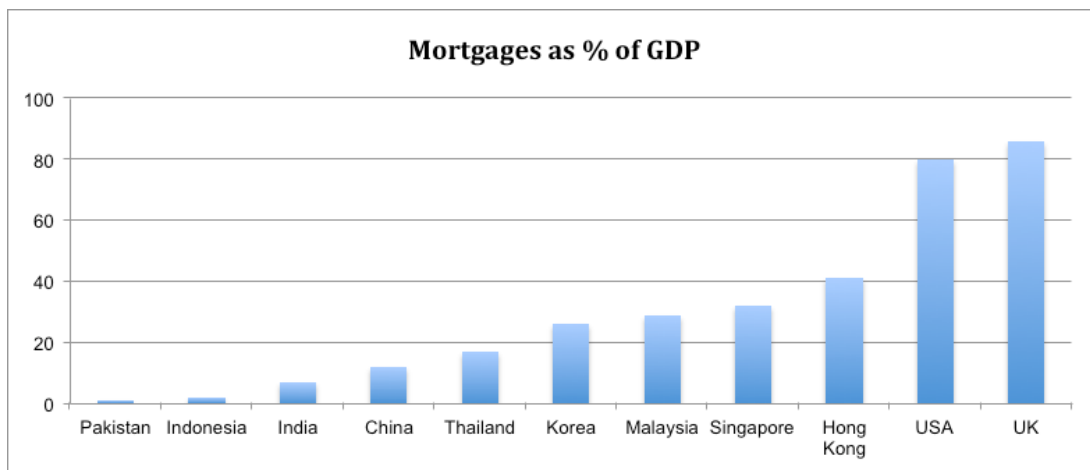
Figure 13. Mortgage across the world as % of GDP (Source: (Bauluz, Govind, & Novokmet, 2020))

However, despite the low incidence of mortgages, house ownership is not low, and is frequently greater than in many Western nations, as seen in Figure 14.
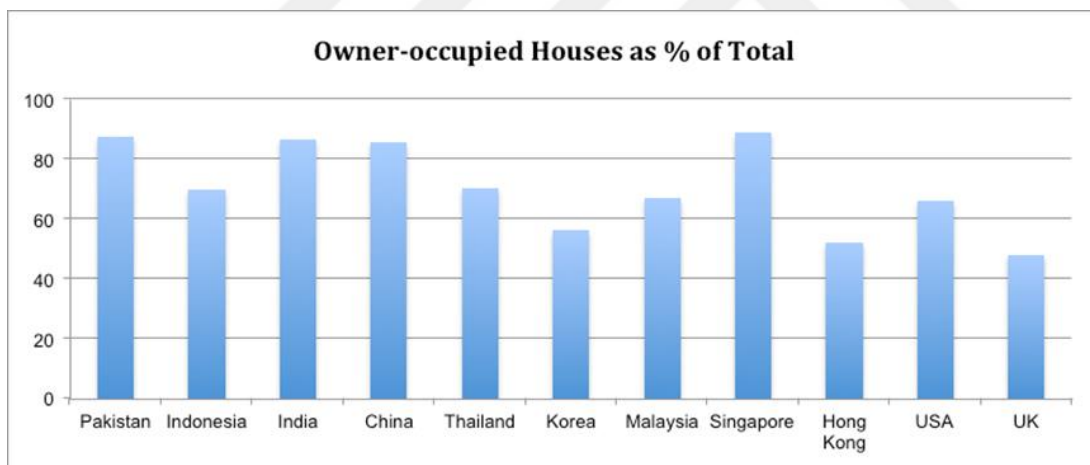
Figure 14. Ownership of Houses across the world (Source: (Bauluz et al., 2020))

So, how can these countries maintain such high house ownership rates? To some part, this is due to a lack of alternatives: unlike the United Kingdom, households may not be able to rent or have access to social housing, requiring them to build or own their own homes. Nonetheless, how can so many families get their hands on a home?

To begin with, low-income people conserve by doing more with less. As a result, they obtain a house that is smaller, has lower quality, and is less comfortable, but costs roughly half as much. Lower-income households, on the other hand, do not regard

homeownership as a one-time event, but rather as the start of a process that would eventually result in a "more complete" home that is more akin to planned housing.

Table 6. Making Housing Affordable

	Professionally Designed Housing	**Household Developed Housing**
Plot size	125-50 sq.m	75-100 sq.m
Land cost -%	20	0-10
Infrastructure	House connections	Shared connections
Infrastructure cost -%	10	0
House size	100 sq.m	60 sq.m
House cost -%	70	40
Total Cost -%	100	50

2.6 Urbanization Trends for Low-Income housing around the world

While we are discussing the issues related to low-income houses (squatter settlements), it is important to review some similar cases which have been approached for its solutions under similar circumstances. Below some case studies are discussed which had some similar characteristics as the concerned issues of this paper.

The first example is from Ankara, Turkey. When we talk about collaboration between departments and government and to understand how important this concern is, one example is given below from Ankara, Turkey which lightens up the importance of relationships between public and private sectors.

a) Batikent Settlement project, Ankara, Turkey:

Similar to almost all countries, especially in the east, has faced the problem of rapid urban growth since the past century, due to rural to urban migration.

It resulted in a huge emergence of housing shortages. Squatter settlements (Gecekondus) were created as a rapid response to this problem.

The Batikent is a mass housing project, being one of the firsts in an attempt to tackle the emergence of the squatter settlements in Turkey. It was a collaboration between the municipality, central Govt. And housing Co-operative. The development plan of

Batikent was prepared according to some principles in order to achieve a well-ordered environment.

Planning:

1) Urban development

2) Housing units

Figure 15. Site plan of Batıkent.
Source: https://archnet.org/system/publications/contents/2949/original

Figure 16. Batıkent's land use map (1979)
Source: https://open.metu.edu.tr/bitstream/handle/11511/90531/10394804

The Master plan was spread out into different zones, comprising of different units.
The smallest unit for Batıkent was determined as a 'cooperative block' consisting of

300 housing units with a social center for commercial activities. Above the cooperative block, 'neighborhood level' was identified with the facility of nursery. Two neighborhood units constituted the 'quarter unit' which includes a primary school, parks, playgrounds and piazzas. 'District unit' formed from five quarter units was characterized by a high school and a sub-center serving to 50,000 people. As the largest unit containing whole settlement, 'main center' was able to serve all Batıkent with commercial activities, religious units, social and cultural centers. In total, Batıkent was developed with 40 nurseries, 20 primary schools, 4 high schools, 4 health centers and several social and commercial units in proper for 250,000 people.

Housing Units:

- Low-density housing areas (350 people/ha): Two-story duplex blocks (Courtyard Houses)
- Medium-density housing areas (425 people/ha): Five-story blocks
- High-density housing areas (600 people/ha): Ten-story blocks
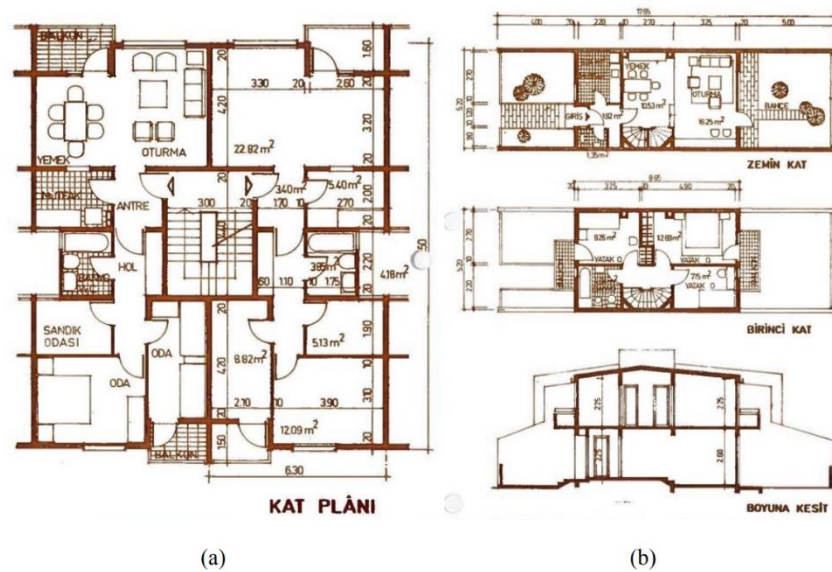
Figure 17. Sample plans of different housing types constructed in Batikent.
a) Plan of an apartment
b) Plans and a longitudinal section of a duplex house with garden
Source: https://www.witpress.com/Secure/elibrary/papers/SC17/SC17005FU1.pdf

Batıkent can be put forward as a great model for such cases like Lahore squatter settlements as being discussed in this paper. The solution which Batikent is approaching provides more than housing to urban housing problem. As one of the

main concerns in this paper is regarding the collaboration of governments and private sectors is very weak which results in dismissals of such ventures but in the case of Batikent the central government, municipality and association of housing cooperatives combined together in such way that it resulted in the success of public and private partnership in the field of housing in Turkey for the first time. Batıkent project drew its strength from the solidarity, especially of cooperatives gathering people together to decide for themselves about the characteristics of houses, involve in the implementation process and meet their social and cultural needs through their own organizations. In this way, variations in building designs could have been made and the problem of monotonous environment could have been prevented. Under favour of cooperatively working, the project accomplished to organize real sufferers of housing problem and create a qualified urban sector through the democratic participation of public.

When we talk about affordable housing the important factors such as affordable construction, new methods should be used to use in process of constructing buildings in such a way to focus more on local materials. This would lead to reduce down cost of construction deliberately. In similar way the next example from Pakistan puts light to the importance of such methods.

b) Angoori Bagh Housing, Lahore, Pakistan:

Figure 18. Angoori Bagh, Lahore
Source: Kazi Khaleed Ashraf, Aga Khan. Visual Archive

In 1973 the Punjab government appointed Yasmeen Lari to design a social housing scheme which was planned to provide with 6000 houses to low-income families. Angoori Bagh Housing was the first phase of the plan and the only one to be built. Lari saw this commission as an opportunity to prove that good quality housing could be delivered through good design, cheap materials and local workforce. The site covers 47,000 square feet in the residential area of Defense Society, it is bound on two sides by vehicular roads and separated by a canal from the Katchi Abadi.

A brief was formulated between the future occupants and the architect. Inspired by the organic morphology of Karachi and Lahore, Lari's proposal gave response to the site constraints such as the climate, the lack of skilled labor and the low budget. The project is for 787 dwellings arranged in blocks of 2 and 3-storeys which were grouped in clusters forming narrow pedestrian streets and public spaces. The decision of cluster grouping minimizes construction costs and maximizes weather protection, specially from the intense summer sunlight. The building system is as simple and economic as possible, using mainly cheap local brick in walls, which are load bearing. Floor and roof slabs are made with reinforced concrete poured in place and windows and doors are in wood, also locally produced. All the labor was formed by workers from Lahore, of which 70% were unskilled.

Figure 19. Public Space in Angoori Bagh
Source: Kazi Khaleed Ashraf, Aga Khan. Visual Archive

Figure 20. Walkways between homes with elevated Facades
Source: Kazi Khaleed Ashraf, Aga Khan. Visual Archive

The combination of these two typologies in the different groupings of 2- and 3-storey buildings generates dynamism and an interesting urban landscape. A certain degree of freedom in the facades allows families to express themselves through color in doors and windows. Access to the homes is through brick-paved pedestrian streets, exterior stairs, and elevated bridges.

The low-income families for whom the project was intended fell victim to political factors and the units were allotted to people at a middle-income level. The units lay vacant for a long time and only a small amount of the initial investment was recovered: the dream of creating a 'revolving fund' to build more units never materialized and the project – initially meant to provide five similar housing schemes comprising 6,000 dwelling units – stalled as a consequence.

Figure 21. Site Plan
Source: Kazi Khaleed Ashraf, Aga Khan. Visual Archive

Figure 22. Connected houses

Source: Kazi Khaleed Ashraf, Aga Khan. Visual Archive

All units have private courtyards open towards the sky, photograph from 1979-80 ©
Lari Associates

Figure 23. Dwellings: Sections.
Source: Lari Associates
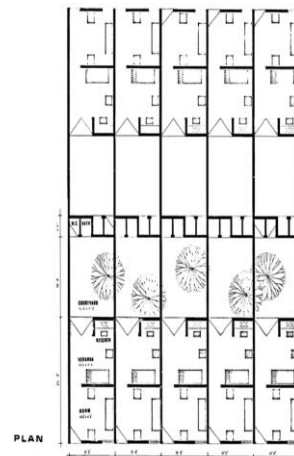
Figure 24. Dwellings: Floor Plan.
Source: Lari Associates
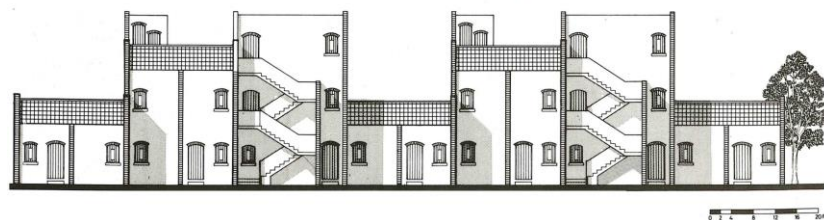
Figure 25. Dwellings: Elevation.
Source: Lari Associates

c) Sheikh Sarai Housing, Delhi, India:

Area: 35 acres, Density: 100 Apartments / ha, Total No. of Units: 550

Architect: Raj Rewal.

Figure 26. Sheikh Sarai Housing
Source: Raj Rewal Associates and http://www.betterinteriors.in/people/architects/raj-rewal/13453

Completed in 1982 the Sheikh Sarai Housing, a complex of 550 units in South Delhi, is a high-density scheme that combines diversity in units. In this case Rewal is focused upon the works in the southern expansion area of the city. The design is based on clear pattern, connecting movement to space, from person to neighborhood and pedestrian to vehicular.

From the design point of view, the organization of the blocks making up the composition finds connections with the historical realities of the cities of Rajastan and Udaipur, which have characterized the urban fabric of India and which are distinguished by the density of the inhabited area and for the close relationship between open and closed spaces.
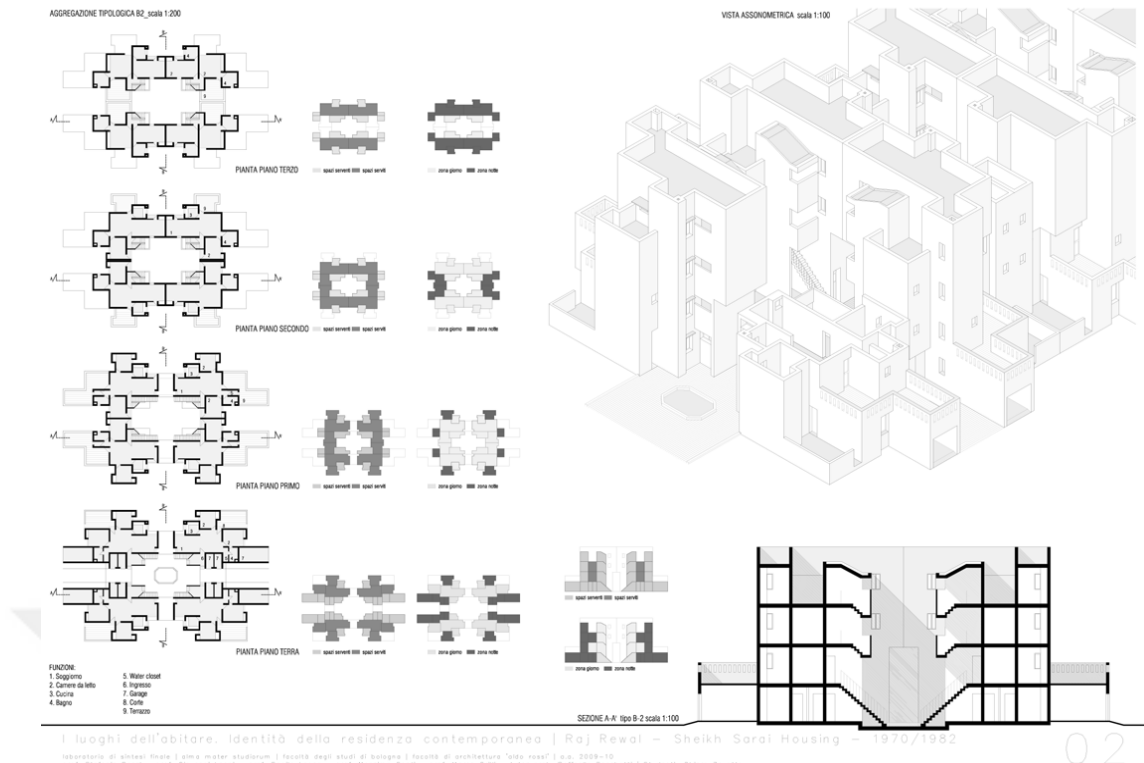
Figure 27. Houses Plans, Sections and Elevations

Source: Raj Rewal Associates and http://www.betterinteriors.in/people/architects/raj-rewal/13453

Figure 28 & 29. House Facades and walkways 1 & 2
Source: Raj Rewal Associates and http://www.betterinteriors.in/people/architects/raj-rewal/13453

Affordability: A new financial scheme was developed for this case which helped subsidize the housing units for the users. In the Self-Financing-scheme, the allotters had to pay in 5 installments over the period of the construction phase. This allowed

the housing authority to create mix of units and make the project more economically viable. The use of locally available material was intrinsic to the nature of project and to further bring down the cost of the project. The structure comprised of concrete posts and beams with infill brick walls covered with rough cast plaster. This gave the user the flexibility to modify as well.

Six different types of units ranging from 70-120 sq.m organized in two different clusters, 3 and 4 story high. The units have several variations in type, from 1-3-bedroom apartments, although minor in each case, the need for economy and design is apparent within the interior. The units are compact without any ambiguity of space that comes from having greater floor areas to negotiate from. Despite the compactness of both units and clustering, every room is well- ventilated and well-lit with an attached terrace for each unit.

Materials used in this research are mostly based on Surface coating in plaster with powdered slate, finishing in the rough, white color. Wood frames with white color. External paving blocks of local stone.

d) Peru lima competition – project by Christopher Alexander:

Another great example of the low-income housing urbanization is by Christopher Alexander in which he worked on Experimental Housing Project based in Peru, Lima. You might remember these projects from an International Architectural competition PREVI in 1969. Atelier5; Kikutake-Kurokawa-Maki; and Herbert Ohl were the official winners but there was a split in the jury and Centre for Environmental Structure by Christopher Alexander was considered by this jury to be worthy of a winner.

In the idea of Christopher Alexander house construction was aimed at using local materials and traditions where possible. The foundations were floating slabs supporting load-bearing walls and a lightweight plank and beam floor/roof. An ingenious interlocking mortar-less concrete-block for wall construction, reinforced with Sulphur, with cavity for plumbing and conduits. The planks and beams are made of urethane foam-plastic and bamboo, reinforced with Sulphur-sand topping; all are earthquake resistant methods of construction.

In this competition the jury in a split decision thought that Christopher Alexander's work was a milestone which was addressing the brief and local Peruvian conditions

and produced an interesting imaginative solution for low income housing and was offering maximum freedom of individual choice as a resident. To Christopher Alexander the praise continued "a freshness of approach, a commitment to the dignity and worth of individual, a recognition and understanding of the complex linkages between the individual, his family, his belongings, his neighbor's and the entire community are implicit in each part of this proposal."
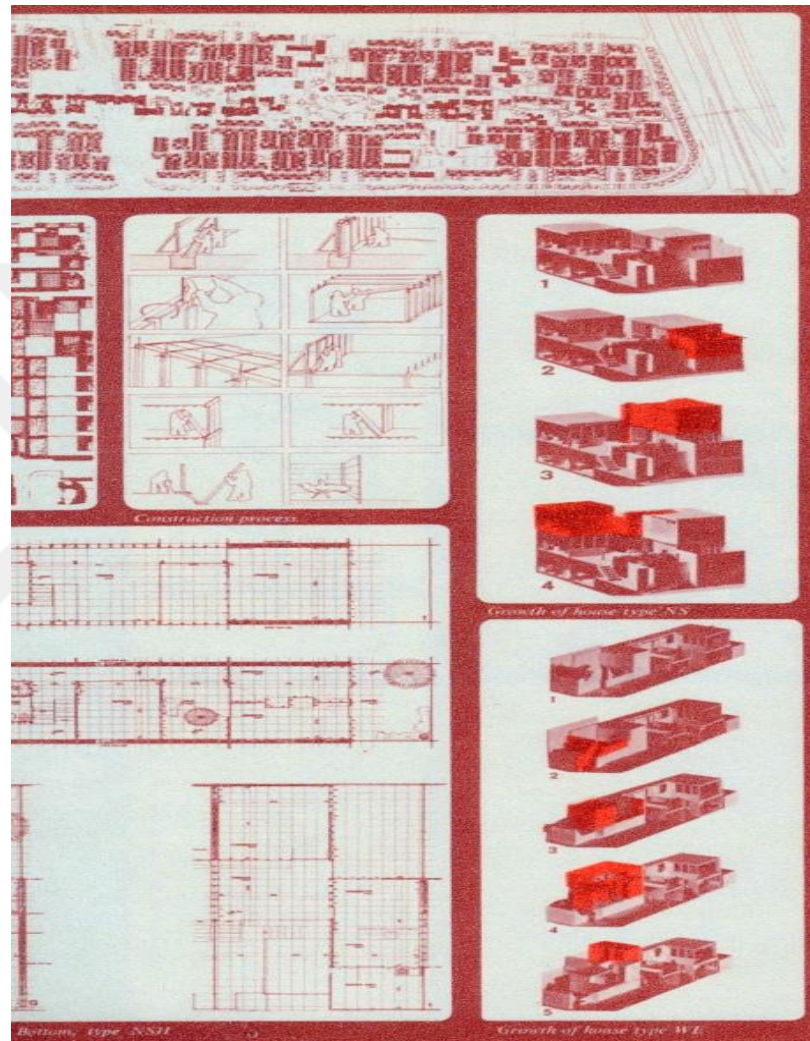
Figure 30. Project proposal by Christopher Alexander

Source: https://iqbalaalam.files.wordpress.com/2013/01/previ101-001.j

e) Self-help Housing in South Africa: Paradigms, Policy and Practice

Self-help housing groups negotiate with the owners of empty properties for their use and then go on to organize whatever repairs are necessary to make them habitable. The properties are often borrowed on the basis of a license or sometimes a lease for a specified period of time.

Most South Africans live in formal dwellings 80% according to the latest statistics in 2017. A further 14% live in informal housing, which are mostly squatter settlements on the periphery of cities and towns and in the gardens of formal houses. The remaining 6% live in traditional homes in rural villages.

In the South African context, self-help is officially called the People's Housing Process (PHP). Institutionalized self-help housing refers to implementation of self-help housing through community-based institutions such as cooperatives or self-help groups. At the international level, these self-help groups are referred to as housing co-operatives while in the South African context they are referred to as housing support centers.

Figure 31. A project by PHP in South Africa

Source: https://www.dezeen.com/2017/12/28/empower-shack-urban-think-tank-low-cost-housing-khayelitsha-south-africa/

This research from South Africa is a good example of that one of the most important steps towards a better urbanization of such low-income housings has to have a proper government backed policies which are transparent from corruption elements and focused on the rehabilitation of their citizens with such projects.

CHAPTER 3
DESCRIPTION OF THE SITE

3.1 Lahore

Some sites hold the core of human genesis as well as the brilliance of human development. For individuals who like the nostalgia of old thoughts, such places are always significant. Lahore, Pakistan's second-largest city and the capital of Punjab province, qualifies as such a location. The map of Lahore is shown in Figure 12.

After seeing so many ups and downs in history and culture, Lahore has grown into a whole universe with a rich history and has a desire to get success in the future. Lahore's diversity, from Rudyard Kipling to Abu-Rehan Al Bairooni, from the Victorian era to the Mughal era, and from structures and gardens to forts, might be excruciating at times, but the happiness is forever (MacKenzie, 2017).

Figure 32. World map of Pakistan.
Source: https://www.britannica.com/place/Pakistan

Figure 33. Map of Pakistan with Provinces

Source: https://gisgeography.com/pakistan-map/#ProvincesMap
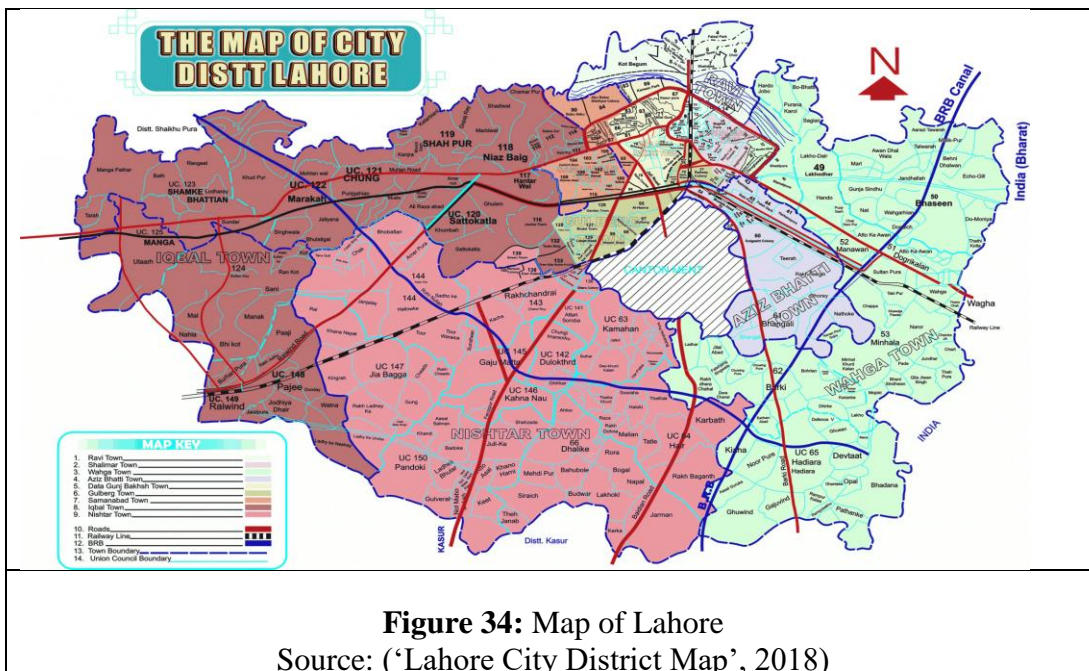
Figure 34: Map of Lahore
Source: ('Lahore City District Map', 2018)

3.2 Origin of Lahore

It is difficult to determine the correct period of origin and how the name Lahore came into being. There are many diverse traditions, each with its own origins and interpretations. Lahore's name in different shapes can be found in old manuscripts. Historians have found traces of Lahore in scripts back to 2,000 B.C. Lahore was described in the "Huddud-e-Alam 982 AD" as a tiny city with majestic temples and vast markets (Shazia Khan, 2011). It describes that huge orchards and homes were encircling the city, which was surrounded by a massive mud-wall (Minorsky & Bosworth, 1937).

Based on Hindu mythology, Lahore was named after prince Deep Chand's nephew "Lohaar Chand" (Qureshi, 2017). The oldest reliable literature in which we can discover Lahore is, Abu-Rehan Al Bairooni's "Tareekh-ul-hind," which was written in the 11th century when he traveled to India. According to his book, he refers to Lahore as a region rather than a city with a capital known as "Mandhor kor" ('Capital of Punjab - Lahore', 2017)

Lahore was also mentioned by Hazrat Data Gunj Buksh, a great Sufi saint of Lahore who died in 1088 A.D., in his book "Kashf-ul-Maajuub." The name "Loha-war" was written by Abul-Farj, a poet during the Ghaznavi period. In his book "Nazhat ul Mushtaq Fe Akhteraq ul Affaq," an 11th-century Iranian scholar "Tahir Marozzi" refers to Lahore as "Laha-wr". Lahore's name as "Lao-hore" has found in Ameer Khusro's renowned poem "Quran ul Sadeen" in the 13th century when he enlightens the onslaught of the Mughals (MacKenzie, 2017).

3.3 Great Historical Events

The city had a tumultuous past. From 1163 to 1186, it was the capital of the Ghaznavid reign. In 1241, a Mongol army sacked Lahore. Until 1398, when it fell under the hands of the Turk ruler Taimur, the city was constantly attacked by Mongols. In 1524, Mughal Babur's soldiers seized it (Jalal, 1995). The Mughal era, was the start of Lahore's golden age when the city was frequently used as a royal residence (Jamsari et al., 2017). During the time of Shah Jahan (1628-1658), it was substantially extended, but during the reign of his successor, Aurangzeb, it faded in importance (Aziz, 1993).

Lahore has been embroiled in a power struggle between Mughal rulers and Sikh insurgents since the death of Aurangzeb (1707) (Schimmel, 2006). In the mid-eighteenth century, Lahore became an outpost of the Iranian empire after Nadir Shah's invasion. Conversely, it was quickly allied with the emergence of the Sikhs during the reign of Ranjit Singh (1799-1839) (Singh, 2017). The city rapidly weakened after Singh's death and in 1849, it fell under British authority. When the Indian subcontinent gained independence in 1947, initially Lahore became the capital of West Punjab province in 1955, afterward in 1970 renamed Punjab province of Pakistan (Shazia Khan, 2011). One of the old pictures of Lahore in the 1970s is shown in Figure 13

Figure 35. Lahore in the 1970s
Source:(Qureshi, 2017)
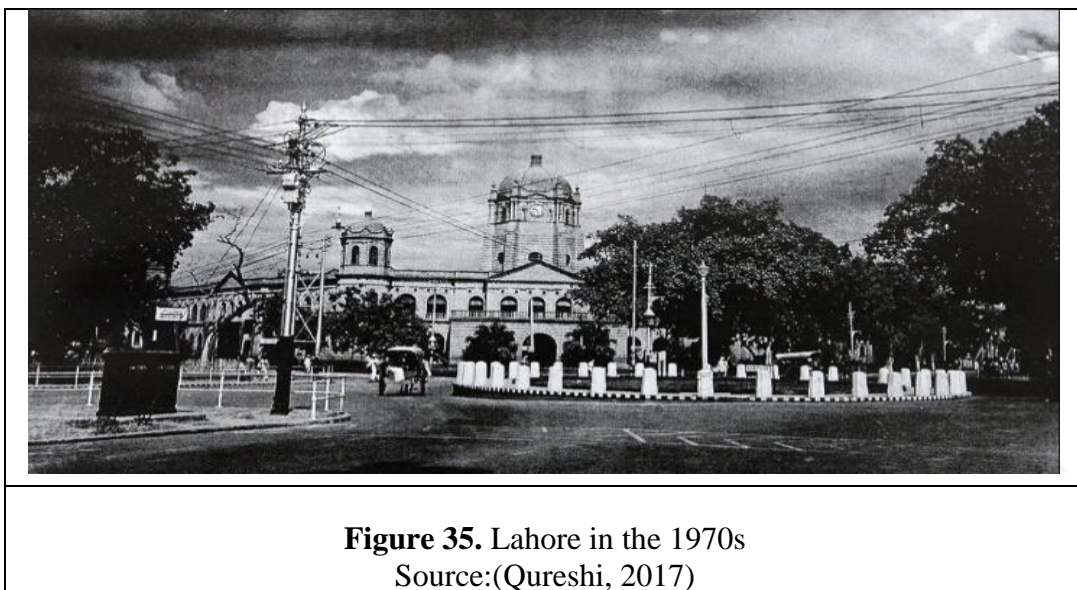
3.4 Lahore Today

Nowadays, Lahore can be described as a megacity just so marvelous that every corner of the city speaks of a certain enthusiasm that cannot be found anywhere else in the world. The city's maturity can be seen in different regions of Lahore. It can be found in monuments, bazaars, old buildings, malls, and the huge Cantonment's sports grounds. Besides these, one thing that is certain is that the people of Lahore most clearly display their tremendous Lahori spirit in every field of life. At present Lahore is shown in Figure 14.
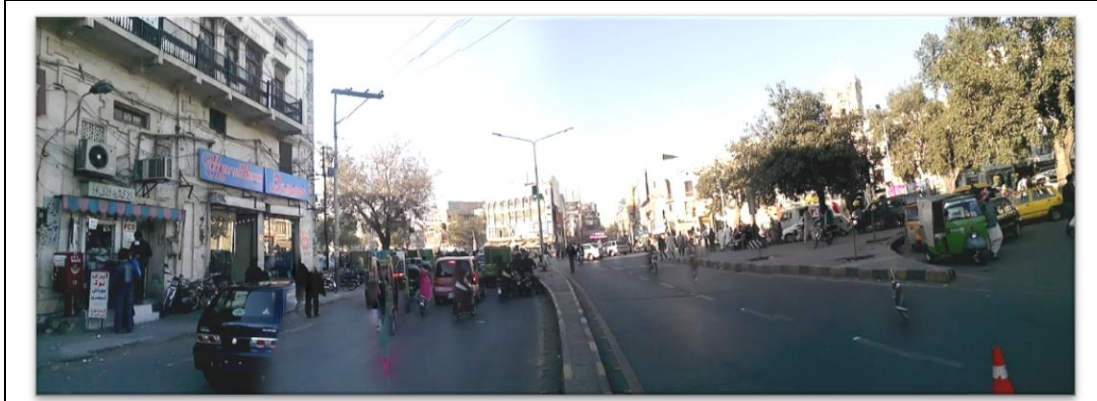
Figure 36: Today's Lahore
Source:(Aziz, 1993)

Lahore is a city rich in history, culture, and an unmistakable charm that distinguishes it from all other cities of the world. Over the years, it appears that the great Lahori spirit has infiltrated and conquered this city. Despite its resemblance to other Mughal capitals, Lahore is now not just a city, not just a location in one corner of the globe, but seems like an entire universe in itself. There is an old proverb that there is a Mughal prince in every Lahori. According to (Shazia Khan, 2011) in every Lahori, there will be a great resemblance to the Mughal prince from the past.

All of this adds up to a wonderfully satisfying experience in Lahore. The buildings, roads, trees, and gardens, in fact, the very air of Lahore, are enough to make one's head spin with awe. Many poets have written on the phenomenon that occurs in the Lahore area. When the wind whistles through the tall trees, the twilight floods the beautiful face of the Fort, and the silent canal lights up to herald the end of another chapter in history, the Ravi is absorbed in harmony, mist fills the ancient streets, and the Havelis come alive with strains of classical music, the spirit of Lahore pervades even the hardiest of souls.

3.5 The Site
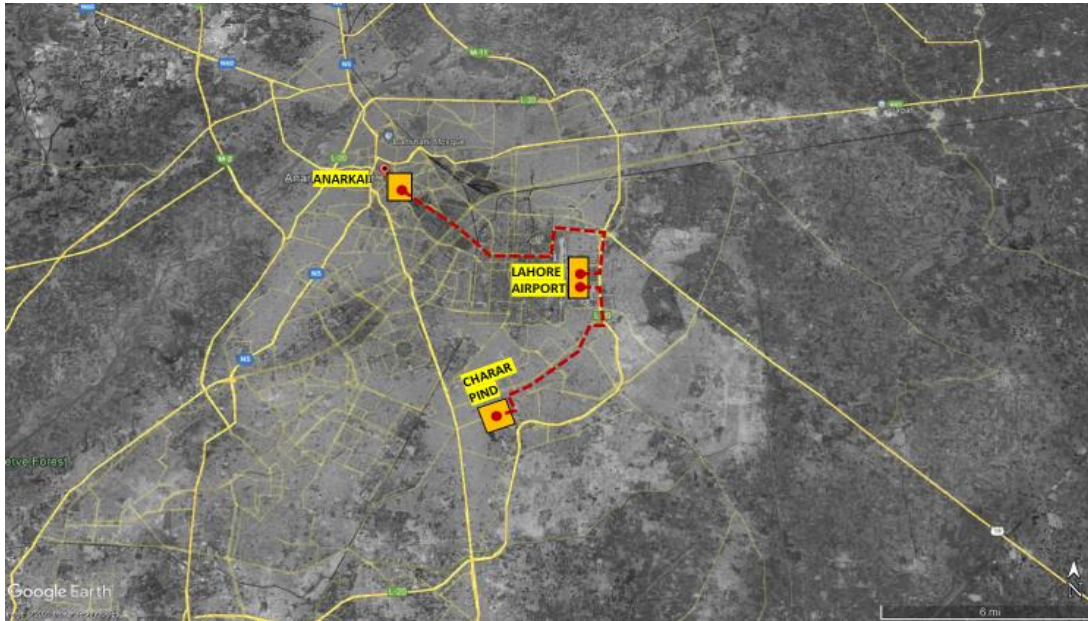
Figure 37. Site Map
Source: Google Maps

Figure 38. Market junction on the site
Source: Yazdaan Haider Khan

Figure 33 is showing one of the market hubs in the site. The photo description of the site can show us how the social movement is on the site along with the irregular parking spots and side walkways which create uncertain traffic jams in the area.

3.5.1 Lahore Master Plans

From the previous studies, it was found that Lahore City has grown and gone through many development eras, including the Hindu Era, the Mughal Period, the Sikh Raj,

British Rule, and the establishment of Pakistan in 1947 (MacKenzie, 2017). Since then, the city has grown in a somewhat circular fashion around the walled city, as well as unplanned organic growth of old population centers outside the walled city area, as the capital of Punjab Province.

The major expansion began in the late 1960s when the population growth rate was very high (Arif & Kipfer, 2015). With the exception of the wealthy areas of Model Town, Gulberg, and Shadman, the city expanded in the south and south-west corridors of Ferozepur Road and Multan Road, resulting in mostly unplanned suburbs (Malik, Roosli, & Tariq, 2020). Because of its proximity to India, urbanization in the east has been limited and has been severely impacted since the 1965 war. Similarly, due to the Ravi Riverfront, westward expansion has been limited (Mustafa, 2019).

- **Greater Lahore Master Plan of 1966**

The 1966 Master Plan for Greater Lahore foresaw Lahore's development. The Greater Lahore Master Plan envisioned Lahore as a metropolitan metropolis with numerous satellite towns within a 20-25 km radius, similar to the prevalent town planning patterns of the time (Zafar, Waheed, & Javaid, 2019). However, due to a complete absence of development management and a lack of knowledge of transportation demands that outstrip transportation infrastructure expansion, the city continued to grow linearly along radial roads, and the Greater Lahore Master Plan fell short of its goals.

- **NESPAK's Integrated Master Plan for Lahore-2021**

National Engineering Services Pakistan (NESPAK) consultants did this research for LDA in 2001. The research addressed Lahore's urban planning concerns and produced a grand plan for the year 2020. In terms of urban planning, the report is broad in scope. The data analysis is lacking, since it does not show the influence of various urban growth projections on road capacity and the resulting transportation infrastructure requirements. As a result, without taking into consideration inhabitants' accessibility/mobility concerns as well as upcoming road capacity demands, the master plan is of limited utility as an integrated grand plan for the city.

3.6 Site Analysis

Old Anarkali

Figure 39. Site map of Old-Anarkali Katchi Abadi
Source: Google Maps

Old Anarkali (Union Council 60 in Aziz Bhatti Town) is situated in Sadar near Ranger's Head Quarter Lahore. Old Anarkali was developed in 1960. The total area of Old Anarkali is 400 Kanals. There are the total of 1300 houses in this Abadis with a population of 7800 ('Population Census Pakistan', 2017). Some people are urban settlers and others are migrants from different villages of Pakistan. The nearby localities are Ali Park, Jalal Town, and Ittihad Colony.

There are only 2% of respondents have gotten ownership rights from LDA and the remaining 98% of respondents are living without having ownership rights. People complain about corruption by LDA for giving ownership rights. They charged more than RS.172/marla (According to the Katchi Abadi act 1992) from residents of Katchi Abadis. There are also some people who don't know the procedure of applying for ownership rights.

Figure 40. Pedestrain Movement in Old-Anarkali Katch Abadi area

Source: Yazdaan Haider Khan

Figure 41. Commercial Street View of Old-Anarkali Katch Abadi

Source: https://www.pinterest.com/pin/435371488959445238/

Charar Pind

Figure 42. Site map of Charar Pind Katchi Abadi
Source: Google Maps

This settlement is located in Ward no. 10 of the Cantonment board area near Allama Iqbal Airport Lahore. The total area of Charar Pind is 840 Kanals & 15 Marls. There are a total of 2757 houses in this abadi and having 16,890 population ('Population Census Pakistan', 2017). The people are heterogeneous by composition. Some are Muslims and others are Christians and the nearby localities are Dagra, Dairy Form, Darpaty, and Malik Pura. As Charar Pind yet has not been listed in LDA as a Katchi Abadi so no one applied there for ownership rights and all people are living without getting ownership rights. Residents of Charar Pind are fully willing to get ownership rights.

Figure 43. Open market around the area of Charar Pind
Source: https://www.shutterstock.com/search/pakistan+health+issue

3.7 Demographic Analysis

The demographic section includes the questions related to the residing period, household size, type of family, etc. The household size determines the level of overcrowding in the dwellings of Katchi Abadis. The type of structure and type of family is an important parameter in relation to the socio-economic status of the residents.

3.7.1. Residing Period

Old Anarkali

In Old Anarkali, 61% of respondents are living here for less than 11 years, 33% of respondents are living from 11-20 years, 3% of respondents are living from 21-30 years and the other 3% of respondents are living from 41-50 years. Figure 15 demonstrate the different age bracket peoples are associated with this area.
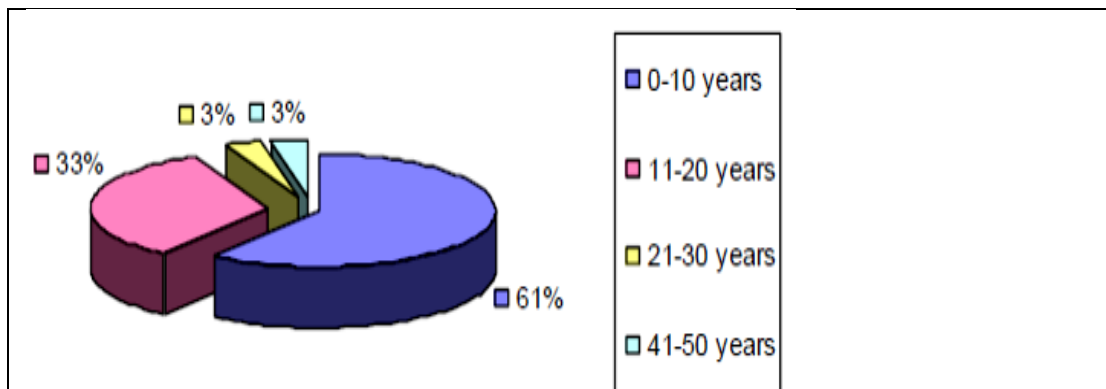
Figure 44. Residing Period of Old Anarkali

Source:(Saad Khan & Adeel, 2017)

Charar Pind

In Charar Pind katchi abadi, 43% of respondents are living here from 0-10 years, 40% of respondents are living from 11-20 years and 17% of respondents are living there from 21- 30 years. Figure 8 demonstrate the different age brackets peoples are associated with this area.
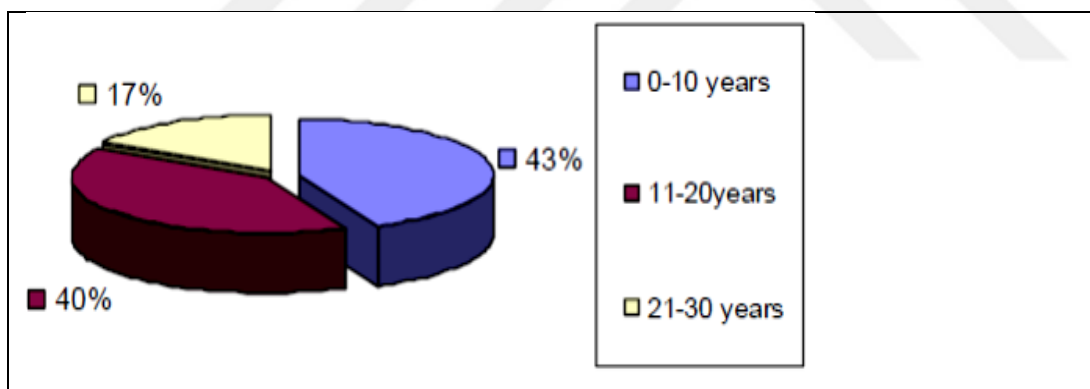
Figure 45. Age Bracket people living in Charar Pind

Source:(Saad Khan & Adeel, 2017)

3.7.2 Residing Purpose of People

Although Old Anarkali has illegal status and is lacking with good quality of life but many people are living here due to many reasons. Table 7. describes residing purpose of people in both old Anarkali and Charar Pind. In colony 23% of respondents are living here for getting job opportunities, 7% of respondents are living for better

education in the colony, other 17% of respondents are living for better life and remaining 53% of respondents are living for other purposes.

In Charar Pind, 30% of respondents are living here for getting job opportunities, 3% of respondents are living for better education in the colony, 30% of respondents are living for better quality of life and remaining 37% of respondents are living for other purposes.

Table 7. Residing purpose of people in old Anarkali and Charar Pind

	Old Anarkali		Charar Pind	
	Frequency	**Percentage**	**Frequency**	**Percentage**
Job opportunities	7	23	9	30
Better education	2	7	1	3
Better quality of life	5	17	9	30
Other purpose	16	53	11	37

3.7.3. Type of Residence

Table 8. describes type of residence in old Anarkali and Charar Pind. In old Anarkali, 77% of respondents have their own houses and 23% of respondents pay rent for the houses. In Charar Pind 67% of respondents have their own houses and 33% of respondents pay rent for the houses.

Table 8. Type of residence in old Anarkali and Charar Pind

Type of Residence	Old Anarkali		Charar Pind	
	Frequency	**Percentage**	**Frequency**	**Percentage**
Owned	23	77	20	67
Rented	7	23	10	33

Figure 46. Multiple commercial activities happening in the household of Charar Pind
Source: Tasneem Siddiqui, 2014

3.7.4 Types of Family system

In the old Anarkali, nucleus family system dominates over the joint family system. There are 67 % of respondents who live in the nucleus family system, 27% of respondents live in the joint family system and the other 6% of respondents live as one single person in one house.

On the other hand, in Charar Pind, 50%of respondents have a nucleus family system,46% of respondents have a joint family system, and the other 3% of respondents live alone as only one person in each house.

3.7.5. Household Size

Old Anarkali

Figure 42. shows the percentage of household size in old Anarkali. The household size in 10% of 30 houses is 2, in 3% of 30 houses is 3, in other 3% of 30 houses is 4, in 20% of 30 houses is 5, in 17% of 30 houses is 6, in 27% of 30 houses is 7, in other 7% of 30 houses is 8, in 10% of 30 houses is 9 and in remaining, 3% of 30 houses is 10.

Figure 47. The household size in old Anarkali
Source:(Saad Khan & Adeel, 2017)
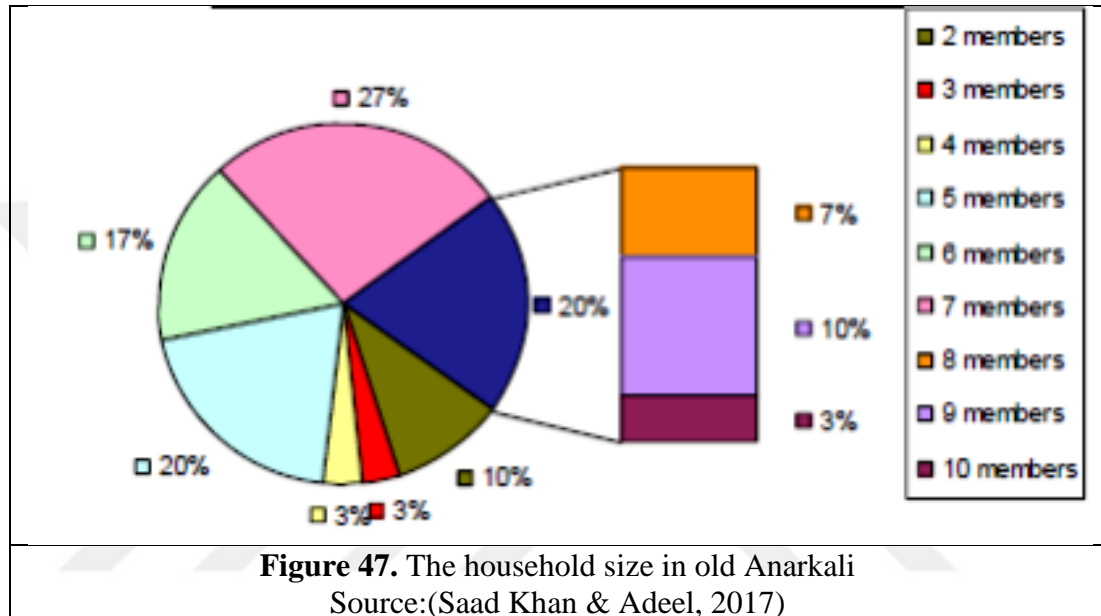
Charar Pind

Figure 43. shows the percentage of household size in Charar Pind. The household size in 3% of 30 houses is 2, in 7% of 30 houses is 3, in 13% of 30 houses is 5, in 19% of 30 houses is 6, in 7% of 30 houses is 7, in 20% of 30 houses is 8, in 7% of 30 houses is 9, in 10% of 30 houses is 10, in 7% of 30 houses is 11 and in other 7% of 30 houses is 14.
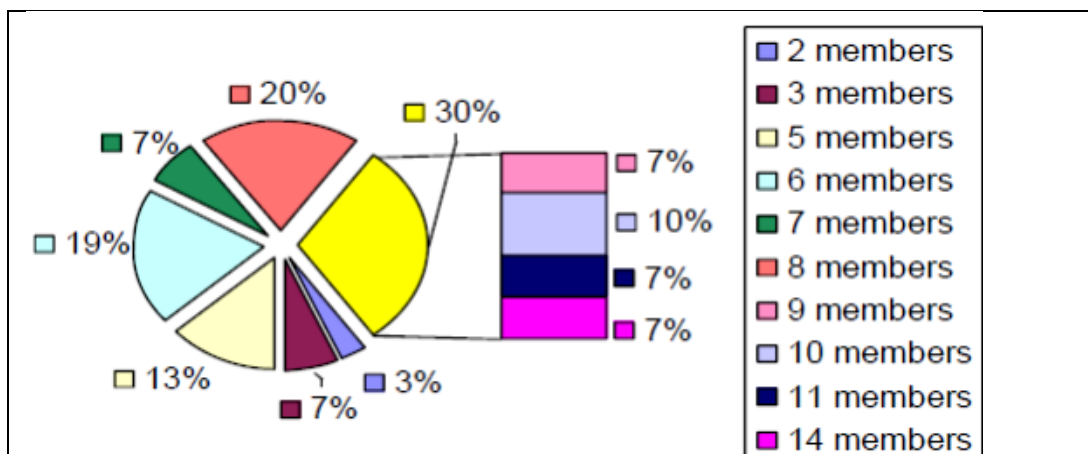
Figure 48. Household size in Charar Pind
Source:(Saad Khan & Adeel, 2017)

3.8 Economic Analysis

The economic impact of the Katchi Abadi regularization/development program was assessed using an economic study. This part contains questions on a family's total earning members, kind of employment, monthly income and expenses, and so forth.

3.8.1 Total Earning members in Single House Structure

The economic impact of the old Anarkali and Charar Pind was assessed using an economic study and their results are shown in Table 9. in terms of total earning members in single house structure.

Old Anarkali

There is only one earning member in 67% of 30 houses, 2 earning members in 13% of 30 houses, 3 earning members in 7% of 30 houses, 4 earning members in 10% of 30 houses.

Charar Pind

In Character Pind, 33% of 30 houses have only one earning member in each house, 14% of 30 houses have 2 earning members in each house, 40% of 30 houses have 3 earning members, and the remaining 13% of 30 houses have 4 earning members in each house.

Table 9. Total earning members in single house structure of Old Anarkali and Charar Pind

Total Earners	Old Anarkali		Charar Pind	
	Frequency	Percentage	Frequency	Percentage
1	20	67	10	33
2	4	13	4	14
3	2	7	12	40

3.8.2. Type of Occupation

According to the type of occupation, the analysis results are shown in Table 10. and their occupation can be seen in Figure 17.

Old Anarkali

This area lies at the epicenter of historic Lahore. The vicinity with several government offices, including Punjab's chief minister secretaries & Lahore high court enhances its strategic location. There are at least five higher-learning universities in the vicinity. Not only does it make an ideal location for finding residence in anarkali, but also make it a good locality for occupation as well.

In Old Anarkali 37% of respondents are government employees – the area is a huge contributor to workforce accommodation who are Clarks of work at the chief minister's secretariat.

A figure equaling to almost 30% of respondents are laborers. These are the families or persons who have come here to find work in different parts of Lahore. 13% of respondents do their own business and 20% of respondents are private employees in many other privately run businesses.

Charar Pind

The area of charar pind resides at the heard to one of the biggest gentrified gated community of Lahore, the Defense Housing Authority or the DHA. This locality is completely land-locked and encapsulated by this gated community. The DHA grew all around this town and the vicinal areas and agricultural lands have been completely devoured by the gentrification.

In Character Pind, only 3% of respondents are government employees. While a staggering 57% of respondents are laborers – who work as service providers to the residents of DHA. These include but limited to Gardeners, Security Guards, Milkmen, Cooks, Cleaners and janitorial staff etc.

A number 33 % of respondents do their own business, and most interestingly, their business is also associated or linked directly with amenities and service providing to the DHA. These businesses include skilled laborer like masons, metalsmiths, electrical and mechanical workers etc. The other 7% of respondents are private employees.

Table 10: Type of occupation in Old and Charar Pind				
Type of Occupation	Old Anarkali		Charar Pind	
	Frequency	Percentage	Frequency	Percentage
Government Employees	11	37	1	3
Labors	9	30	17	57
Business	4	13	10	33
Private Employees	6	20	2	7

Figure 49. Types of occupation of people in the Anarkali area

Source: (Tasneem Siddiqui, 2014)

3.8.3 Monthly Income

According to monthly income, the economical based analysis results are shown in Table 11.

Old Anarkali

After the analysis of the socio-economic survey, it is concluded that 7% of respondents earn from Rs.100 to Rs.5000/- per month, 23% of respondents earn from Rs.5100 to Rs.10, 000/-per month, 50% of respondents earn from Rs.10, 100 to Rs.15, 000/- per month, 13% of respondents earn from Rs.15100 to Rs.20, 000/- per month and remaining 7% of respondents earn from Rs.20, 100 to Rs.25, 000/-per month.

Charar Pind

In Character Pind, there are 7% of respondents who earn from Rs.100 to Rs.5000/- per month, 33% of respondents earn from Rs.5100 to Rs.10, 000/-per month, 20% of respondents earn from Rs.10, 100 to Rs.15, 000/- per month and other 20% of respondents earn from Rs.15100 to Rs.20, 000/- per month.

Monthly Income	Old Anarkali		Charar Pind	
	Frequency	Percentage	Frequency	Percentage
Rs.100/- to Rs.5000/-	2	7	8	27
Rs.5100/- to Rs.10, 000/-	7	23	10	33
Rs.10100/- to Rs.15, 000/-	15	50	6	20
Rs.15100/- to Rs.20, 000/-	4	13	6	20
Rs.20,100/- to Rs.25000/-	2	7	0	0

Table 11. Monthly income-based results in Old and Charar Pind

3.8.4 Condition of Houses

According to the condition of houses, the analysis results are shown in Table 11. The condition of streets and houses in Old Anarkali is also shown in Figure 18.

Old Anarkali

As far as the condition of houses is concerned7 % of 30 houses having beautiful elevation fall in good condition category, 43% of 30 houses are in fair(neither good nor bad, normal condition) condition and other 50% of 30 houses fall in bad condition category.

Charar Pind

During the survey it was found that 10% of respondents live in well-conditioned houses,80% of respondents live in normal (neither good nor bad) conditioned houses and the other 10% of respondents live in badly-conditioned houses.

Condition of Houses	Old Anarkali		Charar Pind	
	Frequency	Percentage	Frequency	Percentage
Good	2	7	3	10
Fair	13	43	24	80
Bad	15	50	3	10

Table 12. Condition of houses-based results in Old and Charar Pind

Figure 50. Condition of street and house in Old Anarkali
Source: (Tasneem Siddiqui, 2014)

3.8.5 Area Occupied for Houses

According to the area occupied for housed the results are shown in Figures 46 and 47 in Old Anarkali and Charar Pind respectively.

Old Anarkali

In Old Anarkali, 7% of respondents have 0-2 marla houses, 33% of respondents have 2.1.-4marla houses, 53% of respondents have in 4.1-6 marla houses, and the remaining 7% of respondents have more than 10marla houses.
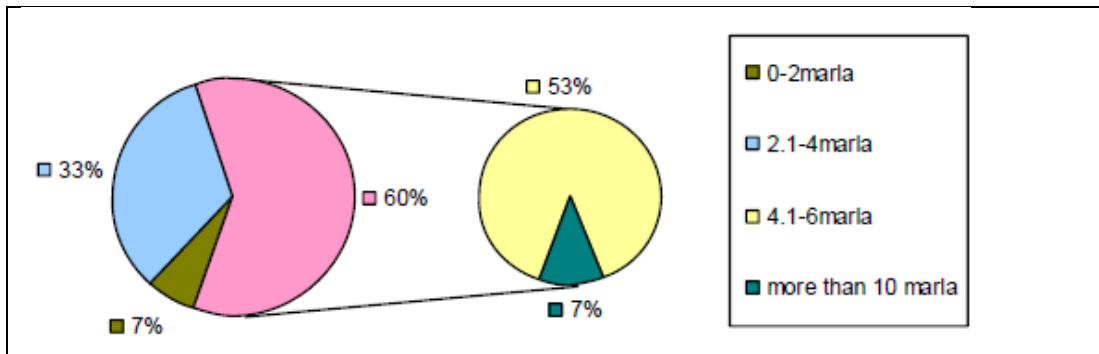
Figure 51. Area occupied for houses in Old Anarkali

Source: (Tasneem Siddiqui, 2014)

Charar Pind

In Character Pind 3 % of respondents live in 0-2 Marla houses, 44% of respondents live in 2.1-4 marla houses, 27% of respondents live in 4.1-6 marla, 3% of respondents live in 6.1-8 marla, 10% of respondents live in 8.1-10marla houses and other 13% of respondents live in more than 10marla houses.
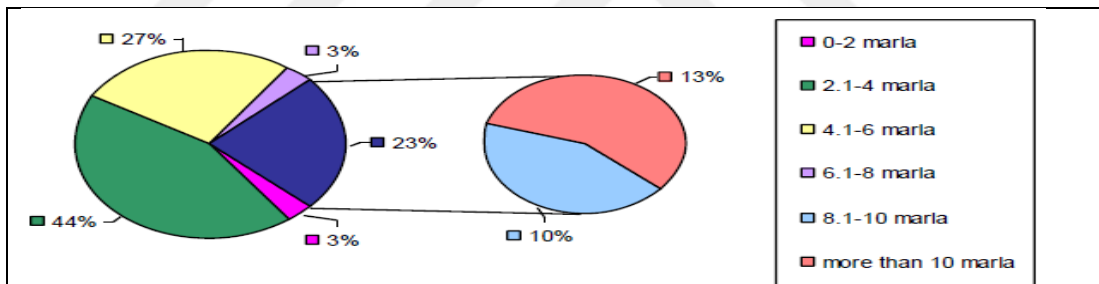
Figure 52. Area occupied for houses in Charar Pind

Source: (Tasneem Siddiqui, 2014)

CHAPTER 4
METHODOLOGY & RESULTS

4 Methodology

A basic and standard procedures and various methods have been involved in the whole process of this research while acquiring the methodology. This research employs both qualitative and quantitative approaches. Both approaches provide mutually supportive evidence and strength to each other. Although both approaches have equal importance and are involved in this research. Starting with the survey study as a basic the major research topics have been observed closely during the survey. Selection of the topics to start the survey has been mostly derived from the discussions from the literature reviews respectively to the case site areas. Starting off with the questionnaires for the relative information gathering process with is vital towards this paper's outcomes for the solutions. This process is not only limited to questionnaires but also consists of verbal interviews of some locals as well as some officials' personals related to concerned authorities which are related to this paper. The basic outcomes of the official's interviews are shown in the tables in this chapter and also the overall results are compiled together and their results in different scenarios have been also shown in this chapter overall.

Further in this discussion the process of sampling techniques is also explained and shown how its distribution is divided. The important section of this part of the chapter is about the process is about the questionnaire designing and how it was formed on the basis of the available data. The criteria of it are mentioned in detail the middle of this chapter.

Another very important section of the methodology for this whole process is the procedure which has been applied. In this process of survey two basic methods have been adopted to gather information which are primary sources and secondary sources which are explained further in this chapter. Data collection and then the collected data have been derived out of the information collected on the basis of these two methods. In the final part of this chapter the section of data processing has been focused and also explained how it has been analyzed and what methods were applied during this procedure.

4.1 Survey Study

For this research, a questionnaire has been designed for the residents of understudy sites that are Old Anarkali and Charar Pind. Detailed of these sites have been given in the previous chapter. One of the main purposes of the questionnaire survey is to gather quantitative information on selected facts. These facts include but are not limited to the number of family members, whether he/she owns the house, duration, and reason of living in that locality, number of dependents, type of family system they are living in, type of job, number of earning members, the average salary of the family average salary of all; etc. This information promotes and strengthens the argument for the financial capacity of the residents of the sites to access affordable housing.

In addition to the questionnaire, interviews have also been conducted with officials of some government agencies/offices related to Katchi Abadis to gather detailed information (qualitative) about low-income housing. The main purpose of conducting these interviews was to get information about the steps that the government is taking for the betterment of residents of Katchi Abadis. Furthermore, if the government is planning to announce any new housing scheme, then what legal barriers and internal challenges will be involved for the poor to participate in those schemes. See Table.13 for a list of organizations whose representatives were interviewed. In interviews with relevant government officials, the interviewee provided information in the form of opinions, explanations, feedback, perception, etc. Detailed findings of these interviews and the questionnaires are discussed in the next chapter.

Table 13. List of institutions interviewed	
Institution	Reason for conducting Interview
Katchi Abadi Planning Wing	• Informal Katchi Abadis • Existence of basic necessities in Katchi Abadis and cost associated with it
Capital Development Authority	• Current going on development • Any new housing scheme for low-income people • Tenure security for residents

Enforcement Directorate	• The government's planning for informal Katchi Abadis • Strengths and weaknesses of current steps
Commercial Bank	• Easiness in taking home loans for low-income people.

4.1.1 Selections of the sampling technique

The houses of the sites under study were randomly selected for the survey. The sample size for collecting basic information from respondents was uniformly selected for each site under study. Due to the current insecure situation in Pakistan (in terms of security and Covid), its culture, and the nature of its inhabitants, selecting a large sample size, even the completion of this survey was a laborious and tedious task. Therefore, 50 households were selected from each case study area to obtain a suitable scenario. Some of the detail about the distribution of sample size is gi9ven in Table 14.

Table 14. Detail of the distribution of sampling		
Site Area		Sample Size
Old Anarkali	Male headed families	40
	Female headed families	10
Charar Pind	Male headed families	43
	Female headed families	7
Total Sample Size		100

4.1.2 Questionnaire structure/design

The survey questionnaire is mainly divided into four parts.

- The first part i.e. section A deals with the collection of data related to general and demographic information of the residents of the Sample Area.
- The second part, that is consisting of questions 1-3 from section B, focuses on the reason that why the family of the interviewee is living in the neighborhood.
- The third part, that is consisting of questions 4-8 from section B, concentrates on the way of living of the interviewee family
- The fourth part that is consisting of questions 9-11 from section B, concentrates on the per month income of the family

- The fifth part consisting of questions 12-17 from section B, deals with the provision and non-provision of public facilities and the condition of housing infrastructure.

The questionnaire of this research can be found in the Appendix

4.2 Procedure

In most of the researches, researchers use more than one method to gather information. As mentioned in the previous section, in this research more than one source of data has been used as well. The reason for this is to understand the issues related to the problem under this research and to answer the problem through proper analysis. In short, the following are the primary and secondary sources on which the study is based:

Primary Source: In this source, direct observations, discussions with people of different fields, a questionnaire survey, and interviews with the government officeholders (as mentioned in Table 13).

Secondary Source: This resource includes national newspapers, reviews of previous research, project and policy documents, and discussions with people from different walks of life on the issue under study

According to (Gossaye, 2003),

" It is noteworthy that although the data sources, their roles, and relevance vary during the study, they still support each other. ".

4.2.1 Data collection

Choosing the right time to conduct the questionnaire survey is very important. Many residents may not be at home during weekdays due to their jobs. Therefore, Saturday evening (i.e. from about 6 pm to 10 pm) was selected for this questionnaire survey. As the days are long in summer, the neighborhood is bustling till 10 to 11 at night. One of the main reasons for choosing Saturday evening was that most people get rid of their week-long fatigue by spending some quality time with their families. And it was a good time to ask them a questionnaire survey.

With that in mind, I had to pick a time when they were free from their family meals or any other engagement. Thus, I was able to survey 8 to 9 households each week, as each

survey took 20 to 25 minutes to complete. It took me about 2.5 months to complete the survey of these 100 houses.

4.2.2 Data processing

It is important to process the data to get real results. Once the data is collected, the next step in the research is to process the data. That is, to understand the data collected, it has to go through a series of actions or operations.

Data processing involves two steps: the first is data preparation and the second is data analysis. In the first step, the data is checked for accuracy, errors, incompleteness, and missing parts in the data. This has been done by entering the data into MS Excel and SPSS. In addition, land maps of the areas under this research have been obtained using AutoCAD.

The second step, i.e. data analysis, divides the data into two parts: descriptive and inferential statistics. After sorting out the descriptive nature of the research data, different scenarios will be developed with the help of cross-tabulation and the application of several other tests. This data analysis will further shape the results of this research. Detailed results of all the processing have been explained in the next chapter.

4.3 Results

This research is based on the systematic investigation of the living conditions of the residents of two slums in Lahore city, particularly the old Anarkali and Charar Pind. A number of sources have been used in the investigation, including interviews and questionnaires with the slum dwellers understudy, interviews with government officials, and conversations with people from various walks of life. This part of chapter will first analyze the characteristics of the occupants of the two neighborhoods and identify the condition of the houses located in them.

4.4 Analysis of the current situation (Questionnaire survey perspective)

During the survey, every effort was made to ensure that the resident whose questionnaire was being filled must be sensible and mature. Below in Table X2, the cross tab is given which clearly provides the understanding of the gender and the ages of the respondents. Since the locality is quite conservative, it was very difficult to get in contact with the females of the family and have their input. But anyhow we managed to have their input as well which is around equal to 35% of male respondents of the survey.

Table 15. Gender vs Age Crosstabulation

Count

		Age					Total
		Less than 20	27-32	33-38	20-26	More than 39	
Gender	Female	2	4	10	7	8	31
	Male	2	15	15	9	28	69
Total		4	19	25	4	16	100

Since both of these neighborhoods came into being as a result of the partition of British India. From the Figure 48, it can also be observed that many families have been living here since the time of partition. But with the passage of time, the population of these areas has also increased due to urbanization. One thing that we have been informed about through meetings with various people and government officials and the survey also supports it is that there are some families who have recently settled in the old Anarkali area from Charar Pind and other Katchi Abadis of Lahore city. On the other hand, we could not find any family who had recently taken up residence in Charar Pind's neighborhood.
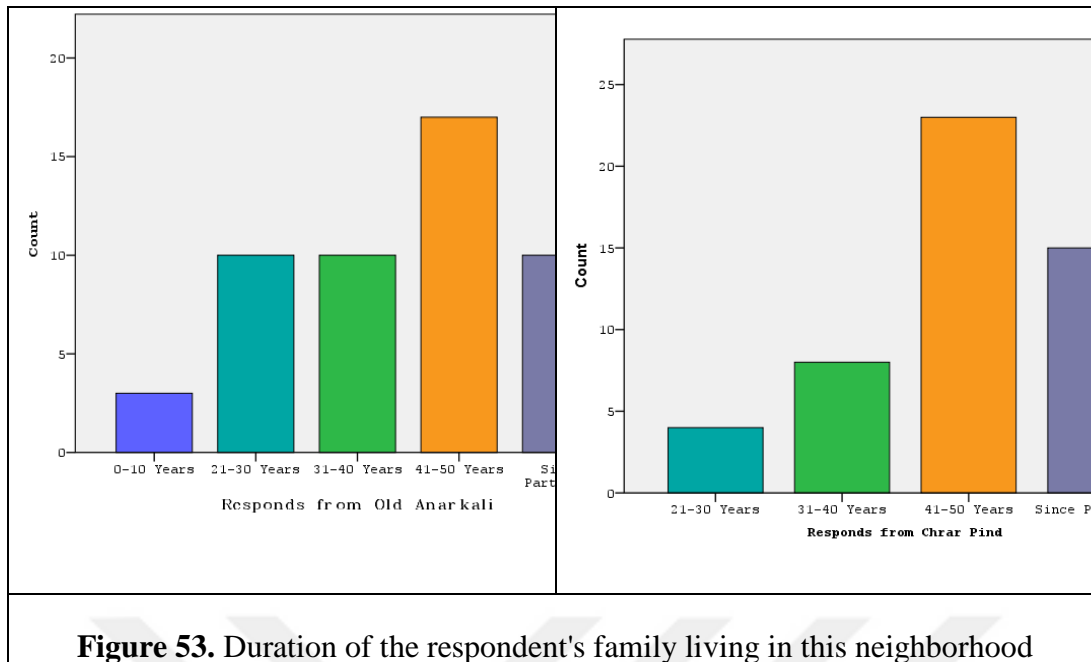
Figure 53. Duration of the respondent's family living in this neighborhood

As far as the type of the social family system is concerned, people of these neighborhoods are living in four different types.

Single-Family System: In this type of family system, a single-family which compose of a husband, his wife, and their children are living in a single house.

Filial Joint Family System: In this type of social family system, parents and the family of their married son having a wife and off springs are sharing the same house.

Fraternal Joint Family System: In this type of joint family system, the families of married brothers are living together in a single house.

Filial and Fraternal (Combined) Joint Family System: This type of social joint family system is the combination of Filial and Fraternal systems in which parents and the families of their married sons are living in a single house.

Figure 48 gives the idea of the type of family system the residents of both the areas are living in whereas Figure 49 and 50 gives the idea separately. It can easily be seen that the majority of the families are spending their lives in the Filial and Fraternal (combined) joint family system.
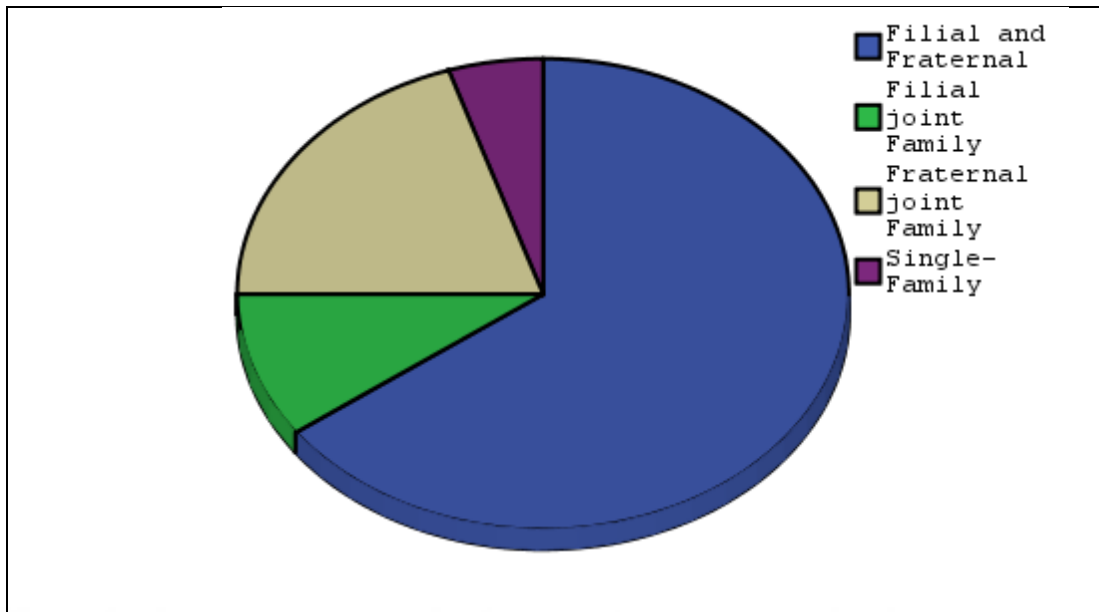
Figure 54. Type of Family System they are Living-In (Anarkali and Chrar Pind)
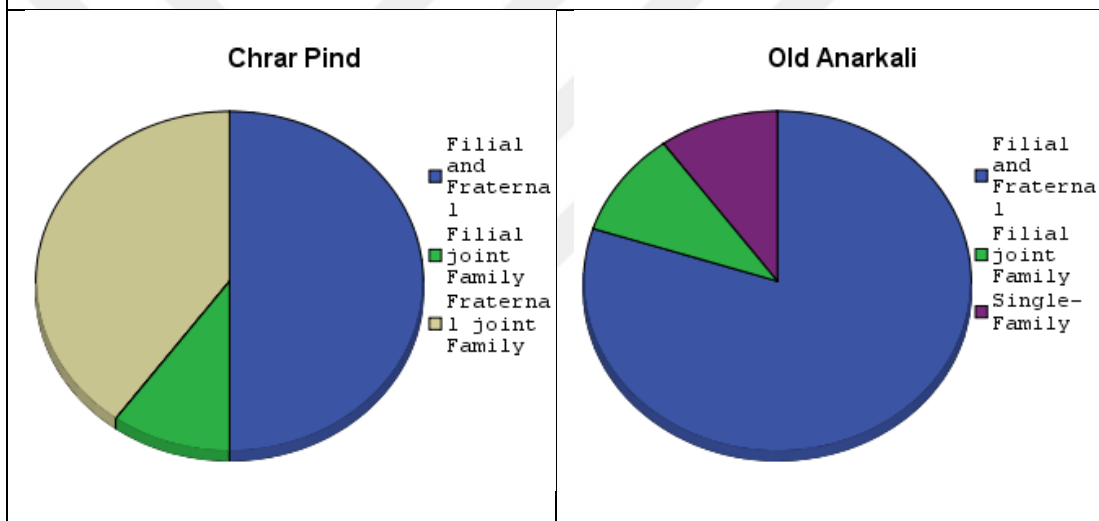
Figure 55. Separate graph showing the Type of Family System they are Living-In

Since most families are living in some kind of joint family system, the number of members in their household will inevitably be high and Table 16 and Figure 50 also support this understanding. It can be seen that most of the houses of both the neighborhoods are very much crowded. Only 20% of the houses have less than 5 members in their house.

Table 16. Number of Residents in a Single House

Count

		3-5 Members	6-8 Members	More than 9	Total
Resident of	Charar Pind	14	18	18	50
	Old Anarkali	6	12	32	50
Total		20	30	50	100
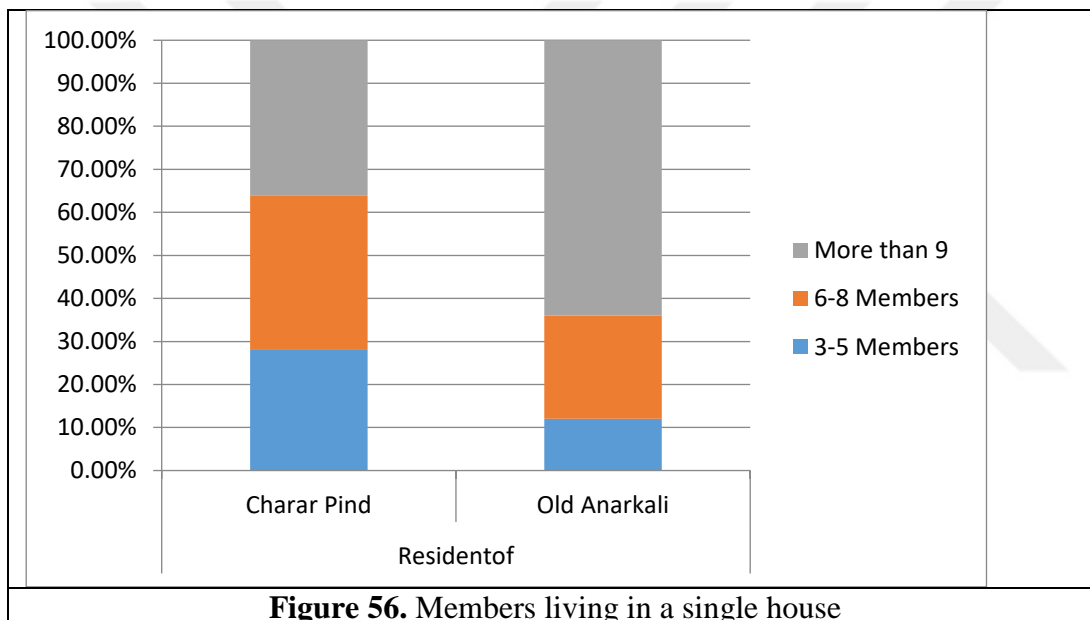
Figure 56. Members living in a single house

As it turns out, most of the homes are overcrowded. A large sum of money is needed every month for the development and expenses of this many people. From personal observation, it can be said that the monthly income of the single head of the households in that neighborhood will not be enough to cover the expenses of the whole family. Therefore, Table 17 proves that there is more than one earner in most households.

Table 17. Number of Earning Members in a Single House

Count

		1-2 Member	3-4 Members	5-6 Members	Total
Resident of	Charar Pind	13	30	7	50
	Old Anarkali	17	29	4	50
Total		30	60	10	100

As far as the average monthly income of the entire household is concerned, it was clear from the survey that the standard of living of the residents of the old Anarkali area was much better than that of the residents of the Charar Pind area. This is possible only when the average monthly income of the old Anarkali area's houses is better than that of the Charar Pind area's houses. Figure 52 can be presented as proof of this claim.
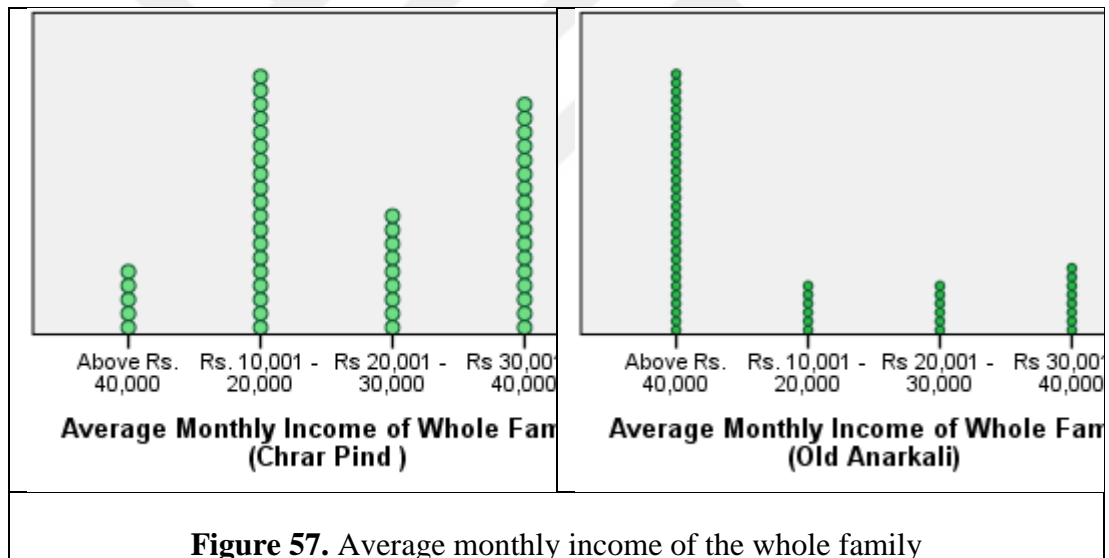
Figure 57. Average monthly income of the whole family

Most of the respondents of old Anarkali are satisfied with the condition of their buildings and consider them strong in structure and better in light and ventilation than other Katchi Abadis of Lahore. However, in most homes, the lights were mostly off due to the heights of the adjoining building. On the other hand, the residents of Charar Pind appeared to be disillusioned with the dilapidated condition of their homes and are living in this particular Katchi Abadi due to their financial constraints.

In order to improve the existing Katchi Abadis' condition, a mixed opinion of the respondents was found. Most were willing to pay from their own resources, with about

30 percent of residents willing to pay partially, and the remaining 20 percent believe that upgrading the Katchi Abadis is the government's liability and, given their current financial situation, they could not bear any monetary burden.

Concerning the housing conditions of both the neighborhoods, it is quite evident that the conditions of houses and sanitary of the Katchi Abadi of Old Anarkali are far better than Charar Pind. Most of the houses in Old Anarkali are big and concrete, having more than 4 rooms, and toilets. Although the residences are as old as Pakistan, the residents take good care of their homes. Figure Y6 showing the condition of houses in terms of their physical existence, area, number of rooms, and toilets.

When asked about the desire to shift to another location, the vast majority expressed displeasure. Very few people were willing to shift to another location on the condition that they were provided with better facilities. The main reason for this dislike is the lack of trust in the government. They are afraid that with the acceptance to shift to another place, they will have to wash their hands from the current place as well.
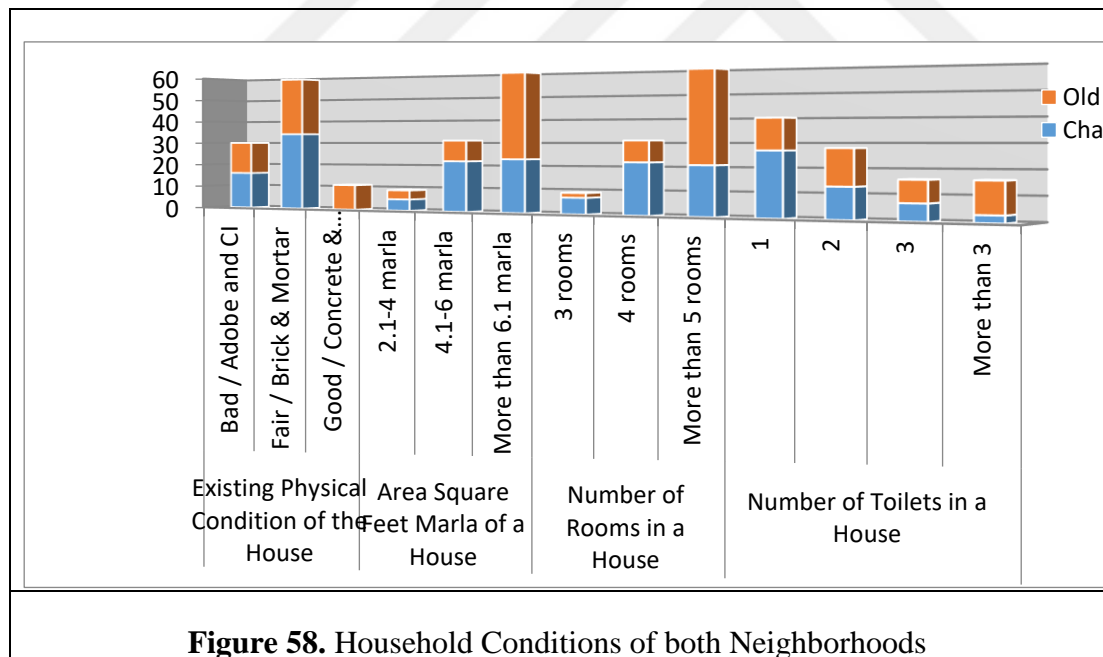
Figure 58. Household Conditions of both Neighborhoods

4.5 Design proposal for affordable housing

The synthesis of data and all allied tangible & intangible factors conclusively lead towards a proposal of affordable housing. The social structure of our area of research is also incorporated into the proposed design while keeping the relationship with the built fabric intact.

To address the urban fabric of Kachi Abadi in Lahore the current bylaws need to be considered and modified to use the existing density in better way. Vacant spaces in existing density should be utilize in such a way that to propose a vertical economical construction idea. In this way the basic problem of land crises would decrease. Shelter for people in Kachi Abadi would disappear. In result, the overall urban fabric of Kachi Abadi would adopt the change of land use. All occupied areas should be modified in this manner that new building proposal must follow vertical construction concept. Rest of the existing building consisting of two stories should be use for communal and commercial purposes.

Right now, the situation of FAR (floor area ratio) in katchi Abadi of building is very low. Only two stories building is permeable in area. The FAR area should be considered and modified. While increasing floor area ratio the vertical building concept will become practical. In this manner the current map would be updated and changed according to the need of katchi Abadi.

Legal ownership of Kachi Abadi is under government. Occupants of Kachi Abadi need to have shelter of their own ownership. Solution for countering this problem and providing people affordable units. Government should introduce economical system in katchi Abadi that they should provide shelter to the people in long term lease. In return people would work to construct vertical buildings. Also, in commercial area, government would provide opportunities that they may earn money for their survival and returning money to the government to get ownership of their units.

Encroachment is also major issue that is faced in Kachi Abadi. Government should need to take legal notice to evacuate encroached areas and use those areas for the benefit of community.

For the affordable construction, new methods should be used to use in process of constructing buildings in such a way to focus more on local materials. This would lead to reduce down cost of construction deliberately.

4.6 The current conditions analysis (interviews/discussions/observations perspective)

The existing condition of the areas are depraved in nature and the reasons for it can broadly be categorized into the following:

a) Institutional neglect & infrastructural condition

b) Building and houses regulation & legal status

c) Family Structure and sub-division

d) Gentrification in adjacent areas

A. Institutional Neglect & infrastructural condition:

The study area is located in the primal location of Lahore which is a densely populated constituent of town. The strategic location of the study area has made it a valuable epicenter. However, the existing conditions are worsening due to institutional neglect.

The study area does not have any public or state-run healthcare facility. The Government of Punjab's health department has never established any facility in the town – despite a huge population.

The same trend is evident in educational institutes as well. There used to be two primary schools (classes 1-5) and one secondary school (classes 5-8), but only one primary school is functional. Since the closure of schools at the start of this millennia, many private schools are operating in tiny homes.

The water and sanitation authority (WASA) which is responsible for supplying drinking water and drainage, is also no different. The residents of this area, through crowdfunding, laid water supply pipes in the early 1990s. This worked just well for a decade. However, since the population is increased by a trifold, the water supply is insufficient. Moreover, the pipes laid in the area were made of low-grade, recycled Galvanized Iron, which are now rusted. The drinking water is contaminated with all other impurities.

The SNGPL (Sui Northern Gas Pipeline Ltd) is responsible for supplying natural gas for households. However, the supply is extremely limited. The subdivision of houses has further put a huge strain on each connection – which are now functioning at almost double capacity. The low supply and more demand also result in extremely low pressure. The peak hours are also a nightmare when the local residents use illegal means to suck gas from the pipeline. This is done through a makeshift suction machine, which uses a compressor to sap the gas from the pipeline. Due to this illegal method, the gas supply company decreases the gas volume even low.

The electrical supply and transmission lines are not installed safely and are a constant life hazard. Since almost all the houses are subdivided, the electrical load, like gas and water is also much more than other parts of town. As the heatwaves in peak summer months, the trend of electricity theft (directly from transmission lines) is also evident at an open scale. The Lahore Electricity Supply Company (LESCO) claims that it has one of the lowest revenue collections from this part of the city, and that line losses & theft are the greatest. The company, as per policy, increases more load-shedding hours to attain a balance that was triggered by losses.

B) BUILDING AND HOUSES REGULATION & LEGAL STATUS:

- Land use division plan is not present due to which residential properties are converted into commercial properties and vice versa.
- Plot ownership and legal possession seldom reside with the living family,
- Many families are in possession of these plots since partition and they claim a degree on this land.
- Due to no legal recognition of land, many conflicts happen when eventually lead to criminal activates.
- No bylaws exist to guide new construction or to regulate existing structures.
- Roads and street network's datum is not fixed and residents change this according to their will. This has a huge impact in the monsoon season. This causes urban flooding in the majority of the areas.

C) FAMILY STRUCTURE AND SUB-DIVISION

- A single house that had one family four decades ago, is subdivided into three houses, on average.
- Internal Subdivision of house puts more pressure on the infrastructure of amenities (electricity, gas, water supply sewer lines, etc.)
- No government program to address and aware people about population control
- The local population also does not move out of this area to find work; as this locality resides in the city's epicenter, there are always quite good jobs opportunities available.

- The vicinal areas are hugely gentrified in the past ten years.

- Two new mass transit lines are placed within ten-minute walking distance from this area. This includes Green Line (or bus rapid transit system). Colloquially known as Metro Bus,

- The other transit line is the Orange line metro train.

- Due to vicinity with metro bus & rail stations, the price of land and overall real estate has almost increased up to 5 times of the original

- Due to easy commute, residents do not feel a need to migrate to any other part of town.

- Due to gentrification around the city and subdivisions of houses within themselves; the population density of this area is also increased.

4.7 The description of design Idea

The design idea of affordable housing consists of two major thought processes. One is related to the architecture and urban design outreach. Second idea is related to the economic development of the area.

Architecture and urban design idea are specifically referring to communal fabric of Kachi Abadi to provide affordable vertical units to the occupants. It would be injected in form of transforming the horizontal expansion of area in vertical construction. This vertical construction would work parallel with streetscape of the area by balancing negative spaces with positive spaces.

Economic development of Kachi Abadi is another foremost issue to addressed specifically by providing economical system. Through this economical system people of the area would be able to afford their shelters and also this is necessary to drag the out of poverty.

4.8 Expected improvements/ outcomes

If we talk about the instant outcomes of the design then we should remember this first that the design idea is gradual process and it takes time to show its positive effects. It would be reflected with the quality of occupant's lives. By following the model of affordable housing and increasing economic growth of the area. The outcome of all

this would raise the quality of life from low to high with the passage of time in terms of social, culture and civic life with economic growth.

In a country like Pakistan if we talk about somehow stopping migration towards the cities then it can be said that this might never happen due to our geographic conditions and also another important issue is our complicated cast system which plays quiet a big role in most of the families in Pakistan and have certain effects on their life's. Well it can be said that in coming few decades this trend of migrating to big cities might slow down but only if the smaller cities and other urban areas get the appropriate facilities which improve their life standards and provide some kind of safe and guaranteed hopes for their upcoming generation. This all is possible only if government takes new plans and policies to fulfill such programs and also make sure there are certain bodies to overlook these programs to ensure the proper implementation of these programs and make them corruption-free so that people start feeling secure and governments starts gaining people's trust.

This model would lead to increase of buying capacity by providing them opportunities for developing their own small-scale businesses in commercial areas. Also, opportunities of jobs would increase with constructing work. In this manners people would not move out to other developed areas around. This design idea would also attract investor from outside to invest here and it would directly increase the economic growth of area.

This model can be used in all other Kachi Abadis to enhance their life style and to provide affordable housing. By apply this model in Kachi Abadis, it would lead to good terms between administrative representing government and local people of the area which will itself lead to the strong demarcated system.

CHAPTER 5

CONCLUSION AND FUTURE RESEARCH

Figure 59. Conclusion

Source: Yazdaan Haider Khan

While talking about the issues of informal settlements and the Katchi Abadi's can be seen as the integrated part of urban development process of Lahore city in a developing country like Pakistan. Well it can be said that the majority of the increasing lag in the housing in Pakistan is actually existing due to inability and lack of consistency towards improvement of housing policies and especially their implementation by the government authorities in Pakistan. In recent decades the rural poor migration towards the urban has increased which required better amendments in housing and urban sector but unfortunately it did not happen and as a result the rural migrations into urban cities brought poverty and unorganized settlements in big cities such as the case of Lahore discussed in this paper.

The major and primary objective of this thesis paper is to analyze the current conditions of the Katchi Abadi's based in Lahore and indicate the issues regarding housing conditions. This paper in this part is going to recommend and establish some parameters. These recommended amendments of the rules if adopted properly then they will result in creating a big breathing environment in the city of Lahore its

habitants which has already become very congested and way more expanded then its capacity.

Based on the surveys and work done in this paper above, the paper will discuss and recommend some policies and ideas from which the communities of Kachi Abadi's can benefit to a great extent in multiple aspects of their life.

To start with the outputs of this paper we should start with the regulations and policies because government policies can play a vital role in accomplishing these objectives. There are some vital policy measures which can greatly improve the upcoming projects and also can be applicable on majority of the existing settlements. For instance, the focus towards the importance of high-rise buildings can be a gateway towards the lower prices of individual housing units and it can create a big vacuum in the increase of overall housing availability on a larger scale. In this matter to consolidate such issues the legislation and empowerment of the local government needs to be done by the federal government so that the local governments could tag along other related agencies on board to emphasize the integration of city planning. In this process the government authorities can acquire and also issue the unutilized/underutilized lands under certain new bylaws to rezone these areas and allow agencies to do high rise development projects. Such policies should be introduced in which wherever possible, government should allow only high-rise construction projects especially considering areas like Katchi Abadi in Lahore and other similar parts of the city with concentrated housing. Considering the existing deficit in housing already along with drastic increase in urbanization the government should not permit anymore unnecessary low-rise units in such dense areas. Due to weak management and partially corrupt system very often some bylaws are overlooked by the authorities while these projects are being built and it is an existing big issue in Pakistan. So, to handle these issues such departments should be established who overlook these projects they work alongside to the local bodies to ensure that the titles of ongoing vertical and physical spaces are performed by right policies and legitimately. The implication of the policies is going to be a very big challenge for the federal government in coming years and to ease these challenges the local government should be given more resources and more empowered when it comes to low income housing decentralization. Even for local governments this is going to be a difficult task so it requires thorough research process before appropriate steps are taken into account, which this paper is not ruling out but only indicating

towards this future concern. However, regarding modern mechanism which can be considered as agriculture tax, property tax, land reform etc. They need to be revised in more details and how will they effect the low-income housing needs to be taken under consideration thoroughly.

Government should focus on land utilizations and should release as much as unutilized lands they can which might be under non-productive uses and utilize these areas for the establishment of affordable housing units. Another major step required id to take substantial steps regarding the expansion of construction financing and mortgages profiles with the banking sectors and also for middle income groups which will result in more feasible outcomes for the developers and the consumers as well. More approachable leasing policies should be introduced for low income people from bank through government support regulations which will result in more people with less support resources getting better housing setups and once this given platform gains speed it will help reducing many other issues related to urban mechanism and also will help people in improving their life styles with better resources. All these proposed policies and such other measurements related to housing sector in these Katchi Abadi's and other densely concentrated areas should be taken into account towards the broader commitments of the city and these areas will merge into affordable and also sustainable development programs with positive outcomes in longer run. Regulating new housing policies especially for the ones with less privileges in our society should not be ignored and taken into serious consideration because these unregularized areas of the city have very deep connection to social impacts, economic growth, environment and many other major aspects which create better effects on the city and society as a whole.

If we talk about affordable housing then opting for vertical construction is the most efficient way in the case of our site of this paper which is Katchi Abadi's. Based on my recommendations in the previous parts of this discussion, the communities of Kachi Abadi's will benefit to a great extent in multiple aspects of their life. Switching to vertical density will help in optimizing the land use. Communal life is an important part of the social and cultural fabric of Pakistan, and its importance increases as we move towards the low-income population. Verticality will create additional areas for streets, which play a pivotal role in the communal life, from adults to children, hence improved streetscape replicated into the new design allied with the features of the existing streetscape will drastically improve the quality of life. The tried and tested

concept of placemaking can be applied through addition of green spaces and recreational areas, which will improve the surroundings visually and environmentally, directly resulting in a positive psychological and physical impact. The upped social integration will improve communication of the area, thus resulting in increased sense of security in the community. The application of stacked housing will directly improve the built environment. It will help in creating more openings in the structure. Passive design can be applied, creating ample natural light and ventilation, making the buildings energy efficient, directly impacting the costs of living and making indoor life finer. Another possible advantage by opting these methods that they will result in better economy of the area and individuals of these Squatter Settlements which brings better understanding and coordination with other class systems and better mindset for a more stable environment in the society which in time can help in slowing down child birth and eventually start having some positive effects on population control.

Important factors such as cost effectiveness and construction optimization can be achieved through this strategy. The use of locally sourced material e.g., brick, extracted steel from raw materials, bamboos, cane internally etc., will reduce the cost extremely effectively. The economic analysis suggests that an independent unit is expensive than its equivalent in a mid-rise structure. Along with a cost-effective structure, it provides income opportunities for the occupants. The house will virtually be divided into multiple units, which can be rented and in return help the owner with the lease payments, thus moving towards permanent ownership. The multiple vertical units will also allow more space for commercial activity, improving the income of the residents of the Katchi Abadi's, creating a catalyst for economically sustainable community, eventually attracting investment for outside sources. At this stage I think it is necessary to mention that the recommendations and ideas discussed above are not exhaustive but are very suitable to the existing site and other similar dwellings facing similar scenarios in other parts of Lahore city. For such cases there are other options also which according to other individual's mindset can be approached and can be utilized for the improvement of the concerned issues at hand but this also about the mindset of people as a community which doesn't happened overnight, so we can think of these outcomes as positive aspects for society which will take place gradually.

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APPENDIX

HOUSEHOLD RESEARCH QUESTIONNAIRE

Urban Households of Lahore | Yazdaan Haider Khan

<u>(Investigating population settlement trends and quality of infrastructure)</u>

The purpose of this questionnaire is to find the settlement trends of people in the study area of Lahore. This analysis is meant for a master's thesis work on the factors influencing the case for affordable vertical housing in the city of Lahore.

This analysis is exclusively for research purposes. Please provide the needed information and respond to the questions by ticking your choice.

Note that this evaluation is qualitative in nature and there is no "right" or "wrong" answer. Your Corporation is highly appreciated.

SECTION A:

Area of Survey: _____

Street Number: _____

House Number: _____

Age: less than 20   20-26   27-32   33-38   39+

Gender: Male ( )   Female (   )

Respondent Status: Resident ( ) Non-Resident (   )

SECTION B:

In this section, select answers from options provided opposite to each query.

S/N	Criteria	Possible Answers						
1	How long have you been a resident of this area/locality/neighborhood?	From my birth	0-10 years	11-20 years	21-30 years	31-40 years	41-50 years	Since partition
2	Why do you prefer to live in this neighborhood instead of any other part of Lahore?	Near to workplace		Better than other Katchi Abadis	All Relatives are living nearby		Affordability	Ancestors
3	Do you own this house?	Owner/Lease			Tenant		Mortgaged	
4	What is the family system you are living in?	Single-Family	Filial joint Family (parents and their married sons with their offspring)	Fraternal joint Family (two married brothers and their offspring)	Filial and Fraternal (Combined) joint Family	Flats/Sharing with others	Independent	
5	How many people are living in your house?	Less than 3		3-5 Members		6-8 Members	More than 9	

6	What is the gender of the head of the family	Male			Female	
7	How many earning members are there in your family?	1-2 Member	3-4 Members		5-6 Members	6 and more
8	Is earner the owner of the family as well?	Yes		No		I don't know
9	What type of occupation do you have?	Government Job	Private Job		Daily Wager	Business
10	What is your average monthly income of you and/or your spouse?	Rs 1000-5000	Rs 5100-10000	Rs 10001 - 15000	Rs 15001-20000	Above Rs 20000
11	What is your average monthly income for the whole family?	Less than Rs. 10,000	Rs. 10,001 - 20,000	Rs 20,001 - 30,000	Rs 30,001 - 40,000	Above Rs. 40,000
12	What is the existing physical condition of your house?	Good / Concrete & Cemented		Fair / Brick & Mortar		Bad / Adobe and CI-
13	What is the area (square feet/marla) of your unit?	Less than 2 marla	2.1-4 marla		4.1-6 marla	More than 6.1 marla
14	How much you are spending per month on the house? (Repair or rent)	None	Less than Rs. 1000	Rs. 1001-2000	Rs. 2001-3000	More than Rs. 3000

15	Number of rooms in the house	3 rooms		4 rooms		5 rooms		More than 5 rooms
16	Number of toilets in the house?	None	1	2	3			More than 3
17	How much money you are paying in terms of all utilities	Less than Rs.1,000		Rs. 1,001-1,500		More than Rs. 1,500		