

BUILDING LARGE: TRACING TRANSFORMATION OF VOLUME IN
CONTEMPORARY HOUSING IN ISTANBUL/ KADIKÖY



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BUILDING LARGE: TRACING TRANSFORMATION OF VOLUME IN
CONTEMPORARY HOUSING IN ISTANBUL/ KADIKÖY

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ABSTRACT

BUILDING LARGE: TRACING TRANSFORMATION OF VOLUME IN CONTEMPORARY HOUSING IN ISTANBUL/ KADIKÖY

This thesis studies the role of building large within the context of repetition and shrinking in size of units in housing. A brief history of larger structures is investigated, in relation with trends and timeline, to clarify their role and impact on urban settlements along with cultural, political and management dynamism. The Industrial Revolution and Modernism have transformed the city by introducing new building types of larger structures and by re-centering the City, to place of work, followed by the place of residential. With altered building techniques that led to new set of aesthetics the traditional city was being transformed. The political and economic influence with the post war problems of urgent Affordable Housing need, large housing structures were designed by architects. Since, many terms for explanatory have been outlined and used to study large structures.

The connection with urban fabric is one of the focus points of the study. Building large is noted for creating detachment in the scale of the float which results in the loss of public realm. Gated communities are being highlighted for breaking the float of urban tissue further.

Besides the journey of building large and housing in other countries, the journey and the transformation of Turkish housing in relation to cultural alteration with political reforms and law enforcements are studied. There are four periods of housing in Turkey examined. Building large and tall showed a growth especially after 1990's in Turkey in housing sector. Istanbul is the city containing highest volumetric urbanism and the district of Kadıköy that contains both new and historical fabric of housing with large regeneration area is studied along with building tall, through researching available flats for sale and rent on housing market.

Sahibinden.com's widely used research engine is enriched and the mass housing typology with tall structures of these areas with neighborhoods are identified to study the unit sizes in relation with the volume of mass, covering the features of repetition and shrinking in size. The phenomenon of going larger and taller (in terms of volume) while getting smaller (units) lies at the center of this study.

ÖZET

İRİ YAPILAŞMA: CONTEMPORARY ISTANBUL/ KADIKÖY KONUT HACİM DÖNÜŞÜMÜNÜN İZLENMESİ

İri yapılaşmanın rolü, bu tez çalışmasında, konut yapılarında mekanların tekrarlaması ve küçülmesi bağlamında incelenmiştir. İri yapılaşmanın genel bir geçmişi akımlar ve tarihçe ile ilişkili olarak kentsel yerleşimler üzerindeki rollerini ve etkilerini değerlendirmek için kültürel, politik ve yönetsel dinamizm ile birlikte araştırılmıştır. Sanayi Devrimi ve Modernizm ile birlikte, iri yapılaşma yeni bina türlerini kapsayarak ve şehri çalışma ve devamında barınma, fonksiyonları etrafında merkezlemiştir. Yeni estetiğe yol açan ve değişen yapı teknikleri ile geleneksel şehir dönüşüme uğramıştır. Acil ekonomik konut ihtiyacının savaş sonrası sorunları ile siyasi ve ekonomik etkisi, iri yapılaşmanın mimarlar tarafından benimsenmesini sağlamıştır. O zamandan beri, birçok terim farklılık ve benzerlikleriyle, iri yapılaşmayı incelemek için kullanılmıştır.

Kent dokusu ile bağlantı, çalışmanın odak noktalarından biridir. İri yapılaşma, yapı ölçeğinde ani farklılaşma yaratmasıyla kamu alanının kaybına neden olması dikkati çekmektedir. Siteler ve rezidanslar, kentsel doku bağlamını daha da zedeleyen öğeler olarak öne çıkmaktadırlar.

Diğer ülkelerdeki iri yapılaşma ve konut yolculuğunun yanı sıra, Türk konutunun siyasi reformlar ve kanunlar ile kültürel değişime bağlı olarak yolculuğu ve dönüşümü incelenmektedir. Türkiye'de üzerinde durlan dört dönem konut geçmişi bulunmaktadır. Türkiye'de konut sektöründe özellikle 1990'lı yıllardan sonra iri ve yüksek binalar yayılma göstermiştir. İstanbul'un şehircilik hacminin en yüksek olduğu il olması, Kadıköy İlçesi'nin ise yeni ve tarihi konut dokusunu içerisinde barındırması nedeni ile konut piyasası, satılık ve kiralık daireler aracılığıyla bu bölgelerde iri yapılaşma ışığında irdelenmiştir.

Sahibinden.com'un yaygın olarak kullanılan wesayfası üzerinden, bu bölgelerde bulunan toplu konut tipolojisi ve yüksek yapılaşma, yapı hacminin içerisinde barındırdığı birimlerle ilişkisini irdelerek, tekrarlayan ve küçülen mahalleler incelenmiştir. Bu çalışmanın ana teması, büyüüp uzarken (yapı ölçeğinde), küçülmek (birim) olgusudur.

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1. INTRODUCTION

Along with the world population growth, the density of population in urban areas increases rapidly. The shift on the number of residents from rural areas to urbanized regions results in a continuous form alteration within cities. Irregular expansion of areas with rapid density of growth needs to be planned and managed for the satisfaction of residents. One of the outcome of many is the larger volumetric design to overcome the increasing population along with high land prices within city centers, and ‘Building Large’ is used as a means of densification on urban fabric.

Large buildings have been part of human heritage in relation with representational buildings, were mainly related to power and religion. With industrial revolution, urban planning functions shifted from religion to political center, educational and health institutions to places of work and residential. Residential have become the center of urban fabric through building large and mass housing started to take over. While houses turned into apartments, apartments turned into residences, enhancing the scale and the height of cities. The process of going larger and taller of structures, ironically create smaller and repetitive living units. This study argues that it is possible to observe such change within Istanbul’s housing stock.

1.1. THE AIM OF THE STUDY

From the point of view of this thesis, it is argued that stand alone vast growing volumes within city centers are resulting in detached urban spaces within urbanism and creates repetition of spaces we occupy. Through building large, while shrinking in size and repetition of inner units escalates, feeling of belonging and attachment to the space fade away gradually. Although this thesis explores building large in a more physical content and it does not study the belonging feeling, the impacts of design is discussed briefly.

The aim of the study is to investigate into the phenomenon of going larger and taller (in terms of volume) while getting smaller (units). Researching into implications of building large foresees the ways of promoting the diversity of housing with well-connected city texture and variation in lifestyle.

The need for large forms in urban settlements is still expanding and the physical form influences human behavior. Therefore, the issues with these structures and volumetric cities need to be confronted. The focus has to be on improving the quality of space within designing large and tall in housing. Besides these improvements being not part of the scope of this thesis, the study aims to open up a discussion on this direction.

1.2. SCOPE OF THE RESEARCH AND FORMING THE STRUCTURE OF THE STUDY

The study frames the vocabulary of cities along with repetition and shrinking in size through building large. The design parameters and qualities for the mass housing construction are investigated to highlight the journey of large housing culture of Turkey. While chapter two introduces building large, which is a vast amount of construction in verifying form and function parameters, section three focuses on the connection with housing function followed by a brief background of housing in Turkey. Chapter four investigates into the available current data in Turkish housing market in relation to getting smaller within building large, which is identified with shrinking of inner spaces.

A timeline of larger structures studied under the main subjects of function and form, including the impact on urban settlements. The substantial values and the current of thoughts have an impact on altering the larger structures. In order to complete the timeline of transformation, city of Istanbul was chosen as the largest metropolis and the district of Kadıköy in Istanbul was identified and studied further. Kadıköy is selected for being one of the earlier settlement area in the city that contains both historical fabric and newer areas of development. One of the expended regeneration project area is also located in this district with large housing structures.

To understand the volumes, the typology of building large is analyzed through form which are grouped under five main categories. Schemas are used for being a substantial element of morphological approach research.

One of the issues of volumetric cities is the construction of detached urban tissue. The role of building large which have a weak connection with the urban mesh, in this context is highlighted. The similarities, diversities and variations with urban identity are investigated.

The scale and volume notion finds a discussion platform in design and Le Corbusier's ideas of architecture are used to link opposed approaches to mass and urban connections. Ideal design is questioned from the scale point of view.

The factors for the increasing volumes are studied under the motives of technology, increasing land prices, logo representation and local authority inducement. Large buildings are representing the power struggle that seems to be the main driver of today's economic world.

In the aspect of shrinking in size and repetition, the flats advertised for 'Sale' and 'Rent' on 'Sahidinden.com' website is studied to show and compare the number of bedrooms and the property of flats in relation to time they were built. Although the outcome of an advertisement site may not be precise, it gives an indication of change in time, through searching what is available on the current market in relation with building heights, units capacities, balconies and the number of bathrooms. The size of units is not included in this study, as the net area is not defined as a research filter on sahibinden.com and the gross area calculation technics verifies with the inclusion of common areas such as main circulation cores, parking and social areas.

1.3. RESEARCH METHOD OF THE STUDY

This thesis studies building large and building tall through historical, morphological and conceptual researches. Most of the studies are based on the history of housing along with the transformation of residential unit types, forms and layouts. Although this thesis utilizes the studies on these subjects, it follows a different direction with exploring building large in the context of getting smaller through the housing stock in Turkey. The researches on the subjects of Megastructure, Superblock, Bigness, Megaform and Megastructuralism is studied to get an overall picture of building large. The relation to these literatures with housing function is overlapped followed by the focus within Turkey housing market.

In this research the information of housing stock in Turkey is gained from the most commonly used advertisement site for selling and renting properties called sahibinden.com. To an extent, the information produced by owners may result in some errors that may be a setback for the coverage of study, the general trend of research is believed to reflect

respectable results. The website being used by both property owners and estate agents, allow a wider spectrum in research for being easily accessed by all.

The numbers of housing units available on the market is superposed with the unit numbers of high-rise construction to get connection to building large with quantitative data collection methods. Besides the high rise construction, the results of this online survey are studied to compare the number of houses with flats, the number of bedrooms within the units, the age of buildings against the number of bedrooms, the ratio of units with balconies. The interaction with urban fabric through gated community construction and the relation between high rise with these isolated complexes are investigated. The high rise construction of single buildings and settlement projects are also compared from the facade area and plan typology point of view.

The numbers of housing units gained through sahibinden.com website, with quantitative research, is transferred into tables with location information. The information on these tables are transferred into bar charts and pie charts to identify the ratios clearly. The ratios on these graphs are implemented into maps to display and connect the information with the location of mapping.

2. BUILDING LARGE IN ARCHITECTURE LITERATURE

The history of architecture has witnessed structures with larger masses in verifying forms and functions. Since the ancient time, being able to build large and high has always been something people desire. From Egyptian pyramids that are around four thousand years old, to Roman mega hippodromes were built around two thousand years ago, early history of building large has been part of civilization.

The first mentioned large structure being the tower of Babel "tower with its top in the sky", in the ancient city of Babylon, was built to get protection from flood, as well as for locals to glorify themselves. Although the myth was about civilization, locals were punished for their hubris by God and the punishment was the confusion of tongues with multiplicity of languages, to restrain communication [1]. This was one the first occasions of many that finds a connection between building large and disasters to follow. There have been many critiques of large buildings, swallowing up urban settlements.

In this section from precursor of building large to ancestors of housing relation of Megastructure Movement and the forms of theorizing building large is studied followed by the connection with urban fabric and the forms of building large. The journey of building large is examined to highlight the transformation through time. It is followed with the connection to housing, to be able to examine the culture of living against building large.

2.1. PRECURSORS OF BUILDING LARGE

People admired large and tall buildings since ancient times. They provide identity for settlements. During the Middle Ages and in the Renaissance there were two types of buildings; representational buildings which were larger structures and ordinary buildings which the housing was part of it [2]. The earliest functions of representational buildings were mainly in relation with power and religion. Church, Mosque, Market Place, City Tower and City Gate were some of the examples of Middle Age representational of large buildings.

Before the industrial revolution urban planning was an art of organizing [3]. With the industrial revolution the relation between the city and the rural dramatically changed with the vast amount of workers being relocated closer to factories. The outskirts of urban areas

expanded randomly without any concern of hygiene and appearance. The solution to these issues were modern urbanism with functionalist outlook of an army organization type communal life [3]. After the construction of larger factoring facilities, the railway system was developed after 1830's. The routes of railways had an effect on the settlements, creating newer industrial centers [4] with factories and housing states.

As technology moved forward and the accumulation of capital grew, the speed of contracting power buildings that represents wealth, has taken over and became more prominent on urban settlements, with variation of functions depending on the era. Despite their varying functions, the need to represent power had been distinctive. Power structures were placed in the center of urban settlements attached to an ideology of period; the representational attribute given to structures started to shift from religion to political center, educational and health institutions to places of work and residential.

With the modern movement larger structures were started show themselves in Cities. Hans Poelzig's 'House of Friendship' shown on Figure 2.1 designed, as part of a competition for Istanbul in 1916. It was designed as a mixed used complex to create common language between East and West, that was not built. According to Frampton [5] it is an early example of a horizontal Megaform.



Figure 2.1. Hans Poelzig, House of Friendship, Istanbul, Turkey [6].

Cultural and political revolutions also have played a role especially during 20th century with world wars. From the end of World War I, a new trend of modernism started show with the architects such as Walter Gropius, Le Corbusier and Alexander Klein; social democratic ideology promoting equality find its place with large designs. According to Urban [7], mass

housing was born to advocate equal living spaces for all people which he described as tower and slab developments. From 1920's onwards modular construction especially in housing were experimented and mass housing started to spread after 1930's. Megastructure movement participated to the trend of mass housing. Building large was reformed in relation to function and form, transforming into a new building typology in architecture.

The terms of Superblock, Bigness and Megaform are studied further in relation to mass housing. As technology moved even further, building large arguably headed upwards, from horizontal to vertical expansion. As a result, building high is to be investigated as one prominent typology of mass housing. The study is followed with the section that examines the larger structures in relation to urban connection.

2.2. MEGASTRUCTURE MOVEMENT

Towards the end of 1950's the political and economic influence with the post war problems of urgent affordable housing need along with modern movement and city planning led architects to search into experimental design solutions, such as Megastructuralism. It started as an Anglo-Saxon experience, even though it was promoted in Germany beforehand. According to Bellini & Arcieri [8], it was the result of a political-ideological-cultural effect following World War II. Megastructure Movement was a housing experiment to meet the primary needs under the social democratic ideology of all is equal. Some of designs and designers of this era are studied in this section to understand building large along with the mass housing of its time. The trend was one of the embranchment ancestor of building large meeting housing sector.

Between 1950 and 1960 larger housing designs and pioneering projects were undertaken by many architects of this era including Le Corbusier and others that started to develop mass housing projects to meet the primary needs of residents and started to shape the feature of architecture. Yona Friedman and some groups of designers such as Archigram, on the other hand, had a different approach to larger structures.

Le Corbusier defined four functions of living, working, resting and communication for ideal urban settlement. With these concepts, he developed the mass housing and urban planning [9]. Functionalism, uniformity and standardization dominated his designs by eliminating

irrational factors of traditions, habits, aesthetics, public memory and historicity [10]. His aim was to create communal harmony by enhancing the open spaces in landscape. He reflected organic and biological qualities in his designs. His project of Plan Obus for Algiers of 1931 is shown on Figure 2.2, was a topographic approach with a main permanent structure to correspond to the Algerian slopes.



Figure 2.2. Le Corbusier, Plan Obus for Algiers [11].



Figure 2.3. Le Corbusier, Unite D'Habitation [12].

Le Corbusier's another project of Unite D'Habitation (1947-1952) shown on Figure 2.3 is a housing block, designed to meet the physical and social needs. The project contains 337 apartments with twenty-three different flat layouts from one person units up to ten person family living flats with a least one balcony each. Along with residential, the project contains hotel, retail units, a gym, nursery with a kids' pool and roof garden to accommodate the

whole set of functions for users. It is a substantial example for a mixed used residential block of contemporary city.

By the time building large introduced housing opportunities, it turned into a community symbol of ‘giving houses to the people’ which escalated the proliferation of large scale housing [13]. Some examples of these experiences are being; ‘Karl Marx Hof’ in Wien by K. Ehn, 1926-1930; ‘Balfron Tower’ in London by E. Goldfinger, 1965; ‘Dentsu Building’ in Tokyo by K. Tange, 1961-1967 as shown on Figure 2.4.

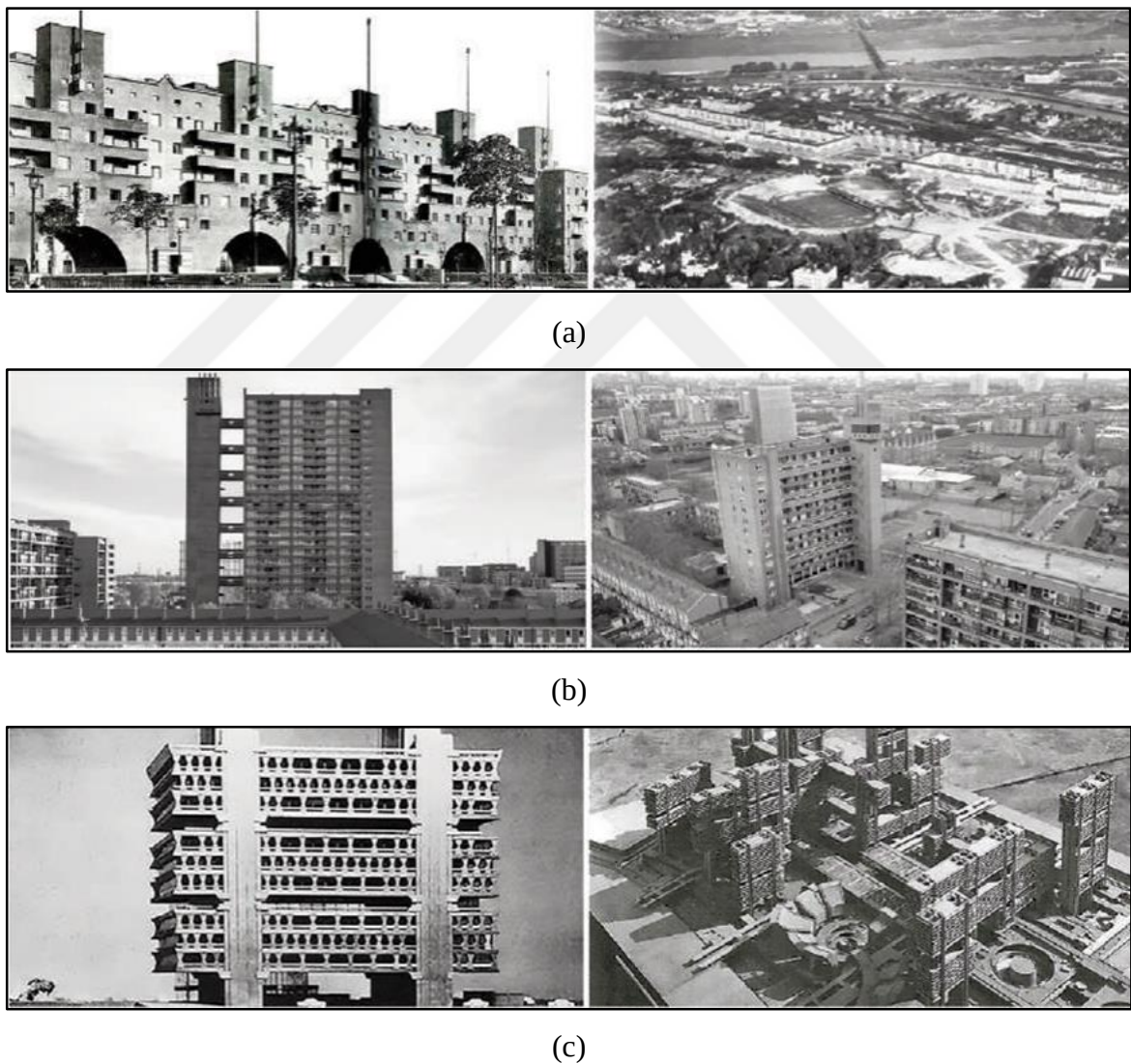


Figure 2.4. (a) Karl Marx Hof in Wien by K. Ehn. (b) Balfron Tower in London by E. Goldfinger. (c) Dentsu Building in Tokyo by K. Tange [8].

The history of architecture in 1960's large structures were produced with variations of interaction between function, form and infrastructure that resulted in new approaches of megastructures mainly produced by Yona Friedman, Constant Nieuwenhuys, Archigram group and Metabolist group. Le Corbusier's Plan Obus for Algiers was an influence for these designers to proceed to explore the concept of Mobile architecture. The Megastructure is associated with the qualities of modularity, extensibility and prototypicality. Idea driven architecture was flexible, as well as being mobile and temporary. Yona Friedman used the flexibility, under the concepts of mobility and freedom. Apart from Archigram which was founded by Sir Peter Cook and the Japanese group of Metabolists, Megastructure is associated with some other groups, such as the French Urbanisme Spatial and the Italian Citta-Territorio [14]. Some of the examples of that era are Yona Friedman's Spatial City (1960) and Paul Maymont's Circular City (1965) in Paris, Kenzo Tange's and Buckminster Fuller's Tetrahedral City (1968); in Tokyo, Archigram's Plug-In City (1964) in London. Maki and Othaka [15] the first to define the megastructure, introduced a mixed use idea of collective form. Megastructure is introduced as a possible alternative to the city that contains the functions of a city that becomes a human made landscape. The variation of functions gathered in a design to provide optimal benefit. The design for their group form idea was proposed with the project of Shinjuku station in Tokyo as shown on Figure 2.5. which was designed with shopping facilities, parking, offices and residential units as a demonstration of form in 1960.

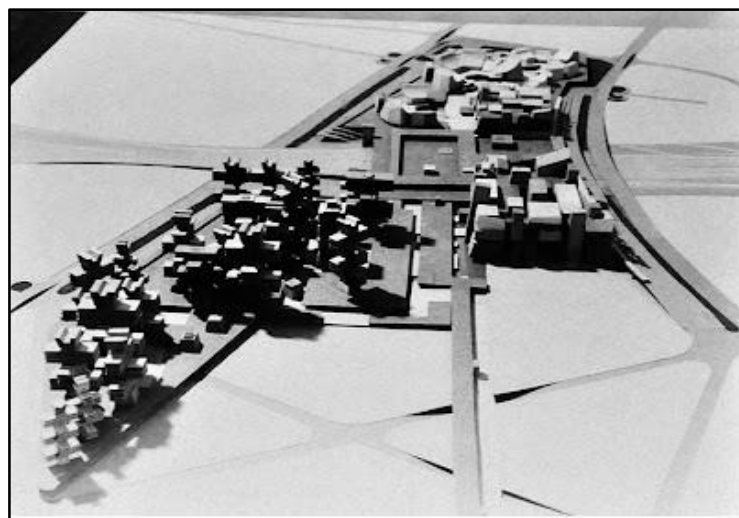


Figure 2.5. Fumihiko Maki and Masato Osawa [16].

In Europe, especially in Great Britain the mass housing started to get constructed in relation with social housing. Some of the examples were designed with more traditional attitude. The

Alexandra Road Estate in London is an example designed by Neave Brown, constructed between 1972 and 1978 as shown on Figure 2.6. The megastructure is a mixed typological design with a 1700 meters length of a block that has the same section throughout [17]. Apart from the apartments the site includes a school, community center, youth club, heating complex, and parkland.



Figure 2.6. Neave Brown, Alexandra Road Estate [8].

After many years of their construction some of megastructure housing projects had been demolished while others are stated as listed and some are being redeveloped [14]. In London, part of Robin Hood Garden Estate project that is a typological mix as a megastructure by Alison and Peter Smithson is an example of a demolition as shown on Figure 2.7., that took place in 2017. A part of the housing estate was preserved.



Figure 2.7. Alison and Peter Smithson, Robin Hood Garden [8-18].

In 1960's at the other side of the world, Japanese architecture was making a contribution to megastructure trend with Tokyo Bay project by Kenzo Tange (as shown on Figure 2.8.); using the artificially filled land on the sea, expanding across the bay. The linear development

included a series of satellite cities, to overcome the vast population growth. He produced a new interaction between urban fabric and architecture.

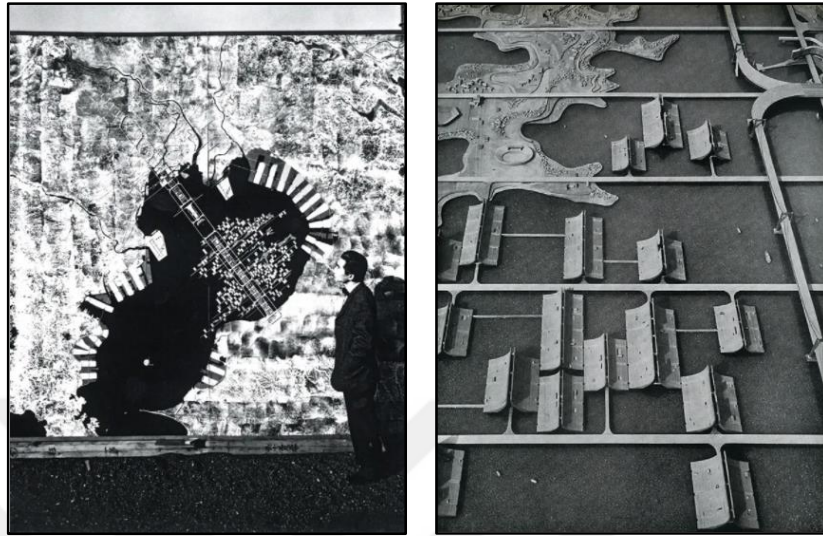


Figure 2.8. Kenzo Tange, Tokyo Bay project [5].

Megastructure was an architectural passion to house thousands. It is discussed in connection with its large form, function, affordability and the ideology it has represented with an undelivered dream; yet it is described as an evolution that denies boundaries of its social, aesthetic, and technical qualities [14].



Figure 2.9. Kisho Kurokawa, Nakagin capsule tower [19].

The principles of Megastructure trend have transformed with capsule design that has mainly contained by small units of housing, which can be continuously expanded. Metabolist's

megastructure approach was introduced with irregular, monumental design of few examples in all around Japan. Nakagin Capsule Tower (Figure 2.9) built in 1972 is a prime example of Metabolic architecture. These modular capsules of shrinking living spaces were introduced with this trend and it may be claimed that these units were going to be more frequently expected from the size point of view.

Although Megastructure Movement has lost its activity as an architectural trend, today the term of ‘‘Megastructure’’ is used in a broader spectrum and the mark of the trend shows itself in contemporary architecture.

Megastructure movement along with mass housing construction contributed towards the journey of building large. How this trend was created and promoted is crucial to understand the architecture transformation of larger structures. It was a combination of social, economic and technical needs and strategies. Followed by this trend, building large was divided into groups with verifying aspects, as it progressed. The features of Superblock, Bigness and Megaform are studied in the following section.

2.3. THEORIZING BUILDING LARGE: SUPERBLOCK, BIGNESS AND MEGAFORM

Focusing on building large opens up the literature on related forms and features of the larger construction. Looking back from 1950’s, the larger constructions were studied by researchers and some are investigated to understand the architectural impact and the meaning of scale. Wilcoxon’s modular notion of ‘Megastructure’, Colquhoun’s complexed great size of ‘Superblock’, Koolhaas’s problem of large called ‘Bigness’, Frampton’s urban connection of ‘Megaform’ and some threshold remarks on building large are discussed.

Four years after the Fumihiko Maki’s book *Collective Form* [15], Ralph Wilcoxon identified megastructure as a vast extendable great size structure with “plugged-in” or “clipped-on” modular units and a main framework that has longer life expectancy. It could be even extended unlimitedly with offsite prefabricated modular units.

From 1999 onwards Kenneth Frampton’s [5] definition of ‘Megaform’ developed a connection of larger structures with urbanism and land formed buildings. According to Frampton megaform is a horizontal urban fabric, dominant enough to transform topography

in the megalopolitan urban fabric and connected to it. While megastructure may be an iconic building, megaform is the horizontal urbanism or structure that contains the megastructure. From this, he separates the megastructure and megaform with the coverage mentality of; megastructure may be part of a megaform but not the other way round. In his study Frampton gives a clear explanation of megaforms and one of the aspects being the orientation towards the densification. He mentions that most of Maki's designs contributed towards the megaform concept.

In 1995 Koolhaas [20] introduced a theory of 'Bigness' or the problem of Large that cannot be controlled by a single architectural gesture. He refers to Bigness as the structures taller and deeper- Bigger- than ever with the issues of composition, scale, proportion, detail. His note on the larger spaces was dishonesty, caused by detachment for the internal and exterior of the architecture, as what you see from the facade no not reflect what goes beyond it. So the city becomes a mysteries place. These structures go into an amoral domain, that is beyond good or bad which are not part of any urban fabric.

Colquhoun [2], described 'Superblock' as a building that has implications of size and complexity that has the notion of 'designed whole'. As oppose to the representational structures that were in relation with power and religion, superblock cannot be classified as a metaphor. He notes that offices and housing were two functions that were questionable to be designed as superblocks.

In relation to the housing, the French planners noticed that the planning strategies did not support the mass housing in terms of land availability, in 1959. To be able to develop larger structures they originated the ZUP, which is a legislation of zones à urbaniser en priorité [21] for large developments and min. of 500 units were identified, as a threshold for a large housing complex [17]. Besides the French Planners Vieillard-Baron [22] expected he threshold to define large scale housing projects as being 500 units or more. Apart from the number of units, he had other conditions such as; clear disconnection with urban fabric, public ownership, repetitive construction method and the inclusion of building services with retail.

The problem of large has been studied by many researches since. Rajchman [23], states that the big mistakes are the only link there is to Bigness, as we do not know what to do with it. The massive presence of paradox that is associated with the most and the least of

architecture; most is related to the larger size and least being the lacking of autonomy. Apart from the structures themselves the sociological outlook of residents was another issue. How the design integrates with the meaning of home and how the feelings involved with living with others is investigated by Bellini, & Arcieri [8] on their study of ‘Megaformalism of Living’.

Large scale form of thermologies with specific requirements are a way of building large that has been through several decades. They also survived by adjusting to the time they belong, by being reformed by architects. After examining Frampton’s connection between building large and urbanism, urban context is studied further in the next section.

2.4. BUILDING LARGE IN THE URBAN CONTEXT

Increasing number and volume of building large within the urban identity due to technology, increasing land prices, representation of power and building regulations are expanding in cities. Traditional large buildings followed by tall buildings played a significant role on urban tissue in the past. After 1980’s the economic and politic frame allowed planners to redefine the architecture introducing concept of bigness [24]. Prearranged or emerged size of plots and the planning by local authorize diverts the city towards the densified urbanism. By the time a land proposal finds itself on an architect’s desk, apart from the size of the plot, the area of construction is predetermined by urban planners.

According to Christopher Alexander [25], a main ingredient is missing from artificial cities, which are intentionally created as opposed to natural development. The reason for the missing ingredient could be the detachment of urban fabric, as a result of standalone large buildings. These large iconic buildings of leading architects’ designs are studied further.

Most metropolises inherit iconic architecture as a planning strategy of urban intervention that commonly finds a role in economically depressed areas. Recently Eisenmann, Hadid or Gehry have had an impact on the cities all around the world, designing large iconic buildings in the world of globalization [24]. Bilbao effect is a different aspect of building large that is the transformation of a poor industrial city into an attractive tourist destination.

Guggenheim Museum as shown on Figure 2.10, a contemporary design by Frank Gehry completed in 1997, achieved an economic improvement in the city of Bilbao. The impact of

museum on the city showed a rapid and vast improvement. A tourism destination has been created from an industrial city. It opened up a new sense within the design by transforming urban landscape [26]. The transformation was an urban planning strategy that was achieved by a large design of an iconic structure along with many functional planning decisions of its time.



Figure 2.10. Frank Gehry, Guggenheim Museum [27].

According to Koolhaas [20];

Bigness no longer needs the city: it competes with the city; it represents the city; it preempts the city; or better still, it is the city.

With this note, he reports that bigness equals to urbanism that versus architecture. On the other hand, his building of, CCTV China's Television Headquarters, as shown on Figure 2.11 is questioned from the urban tissue and public realm connection. His note on the subject being a landmark has the more significance in architecture, shows that building large has an extensive power.



Figure 2.11. Rem Koolhaas –OMA, CCTV China's television headquarters [1].

The Headquarters is a good example for finding solutions to restrictions. One of the issues of building large is the exit route and on this design Koolhaas managed to find a solution by introducing two-way exit, going up as well as going down.

Another planning strategy for housing on urban fabric is the 'Regeneration Projects'. The densified designs are taking over, as a planning solution of contemporary cities. There are many diverse implementations in different countries and many diverse opinions for these large developments. The larger area of regeneration, that has an impact of a city itself, may be seen as creating artificial urbanism. This recreation cuts the lives into pieces through loosing ties with the past [25]. Not having a memory place of people's youth, is breaking the lives.

Grouping of structures denies urban space. Identifiable centers are disappearing with the construction of privatized larger structures. The larger scale buildings themselves create detachment on urban tissue, but having gated communities attached these complexes takes this further, leaving the neighborhood in isolation.

Larger plots under the finance of single entity, result in the design of a single architect that leads to a single architectural concept; which the volume exceeds in parallel with the size of the plot [2]. Colquhoun's note covers the issue of single entity design seems to become evident, as the buildings get larger. Scale is one of the main subject architects research on, since the beginning of design. With the technologic improvements the subject of scale has gained even more crucial role, as a result of increasing building volumes.

Gehl [28] reports, small-scale view is commonly disregarded in contemporary architecture and he offers a suggestion to plan and develop the vast growing cities on human scale. Collecting small units in a larger building is the current urbanism reality in urban areas. His argument on deserting the city space, focusing on single building, is an issue of modern architecture that became dominant in 1960's (Figure 2.12). While the large structures are artificial and permeant, small scale construction are spontaneous and less permanent. From the users point of view on urban fabric, the conditions for the pedestrians worsens each year with larger structures and the physical form influences human behavior [28].

If small scale creates a warm and eventful public realm, architects to research in how to maintain these qualities while designing large. According to Cündioğlu [29], architecture

designs movements, as well as the static of a space. In another words the space is a whole with its occupiers.

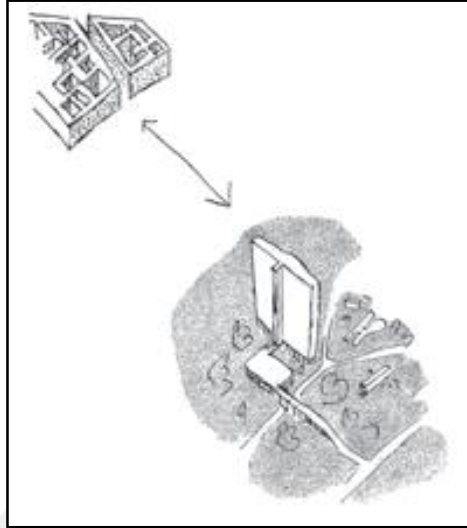


Figure 2.12. City Space to individual buildings. Cities for people [30].

Planners proposal of creating volumetric mesh in Metropolises are growing, bringing the problems with it. Therefore, the issues with these structures and volumetric cities have to be managed and solved. The focus to be on improving the design of building large. The aim is to create diverse city that has it all; modern and traditional, private and public with verifying size of buildings dancing within the city skyline.

It may be claimed that, in 21st century the need for building large in urban settlements continue to expand. Large mixed use buildings are on the rise in contemporary urban fabric, that enlarges the grain of the city. Creating detachment in the scale of the float which results in the loss of public realm. By losing the public realm, people are losing connection to one another. It brings up a question of God's punishment for Babel Tower regard to restraining communication; is the punishment ongoing, as we still try to build higher and higher. Besides the urban context, the form and the arrangement of the buildings themselves have an effect on how building large interacts with its surroundings. Therefore, the form of building large and tall is studied further.

2.5. FORM OF BUILDING LARGE AND BUILDING TALL

In the context of this study, to understand large volumes, structures are analyzed through form, which are grouped under five main categories. Apart from understanding, schemas are used for recording and communicating purposes which is substantial for morphological approach research. This also contributes towards the case study area of Kadıköy. The diagrams are used to explain architectural design, just as they are used to bringing ideas together in the design process to create large scale buildings. Starting from the more traditional forms of below ground and landscape buildings, attached boxes and horizontal expanded buildings are studied, followed by the later forms of vertical envelope and vertical envelope with horizontal base.

Since 19th century architecture witnessed a drastic change due to proliferation of metal and concrete materials. As discussed under the previous title, after the solutions offered by Le Corbusier, Kenzo Tange and many other architects, the combination of building culture formed and almost as a result, as well as horizontal, vertical expansion has proved its permanence, by enabling space expansion on a given land.

‘Underground and landscape buildings’ are one of the oldest type of structure, with the history expanding to medieval times. The caves which were the first known homes have started the process of underground structures. Even when humans moved out of caves they were still built for storing purposes as they act natural cooler for the food reserves.

Apart from the underground structures, there are the buildings ‘which are sensitive to the landscape and which becomes the landscape’ [5]. These are generally sport orientated buildings that have been designed with landscape since Romans, as well as services structures such as Cisterns and transportation network buildings.

In 1992 Enric Miralles and Carme Pinós designed Igualada cemetery, as shown on Figure 2.13. The project is included in Frampton’s study, as being a respectful design to landscape. His notion on the urban attachment with a structure is highlighted on this example, as oppose to the detached urban tissue with building large.

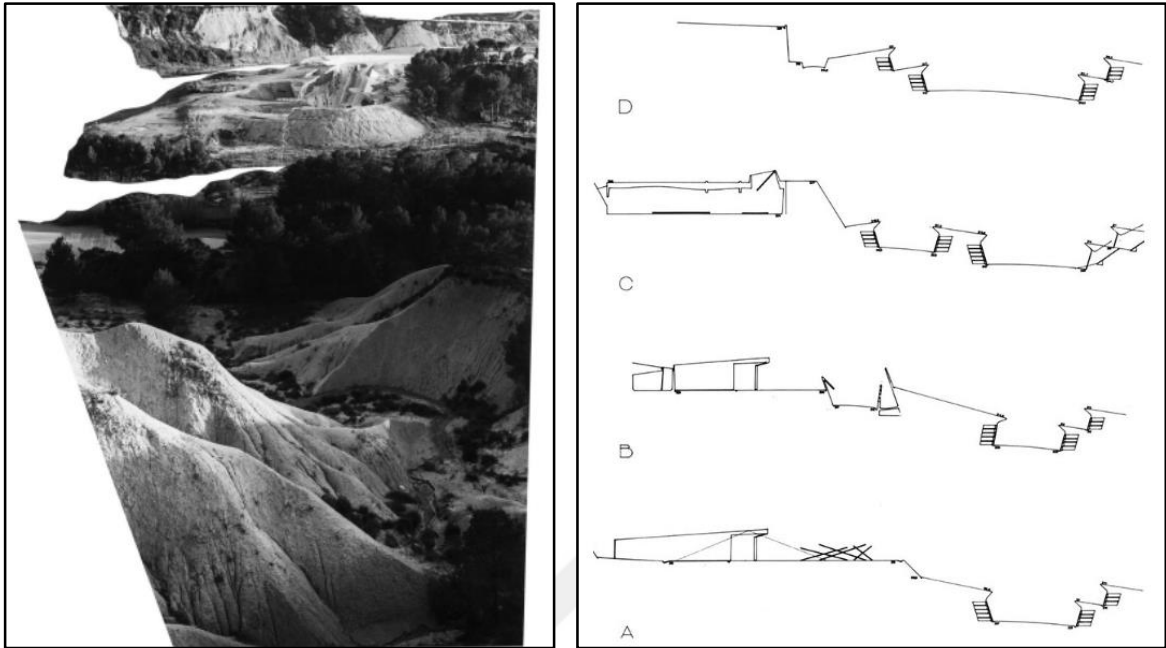


Figure 2.13. Enric Miralles & Carme Pinós, Igualada cemetery [31].

In contemporary design the underground structures are mainly used for parking and storage purposes and some occasions the retail units are located below ground, to create sense of landscape that is a green roof, over the constructed areas. Most of Large scaled residential units in city centers are combined with underground construction. In recent years buried type of housing also became frequent, especially for sustainable consideration and for respecting the nature in design.

In this study underground constructions are an interest, in relation with the mixed used residential high-rise blocks. The trend of building a base with an underground section along with high rise towers is a dominant architecture signature on current luxury housing and office projects. Although the concept building height cover the levels above ground, many contemporary urban large buildings extends below ground. The examples of this typology is to be detailed in housing section.

‘Attached Boxes’ is a typology, created on several floors with regular units arranged on horizontal plan types that has extrusions and set backs of units on facades to create a dynamic mass (Figure 2.14). The semi open areas of terraces and balconies are created in places with this typology. Although it is more popular in Europe, there are not many examples in Turkey [32].

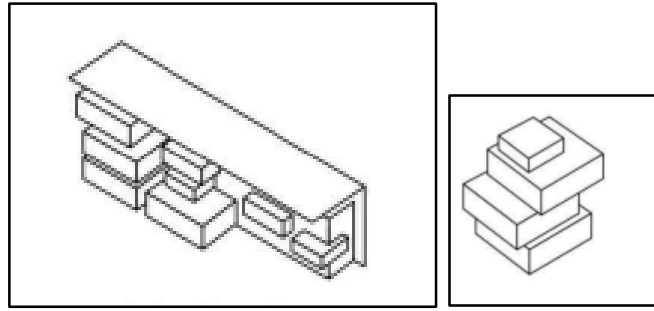


Figure 2.14. Attached boxes typology (takılan /yığılı kutu motifi) [32].

Habitat Montreal (Figure 2.15) 1967 designed by Moshe Safdie is an early example of an attached boxes project. The aim was to create a high quality residential components with modular units. The boxes are stacked together and hold in place by steel cables.



Figure 2.15. Moshe Safdie, Habitat Montreal [8].

‘Horizontal Expanded Forms’ (Figure 2.16) generally implemented on buildings with less or none daylight requirement functions, such as parking lots, shopping malls, Gyms, manufacturing places. In other cases, horizontal expanded form is designed with partial exclusions, to create courtyards for expanding facades. Maximized benefit of daylight and natural ventilation intake is achieved through courtyards. One of the more common function for this typology is offices. Horizontal expanded forms are used over ground as well as below ground, to cover areas of parking, services, storage and so on.

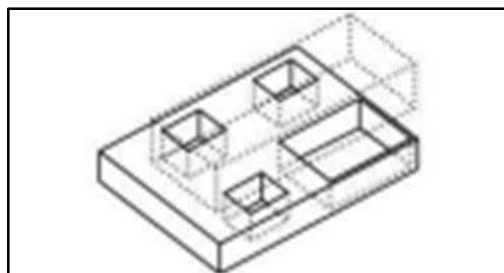


Figure 2.16. Horizontal expanded form with Courtyards (bazasıdelik motifi) [32].

With increasing population and the finance sector directing architects to design cities vertically, ‘Vertical Envelope’ was emerged. The relation between power and height has played a role in the finance sector driven construction industry. Power representation became a way of reflecting high prestige label that has been the target for the companies and even governmental offices.

Humans have an interest in defying the gravity since ancient times. Al-Kodmany [33] points out, tall has power. On top of that, with the help of urban planning, building envelopes expanded towards vertical (Figure 2.17) to be able to increase the construction area while minimizing land usage. The number of floors and accordingly the height of the structures increased, creating vertical cities [9]. Urban Regeneration is another source of construction of tall buildings. The local authorities’ planning decisions for urban areas creates high density leading to tall residential blocks.

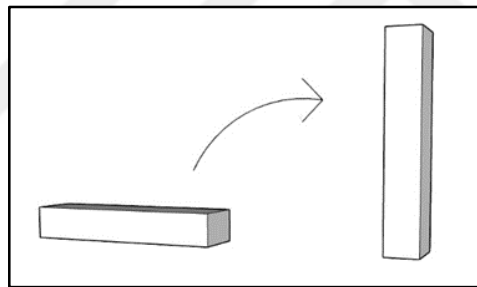


Figure 2.17. Horizontal to vertical expansion. Image created by author.

Besides the construction materials, in 1853 Otis elevator company built first of their lift that has a crucial role for building tall [3]. Frampton [6], suggests that the use of elevator helped to double the height of the office building and the use of steel for structural purpose doubled it again. The technological improvement was added on top of megastructures that resulted in even grander and taller structures of contemporary city. Although the structures were classified under these typologies, Bingöl [4] notes two main approaches to large structures; single entity design of large masses similar to Le Corbusier’s designs and designing through divided pieces of a whole similar to Habitat Montreal project.

New technologies were not only used to increase the height, in general their role of developing the residents’ standards of living have played a role on their boost. Adding the advertising and status advantages of the buildings along with designers’ aesthetics value, high structures generated a new entity to cities’ urban fabric [34].

Iconic buildings gained more popularity that the investors are seeking for the higher structures to gain the larger benefit on their investment. Besides the private construction, governmental buildings are getting taller. ‘Cities are using skylines to brand themselves,’ says Antony Wood, executive director of the Council on Tall Buildings and Urban Habitat [35]. Apart from the functions such as offices, hotels, the residential buildings show their presence in the skylines of cities.

High land value is considered as one of the main causes of building skyscrapers. According to Gilbert [30], the skyscraper is a machine that produces capital for the land. The formula that comes out of this, is the relation between the land price and the height of the building. Where and when land value increases, the height of the buildings go up with it; economics determining the scale of height.

Despite its economic value, there are also consequences of building high. The skyline of cities especially in historical areas are effected. The shade its provided for the neighboring buildings is an important issue as well as the wind escalations in these areas. As oppose these, they are more accessible, mixed used places with economic, social and environmental benefits.

Verticality has become more prominent in cities with the concern of sustainability. It is claimed that the form and density of the building are the two substantial parameters to achieve sustainability. Vertical envelope helps high density buildings to be energy efficient as it uses less energy compared to scattered urban sprawl [36].



Figure 2.18. Skyscrapers in Shanghai/ China [37].

In 2000's the construction of skyscrapers has witnessed a great deal of expansion; mainly with high-rise residential buildings. Three dimensional expansion with over ground and underground construction is the mark for today's urban tissue. According to the McKinsey Global Institution in 2009, China (Figure 2.18) takes the lead on the high-rise construction in the world [35], Turkey is listed as fourteenth tallest country in the world.



Figure 2.19. Skidmore, Owings and Merrill, Burj Khalifa [37].

Burj Khalifa building is currently the world's tallest structure in Dubai that is 828-metre-tall with 163 storeys, designed by Skidmore, Owings and Merrill. The construction was completed in 2010 with the functions of office, residential and hotel over 163 floors as shown on Figure 2.19. The tallest building of Turkey is Central Bank of the Republic of Turkey that is 353-metre-tall with 59 storeys, designed by Vizzion Architecture.

The height of a building is a variable concept, depending on the surrounding urban tissue and the form of the structure. While some slender structures give the impression of being taller, larger footprint one may look shorter than their actual size [38].

In architecture designs of building tall is integrated with a horizontal base structure that creates 'Vertical Envelope with Horizontal Base' form. Multi-Functional building complexes are mainly classified under this section. Apart from shopping malls with housing and offices integration, some single function examples such as offices, health, tourism

buildings are designed with a base that contains singular or multiple tall constructions over (Figure 2.20).

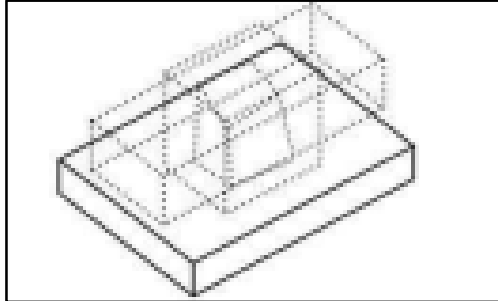


Figure 2.20. Horizontal and vertical expanded form (baza ve mücevher) [32].

Especially contemporary city housing blocks are being dominated with these type of construction with possible parking option underground, as well as social areas on lower levels. An example for this form may be seen in Zaha Hadid Architects' design of Bora Residential Tower in Mexico, shown on Figure 2.21, commissioned in 2015. The high standard housing project expands fifty stories high with restaurants and shops being on street level. Each residential unit to have its own balcony. For such examples, the occupants benefit from the advertisement and status aspects of housing projects [34].



Figure 2.21. Zaha Hadid Architects, Bora residential tower [39].

The architecture literature refers to verifying definitions of high-rise, skyscraper, supertall and megatall buildings. According to Al-Kodmany [33] a tall building, a high-rise, or a tower is a 50 m+, a skyscraper is a 100 m+, a supertall or ultra-tall is a 300 m+ and a megatall is a 600 m+ building. Weiss's [40] paper indicates twenty-one stories and higher to be some of the American cities' verticality. With the light of these data, in this study twenty storey is taken as a threshold for high-rise construction.

Another subject on the high rise construction is the design of interiors. The relation between the size and the height of building and the single unit of the structure is to be studied. The concept of repetition appears with the tall structures that results in shrinking in size of interior spaces.

Remembering Colquoun's words on Superblock, it is possible to see how housing dominates the urban tissue among all functions that has a vast impact on the city. It is the underpin of the construction typology. Therefore, the next section will focus on housing in Turkey in the consideration of building large studied in this section.

3. HOUSING CULTURE AND BUILDING LARGE

The planet with its forces has made people to rearrange the ways of living together, moving them underground to over ground, over ground to sky. The primitive shelter of cave life had a gathered accommodation concept. This type of shelter was replaced through ability of using the materials in nature. Humankind has been trying to live under any climate in any location, due to the ability of transforming its surrounding [27].

The shift from itinerant, hunting and gathering society to settled society with farming replaced the shed and tent with traditional village housing unit. This agricultural period of housing unit culture is transformed with the industrial revolution. During the agricultural period the shelter and place of work were combined and the space had been developed in line with environmental aspects. With industrial revolution, housing was separated from production and work of place at the beginning of 19th century [41]. Space occupied during the day was divided with home and workplace.

Although housing is a way of accommodation, it has been more than just a survival place. The meaning of home or a dwelling is not just a shelter, it is a lived in place that symbolizes belonging and it is identified as one of the necessities in life. The target principle of housing is to improve the quality of standards while maintaining the belonging of feeling. The themes of belonging, identity, participation, continuity and flexibility had been the main concepts of the studies, in relation with housing culture [4].

Home is a mean of belonging that weakens its sense in the face of building large. Belonging is lost with repetitive, identical spaces that are far from diversity. It is not the inner unit that identifies the home; the street, the village, the city basically the surrounding and the social activities of a culture defines the experience of a home and dwelling which is a greater place [41].

As building large started developed with moving from one function to another, it has found its place within the urban areas of work spaces followed by residential units, resulting in the mass housing. The gathered accommodation concept of cave life being an early shelter of history of humankind, it may be claimed that a comparative way of living may have an impact on vast growing popularity of mass housing. It was developed to overcome the vast housing need. According to Bingöl [4] the outcome was more complex than just aimed

target, causing a crucial diversion in housing culture. Although the act of affordable housing triggered the mass construction, building large to gain connection with power and prestige, resulted in the luxuries large structures that have become prevalent in cities' residential tissue. Therefore, the scope of this thesis is significant in this aspect.

The aim for mass housing is to provide functions of modern and developing life. On the other hand, the target for social housing is to meet the minimal functions of life. Although these two types of housing are studied together under building large, the features of housing vary. The social housing for lower income settlers has lower standards of living, whereas other mass housing reflects developing standards.

At the beginning of twentieth century architecture met working class housing which was a significant item in political circular. Optimal design ideas and mass construction methods were developed with the themes of modernism and functionalism [41]. One of the outcome of the megastructure trend studied in previous section discusses the part of the mass housing projects in other countries, especially in Europe. Even though the trend lasted about ten years, mass housing construction has been expanding with the advantage of rapid construction solutions in parallel with the growing urban population. Housing being the majority amount of construction, around 85% [42], large residential blocks have dominated the contemporary cities. According to Bingöl [4], one of the main feature in the production of housing since 20th century is, the dominancy of mass housing construction.

While the larger structures were plotted all over the urban tissue solitary in some parts, in others the whole areas are developed with larger housing blocks. These areas that are created rather than developed in time have two main concerns. They create sleeping cities as the places of work and accommodation are divided clearly and it takes about 5 to 10 years for their acceptance and belonging, if they were to survive [43].

In this section, the housing culture and mass housing along with a brief background of Turkish housing since 19th century is studied to have an overall view of the transformation in Turkey. The related experiences of political factors in Turkey, the trends all over the world and the cultural mutation that had an effect on spaces we live in are cross referenced, to gain broader information. The journey of mass housing along with building large and tall in Turkey are examined, after the previous section coverage of background on building large in other counties.

3.1. A BRIEF BACKGROUND OF HOUSING IN TURKEY

The background of housing in Turkey generally studied under the periods of; up till 1923 that is the establishment of the republic, first years of republic, the unplanned urban settlements followed by the development planning period and the period after the act of mass housing [44]. Generally, this breakout of periods is grouped under the years of, before 1920, 1920-50's, 1950-80's and 1980-2000's [45]. There were clear distinctions with the establishment of republic and vast population movement on 1950's.

The need for vast housing with growing population and the increase on the land value was experienced in Turkey, as well as Europe in a distinctive way. While, as a result, mass housing was starting its journey in Europe, other countries started to develop their modern architecture and housing culture. With the abolition of the '*Tanzimat*' edict in 1839 by Ottoman, the restrictions for foreign population in relation to residential area and construction were removed [46]. After this political reforms with rights granted to foreigners, the period of westernization started with traditional architecture reforming itself, in a distinctive form, in compressing to Europe [47].

The housing design in Ottoman period was being reformed, which gained momentum with the establishment of republic in 1923. Through the Ottoman period the traditional urban fabric was generally arranged with narrow streets and timber construction houses. As a result of timber being the primary building material, most of houses were lost through vast growing fires and lack of maintenance. On the other hand, in many European cities masonry building materials allowed housing to last longer, reaching many centuries of lifespan.

In Ottoman period large fires were a trend to housing areas with cramped configuration of neighborhoods. Records of fires that spreads to burn two to three thousand houses at once are noted in Özgür and Azaklı's [48] study. Burned areas of neighborhoods were generally rearranged with geometrical layouts and masonry construction material, which was the start of transformation of design in housing. Tekeli's [49] note on highlighting the fact how hard it is to find a timber construction house in Turkey after 1930, is a clear indication of this transformation of building material that led up to various design solutions.

During the disintegration of the Ottoman Empire while the extend of the land was getting reduced, the Turks settled in these areas started to move back to Anatolia and Istanbul that

resulted in the rapid increase of population. This created new settlements some being at the edge and others being at the center of urban settlements [50].

The impact with industrial revolution from other parts of the world has effected Ottoman cities among bureaucrats and intellectuals, starting with coastal urban settlements. However, in the Ottoman Empire rather than industrial sector, the trade and finance sector was developed [43]. The row houses and attached construction blocks on several floors were some of the examples of housing brought from other countries. With the ‘apartment building’ culture that has gathered plural units of single family has started to be constructed. Row houses had a limited expansion, while apartment building culture spread vastly. Beşiktaş Akaretler row houses, designed by Sarkis Balyan, built in 1870 (Figure 3.1) and Taksim Surp Agop row houses built in 1890 were some of the examples of this era [45]. The power of building tall over lower construction typology can be seen on this occasion as well.



Figure 3.1. Beşiktaş Akaretler row houses [44].

The phenomenon of ‘Apartment’ first emerged in ancient Roman time in the city of Rome under the name of ‘*insulae*’ (city blocks) that has disappeared and reappeared at the end of 17th century in Paris. It has shown its presence in Turkey at the end of 19th century and proven to be extensive power with a total of 300 buildings in 1910, that increased up to 1300 in 1920 [42].

A significant example of this period is Doğan Apartment (Figure 3.2), constructed by Helbig family in 1893, in Galata. It is differentiated from other examples by its facade design and plan type through French balconies and courtyard design with double entry [51].



Figure 3.2. Doğan apartment [46].

A particular social housing was built in 1922 for the victims of the fire in Fatih in 1918, who lost their homes. Laleli Harikzedegan buildings (Figure 3.3) were designed by Architect Kemalettin, contained 124 residential and 25 commercial units within four blocks of attached courtyard buildings. The project has also the first reinforced concrete structure in the country [49], which allowed durable building with less construction period. This example of social housing should not be classified as a precursor of this typology, as this example has not been replicated.



Figure 3.3. Laleli Harikzedegan housing state [44].

In 1923 with the establishment of republic Ankara was declared as the capital, shifted the center from Istanbul to Anatolia. By granting work permits to foreigners in 1927, under the law of encouragement industry, architects escaped from war ended up in Turkey as well as European countries [46]. Modern architecture with geometric arrangement and plain appearance mainly brought by architects from Germany and Europe in 1930's.

Foreign population influence in Istanbul, with privilege rights and higher income, had a role of transforming the areas in City center. This transformation has expanded, having had an effect on the general building construction. Although the transformation was not as clear as republic period, Ottoman period had shown some westernized tendency in architecture.

Traditional extended family configuration transformed into single family units, strengthened the modernism in architecture. Smaller family infrastructure increased the need for smaller residential units. At the beginning of republic period, in residential units, the rooms were designed as family unit with flexible usage, as opposed to the later period of specific function such as living room, bedroom. This transformation has resulted in toilet and bathroom areas to be designed as a separate room. The three bedroom flats with a living area typology were primarily built in this period which maintain its popularity that will be discussed in the next section.



Figure 3.4. Ceylan apartment [52].

Ceylan Apartment building (Figure 3.4) designed by Sedat Hakkı Eldem is an example of this era, that was built in 1933 in Taksim District. It can be observed that the design of the apartment building shows indications of international style. The building is designed with commercial function on ground level with six residential units on upper levels that has a balcony each.

The second construction type following individual apartment buildings was the cooperative construction type that was carried from western countries and it was a nonprofit arrangement. The first cooperative was undertaken in Ankara in 1935 with 169 number of participants.

Many examples of construction followed and were undertaken in all over the country with an increase after 1950. In 1944 with the law enforcement of 4626 lodgings for government officials were started to be part of urban fabric [49] and social housing for factory workers were established in 1940's, with Sümerbank and State Railway Projects.

After 1950's higher apartment blocks became prevalent. In Istanbul, the districts of Beyoğlu, Yeldeğirmeni, Maçka, Teşvikiye and Cihangir were the areas with earlier examples of these type of high construction. Other influences such as row houses started show their presence with western interaction as mentioned before; none being as widely spread as apartment buildings. While the mass housing in Europe was being developed with the construction materials of steel, concrete and large glazed features in Europe in 1950's, Turkey had started to experience this trend with apartments buildings containing less glazing that has a heavier appearance [47]. With the help of modernism and smaller family structure living, apartment blocks gained momentum and spread vastly.

The plan layout was being transferred along with the size of the structure itself. The 'sofa' area that is located at the center of the unit in traditional Turkish house, connecting all rooms to be replaced with an entrance hall. This area usually doubled as a dining space. The larger rooms called 'Salons' were used for visitors, while one of the smaller rooms were used for living area of daily life.

Although apartment buildings were criticized for being monotone and characterless, the frequency and height expansion continued, resulting in taller buildings in urban areas. While apartment building was a symbol for luxury living beforehand, after this period it became the middle class accommodation and dominated the urban living. In 1950, the number of apartment buildings reached to 5114 in Istanbul, 2009 in Ankara, 1202 in Izmir, 894 in Adana, 62 in Bursa, 299 in Kayseri, 250 in Konya and 75 in Gaziantep [53].

In 1950's both the houses and the apartment blocks were planned and constructed as single buildings. Urban tissue was formed by these singularly added buildings similar to oil stain growth, without any organization of construction, as opposed to the current construction typology of larger joined capital of mass housing.

After 1923, as a result of population exchange between Turkey and Greece, urban population reduced about 800.000 [50]. While the population of urban areas remained stable between 1927 and 1950, after 1950 the balance was changed. With the general population increase

and the migration to the urban areas as a result of inefficiency conditions of rural settlements created rapid urbanization [49]. The five-year development plans were prepared by government and the first five-year development plan (1963-1967) focused on interregional welfare differences, followed by others focusing on urbanism [50].

Besides apartment buildings, smaller buildings without construction permission experienced a growth in 1950's with population rise in urban areas. In 1958 Ministry of Housing were established for housing need, along with the shanty construction issues and in 1964 Public Housing Standards were published.

The vast growing popularity for apartment buildings were spreading, not just for symbolizing a way of living, it was also for the benefit of maximizing the land value. The land value in relation to apartment construction started to develop with the Condominium Ownership Law in 1965 that allowed joint ownership of the land. The sharing of ownership and the right of way law entered into force in January 1966 [49]. Since, as a result of removing the obstacle in relation to the restricted number of ownership on a single plot, allowed to increase the number of units within a single structure.

In 1980's, the political management, the economic growth gained through foreign capital, the mass housing law enforcement of 2487 and the construction of two bridges linking Europe to Asia have accelerated the construction industry in Istanbul. Soyak Göztepe Project (Figure 3.5) is a leading example of this area with 1536 residential units. The buildings were designed over nine storeys with three bedroom and four bedroom flats. The four bedroom units are located on the top two levels with an internal staircase and two number of bathrooms. Three bedroom flats are designed within the first seven levels with one bathroom each. All flats configured to have at least two balcony each. The construction started in 1985 and the housing complex was completed in 1992.

Although, Soyak Göztepe Project is a substantial design for triggering a transformation within the housing typology and many developments followed a similar communal living culture, the reduced facilities of social and cultural functions in the area was apparent.



Figure 3.5. Soyak Göztepe project [54].

Along with city spaces, some developments were planned on the edge of cities in the light of amendment on the law enforcement no 6831, which allowed construction on some forest areas [55]. The large outburst of construction took place after 1990's. The Istanbul earthquake in 1999 slowed the process down until 2005.

There has been a curial structural transformation of housing in 2000's in Turkey [56]. Along with growing need of housing, there has been a break with the spatial system of traditional life, accommodation habits, and places were undergoing a rapid change [56].

With the organized larger projects, the scale of construction has leaped, altering the street and building relation, as wells as the arrangement and fitting out of internal spaces. The social habits of accommodation formed gradually over the centuries has been transferred in a short period of time, resulting in a struggled and painful process that leads to cultural lag [57]. Moving from houses to apartment buildings has now been outlived by moving into gated communities and residences from apartment buildings. The social activity spaces that fulfill the spare time of residents, isolate these residential clusters.

According to Güneş [27], until the French Revolution, cities were associated with protection from danger, as opposed to today's cities are associated with the danger themselves. This transformation of security perceptive created the need for safer areas within the cities, resulted in gated community concept. Therefore, rapidly increased number of gated communities and residences of larger structures have been part of urban fabric that is also part of building large and tall.

3.2. BUILDING LARGE AND TALL IN HOUSING, IN ISTANBUL

This section studies skyscrapers and the construction types of large and tall in housing in Turkey, focusing on the city of Istanbul. The construction typologies of singular high rise buildings, mixed used complexes, settlement projects and social housing that are the main elements of building large and tall on urban fabric are discussed.

Similar to rest of the world, in Turkey as the population and land value increases, the height of the buildings also do so accordingly. Istanbul is the city containing highest volumetric urbanism. According to Istanbul municipality, the population increased from around five million to eleven million in 20 years from 1980 to 2000. In 2020 the population recorded around fifteen and half million. Through the housing need, urban fabric has experienced two dimensional transformation with horizontal and vertical expansion.

The research on highest buildings in Istanbul indicates that, it is the thirty-first tallest city in the world according to skyscrapercenter.com. There are 48 numbers of completed and 7 numbers of under construction skyscrapers with 150m+ height, in Istanbul. Among these structures, the most common function is housing, that is by 45%.

According to skyscrapercenter.com [37], the building completion timeline for high buildings in Istanbul supports Al-Kodmany's study, with a peak in 2014 regard to total number of skyscrapers (Figure 3.6).

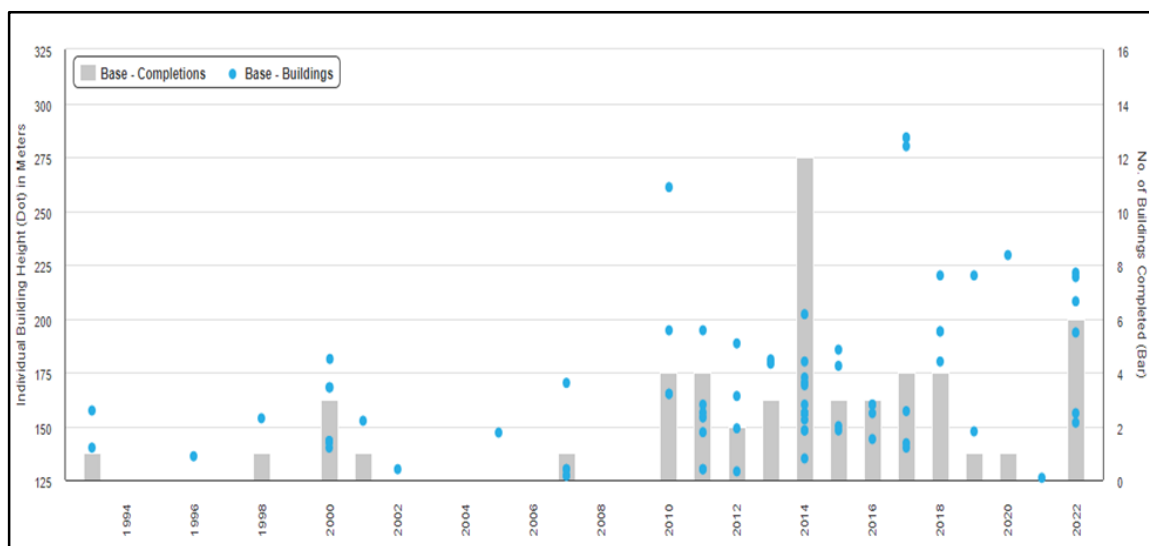


Figure 3.6. Skyscrapers of Istanbul. Accessed April 2022 [37].

The blue dots on the graph above indicate the individual skyscrapers of Istanbul in relation to the height on the left and the construction completion year at the bottom. The number of skyscrapers completed each year is indicated with vertical columns in grey and with the values on the right hand side. According to this graph while the highest buildings were built in 2017 both being 275+ meter high, the vast amount of skyscraper construction was completed in 2014 with twelve no of buildings, followed by six skyscrapers in 2022.

The apartment culture has been replaced with higher construction of residences and skyscrapers. With the transformation of economy and finance after 1980, tall singular residential blocks with vertical expansion form were designed and built (Figure 3.7). They are generally located in city centers, on limited sized plots with taller expansion. While some of them contains residential function only, others have mixed used functions. These are mainly constructed as gated communities and residences. The inner units of these structures have smaller footprints with repetitive plan typologies. In Istanbul Gayrettepe, Maslak and Bomonti are the areas containing most examples of these type of construction.



(a)

(b)

Figure 3.7. (a) Şişli Elit Residence, 2001 [58]. (b) Anthill Residence, 2007 [59].

Another type of housing is designed with horizontal base and singular or plural vertical expanded forms with an aim of containing different functions. The concept of residential has been significantly transformed with this typology. These building complexes including

retail, service, sport and cultural functions were started in 1990's, turning large pieces of urban areas into residential neighborhoods [60]. However, these complexes are also designed as gated communities. The exchange with neighborhoods is restricted and this partly disrupted the neighborhood living. Instead, with this mixed used projects (Figure 3.8), housing units were seen as investment opportunities for higher income group of buyers.

The habitants are most interested in activities of the complex has to offer, rather than the layout and functionality of the residential unit itself. People tend to make their decision on where to live according to the Gym, Shopping Mall, and children entertainment areas within the complex that leaves the living units as a secondary priority [60].



Figure 3.8. (a) Andromeda Residence [58]. (b) Zorlu Center, 2014 [60].

The ‘settlement projects’ are another construction type located at the edge of the cities as well as the city centers. They require larger land that is either available at the outskirts of cities or through combining plots in city centers via regeneration enforcement law coverage. These projects can be designed with a mixture of tall and low structures. They are arranged and equipped to fulfill all the services and needs of a neighborhood.

As an outcome of Marmara Earthquake in 1999, the durability of existing construction stock was questioned and new regulations, demolition and amended expansion plans were placed. The role of the capital and planning decisions diverted the globalized cities towards iconic architecture, often used to rehabilitate the depressed areas. In Turkey, with the registration number 6306, the law of Transformation of Areas under Disaster Risk was issued in 2012. Although the law registered under 5104 started the process of regeneration in 2004, the limitations of the registration resulted in slower process. With 6306 registration,

the vast amount of regeneration projects gained momentum, the majority of construction being in higher income areas of urban settlement [61]. With these regulations, the underdeveloped areas in city centers reformed with new constructions, primarily under the regeneration type of developments. The enlargement of outskirts of cities in 1980's was replaced with larger redevelopment within city centers after 2000's. The city of Istanbul being within the risk area of earthquake, this enforcement law has had a vast impact. Bahçeşehir (Figure 3.9) which is an example for an edge settlement and the regeneration area of Fikirtepe (Figure 3.9) in Kadıköy District are shown below.



(a)

(b)

Figure 3.9. (a) Bahçeşehir [58]. (b) Fikirtepe area [58].

Apart from the prestigious housing, a common mass housing typology after 2000's is social housing constructed by TOKİ [60]. They are generally located on the outskirts of cities with repetitive units, arranged with one plan type and high density (Figure 3.10).



(a)

(b)

Figure 3.10. (a) Tuzla Aydınli 3. phase, 2008 [62]. (b) Halkalı 5. phase, 2013 [62].

The occupants of social housing are in low income bracket; some being transferred from regeneration areas of city centers. A study undertaken to compare plan layouts of flats in higher income area of Bağdat Street against Toki units by Aksoy & Bingöl [56]. The

outcome indicated that plan layouts were the same, apart from toilet and en-suite bathroom preference.

After 2000's with high rise construction, internal spaces were transformed; 'Salon' is removed as the culture of living was reformed. Living areas became the family and the visitor orientated spaces. The kitchens in smaller units were planned as open spaces and designed as part of living rooms to gain area.

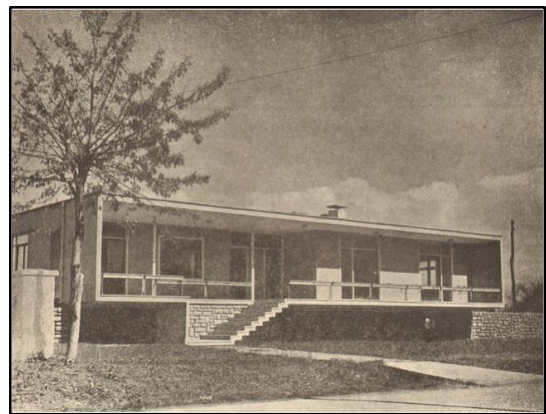
The next section studies a brief background of the Kadıköy District, since it contains a wide range of typologies with various aged housing in Istanbul. The housing is investigated further along with the building large and tall.

3.3. A BRIEF BACKGROUND OF HOUSING IN KADIKÖY

Kadıköy district that has history longer than Istanbul, is one the main areas of Istanbul within Asian side of the city. Through Roman, Ottoman and Byzantine period it was used as a countryside getaway for leading body of officials, as well as being agricultural land. The area shows a significant growth in the second half of 19th century with the construction of substantial buildings such as Selimiye Barracks and Haydarpaşa Military Hospital [63]. Other historical buildings in the area are mosques, churches, dervish lodges, fountains, public baths, pavilions and so on.



(a)



(b)

Figure 3.11. (a) Mazhar house project [64]. (b) Villa project in Çiftehavuzlar [64].

In 1869 it was attached and ruled under Üsküdar district that lasted about 60 years. In 1930 Kadıköy became an official district of Istanbul and started grow with the implementation of

transport links. In 1940's the timber mansions, especially in suburban areas, were started to be replaced with concrete villas [64], Mazhar House Project (1935) and Villa Project in Çiftelavuzlar (1961) are some examples shown below (Figure 3.11).

As a result of its central position, the district had witnessed a vast increase on the population since 1950's. A photo of the district of this era is shown on Figure 3.12. However, the intensity of retail and service industry have transferred the district, losing part of the characteristics of the old town. In 1965 with the Condominium Ownership Law apartment construction started to develop in the area, caused transformation of the suburban areas into city texture. In 1993 by filling the sea, the coast area was enlarged increasing more than 900.000 sq.m. and utilized partially for green areas.

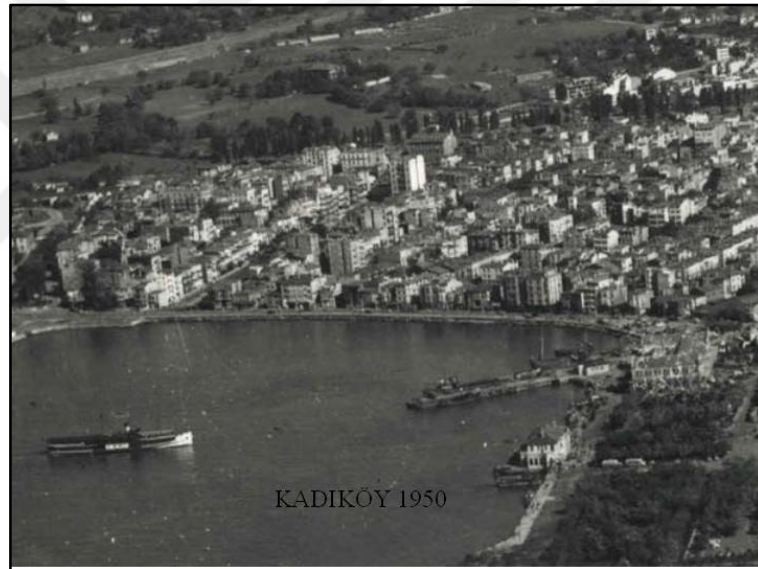


Figure 3.12. Kadıköy district in 1950 [63].

From the point of land coverage and location the district connects main access routes with around 21km long coast, playing a key part in the urban fabric. Being one of the older settlements in Istanbul, it has a significant role of connecting the social, cultural and economic functions.

Kadıköy covers traditional tissue of housing along with newly developed housing areas with a coastline (Figure 3.13.). It is a district with the newly constructed singular housing structures, as well as a newly constructed settlement of housing blocks with regeneration areas. After 1999 earthquake the new set of construction enforcement policies in relation

with demolition had a significant transformation with reproduction in Kadıköy. Currently the district has twenty-one neighborhoods (Figure 3.14.), covering 20,20 km.sq. of area.

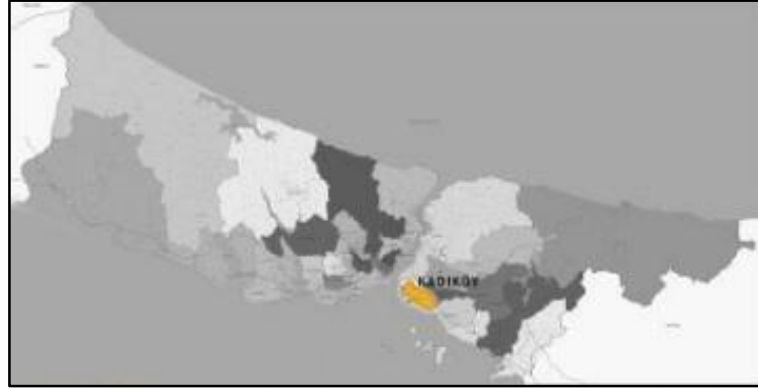


Figure 3.13. Map of Istanbul and Kadıköy [61].

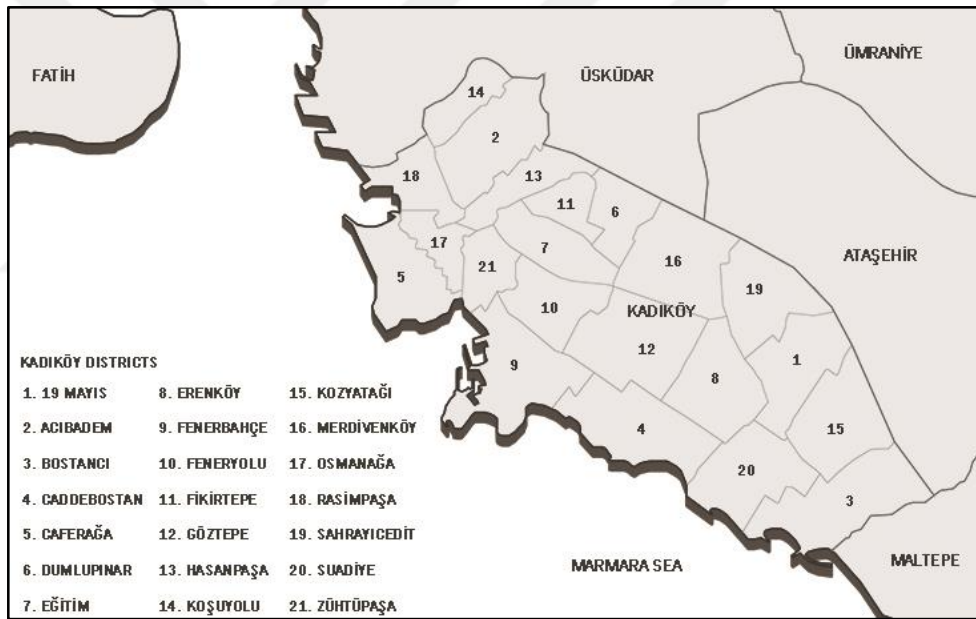


Figure 3.14. Map of Kadıköy's districts. Map created by author.

As mentioned, with the registration number 6306, the law of Transformation of Areas under Disaster Risk, the vast amount of regeneration projects gained momentum. Caddebostan, Caferağa and Osmanağa neighbourhoods have experienced a renewed housing stock on smaller plots of land with generally singular high rise apartment blocks. One of the areas that had a vast transformation is the area around Bağdat Street (Figure 3.15) in Caddebostan neighborhood, where the high-income households of the city live in with a high quality of urban life [61].

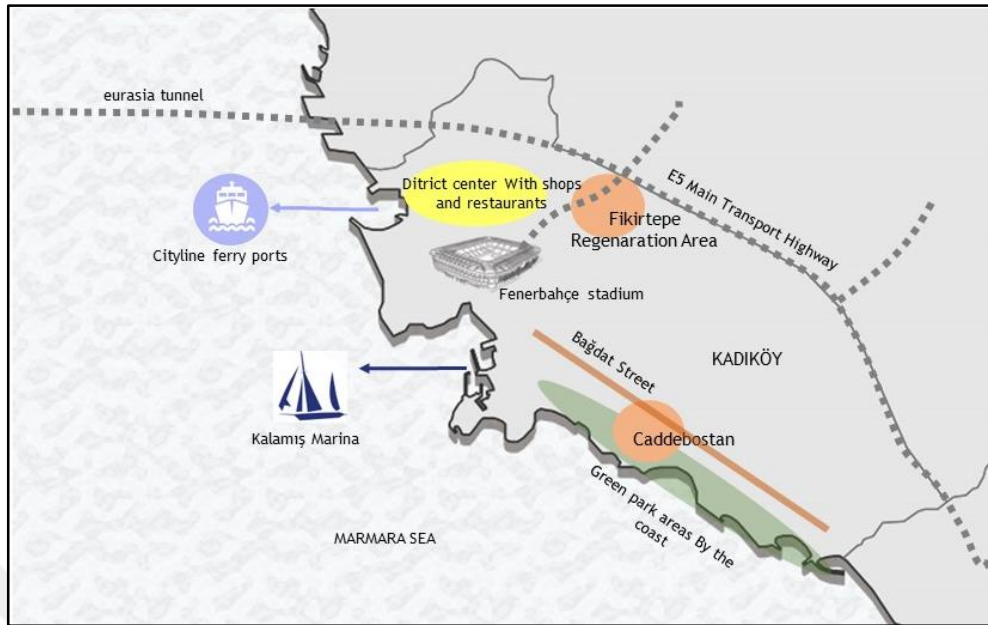


Figure 3.15. Places of Kadıköy map. Map created by author.



Figure 3.16. Bağdat street with surrounding area [56].

While some areas expanded in line with planning strategies in the district, others grew as shanty settlements. The shanty development of Fikirtepe neighborhood, have been demolished and reconstructed as a regeneration project (Figure 3.16), with settlement projects typology that contained large and tall housing blocks.

A substantial part of the area in Fikirtepe district was demolished and reconstructed through this wide spread regeneration projects. These large areas of demolishment create artificial urbanism of regeneration results in losing the ties with the past according to Alexander [25], as mentioned previously.



Figure 3.17. Fikirtepe regeneration project area [58].

The settlement projects in the area are designed as gated communities and they include retail, service, sport and cultural functions within the housing complexes. Besides their overwhelming appearance dominating the urban tissue, the housing units they offer is a curious subject. These housing units within the large structures are to be studied in following section along with the other large developments in the district, especially around Bağdat Street. These different building types are examined in detail through high-rise construction in Kadıköy district and the phenomenon of building larger and taller while getting smaller is investigated through marketing research.

4. BUILDING TALL WITH SHRINKING HOUSING SPACE IN ISTANBUL/ KADIKÖY

According to Al-Kodmany [33], as a result of a study among function and height, the construction of supertall residential blocks is a trend, especially starting with the new millennium, slowing down after 9/11 in 2001 and speeding up rapidly after 2011; offering luxury units with condominiums. One of the cities mentioned in his paper, as an example to this construction trend, is Istanbul. Housing in the city of Istanbul along with a general outlook of Turkey and one of the older districts of Kadıköy in Istanbul are investigated in this section, along with building tall. The relation between tall construction against the interior of these buildings and the facades are studied.

Through what is available in current market of housing, a brief research of housing in Turkey and Istanbul is undertaken, followed by a more detailed study of Kadıköy district. The information is examined, in terms of relation between large & tall construction against the number of bedrooms and the ages of the buildings.

To be able study the high rise housing blocks in Turkey, the available housing stock is traced using one of the most popular advertisement website called sahibinden.com. The website is programmed to rent and sale goods including houses and flats. Although the site is used by owners, along with Estate Agents and some properties may be advertised several times by different agencies, this study argues that the relation between numbers and ratios give an insight for the high rise residential construction in Turkey.

The information and filters available on the search engine may be grouped under nine main sections of; location, value, size, age, height, being part of gated community, financial information, advertised by whom/ when and features of units such as balcony availability, number of bathrooms and furnishing options. In addition to these, the features include map of the property, street view and photo information for users. Some adverts have more detailed data of accessibility and view criteria dynamics, with live visit through video call that has been a crucial feature of pandemic period. Each filter choice shows a total number of units available on the market, that allows a comparison study through the website.

To have an overall view of houses and flats on the market, the percentage of houses against flats are searched. First of all, the numbers of residential units containing both houses and

flats are compared to verify the dominance of urban tissue and housing culture in Turkey, Istanbul and Kadıköy. (Table 4.1.).

Table 4.1. The ratio between houses and flats. Table created by author [58]. Accessed 17 April 2022.

Number of Residential Units advertised on Sahibinden.com					
	Total No of Residential nunits	Total No of Houses	Total No of Flats	Presentage of Houses	Presentage of Flats
TURKEY	514245	74746	439499	14,54%	85,46%
ISTANBUL	141204	11327	129877	8,02%	91,98%
KADIKOY	9949	65	9884	0,65%	99,35%

From this table it is identified that the advertised number of houses in Turkey are very low with around 15% of total residential units. Focusing on the city of Istanbul, the total number of houses advertised reduces to just over the half of the amount. In the centre of the city, in Kadıköy District, further reduction becomes apparent with a value below 1% of houses. This indicates the Apartment building culture has had a vast improvement since 1950's, taken over the country's urban fabric. It grows further in the city of Istanbul, reaching a peak in the centre of the city areas, such as Kadıköy. According to Tekeli [49], in 1980, 39.948 number of new houses and 203.989 number of new flats were issued with construction permit in Turkey. The results of percentage of houses is similar with around 16% in 1980, in relation to current market value of just under 15% in construction. This indicates that the ratio for construction of houses against flats has been stable since 1980. However, the height of the buildings for flats are to be examined.

The result in Kadıköy region demonstrates how the houses in city centres with high value of land areas, has almost on the verge of disappearing; leaving its place to apartment blocks. This could be explained as the transformation towards vertical urbanism. To study the extend of this transformation, the number of flats within the high rise buildings in Turkey, Istanbul and Kadıköy is searched through sahibinden.com website, using the height filter for the buildings over 20 storey and 30 storey in following chapter. The investigation of housing stock is reconfigured on the next step, against the age of the buildings to identify the variables on high-rise construction through periods of time.

4.1. BUILDING TALL RESIDENTIAL BLOCKS IN ISTANBUL

Since 1950's the apartment buildings started to become prevalent in urban fabric in Turkey and as shown on table 4.1, it has become the dominant type of construction. The apartment building culture also has experienced a form alteration since its appearance, growing taller in time, in parallel with industrial development. According to Koca [60], along with the technology, the political management strategies transformed the form of housing design after 1980's. To investigate into the level of rise in height, the number of flats in housing stock is searched using the height filter.

In this thesis 20 storey, as mentioned in Weiss's [40] paper, is used as a threshold for building tall. Another threshold of 30 storey is identified, being the one of the filters available on the search engine of sahibinden.com. To be able to combine and compare the information provided, the buildings are searched with the filters of 20+ and 30+ storey, as being the high-rise construction. The number of flats, the flats within the high-rise buildings and the ratio of them, in current market of Turkey, Istanbul and Kadıköy is shown below on Table 4.2.

Table 4.2. The ratio high-rise housing units. Table created by author [58]. Accessed 17 April 2022.

Number of Flats advertised on Sahibinden.com					
	Total No of Flats	Total No of High Rise (20+Storey)	Presentage of High Rise (20+Storey)	Total No of High Rise (30+Storey)	Presentage of High Rise (30+Storey)
TURKEY	448261	20447	4,56%	9900	2,21%
ISTANBUL	132570	15219	11,48%	7673	5,79%
KADIKOY	10908	876	8,03%	145	1,33%

According to sahibinden.com [58], total number of flats for sale and rent in Turkey, within high-rise blocks that has more than 20 stories are around 4,5%, while in Istanbul it is around 7% higher than Turkey's average. Kadıköy district is a relatively low area of Istanbul with around 8% of 20+ storey in compressing to average of 11.5% in Istanbul.

Although Kadıköy has a mixture of traditional tissue and new construction areas of regeneration projects, the number of 30+ storey building flats are around half of Turkey's average. In contrast to earlier findings of Kadıköy with less than 1% of housing stock is

relatively a low area from the high rise buildings point of view. In relation to data of Istanbul, Kadıköy district is approximately four times lower than the Istanbul's average of 6%.

As mentioned, Istanbul is the thirty-first tallest city in the world according to skyscrapercenter.com. From these skyscrapers the most common function is residential, by 45%. On the other hand, searching into the high-rise construction of twenty storey and higher housing units, the stock of units is around 11 % of total flats. From these residential units, the study aims to investigate into the number of bedrooms for an indication of size and the period of the construction.

Table 4.3. Age of housing units in Istanbul. Table created by author [58]. Accessed 28 March 2022.

Age	No of Flats	High Rise (20+Storey)	Presentage of High Rise 20+	High Rise (30+Storey)	Presentage of High Rise 30+
0-4	64772	8604	13,3%	4143	6,4%
5-10	29289	5226	17,8%	2681	9,2%
11-15	9884	761	7,7%	435	4,4%
16-20	5845	182	3,1%	93	1,6%
21-25	7708	57	0,7%	13	0,2%
26-30	7604	16	0,2%	3	0,0%
31+	7668	11	0,1%	5	0,1%

Table 4.3, is arranged to group the age of the construction regardless of its size. It shows, that the residential high rise units after 2000 in Istanbul has the highest numbers of advertised units in the market. The decline of the unit numbers around 20 years back, shown with red dotted line, is in line with Yalvaç's [44] note of depression in construction industry in relation with 1999 Marmara Earthquake and the economic crisis period of 3 years started in 2001. The total number of flats doubled in the last five years in compressing to previous five-year period, reaching around to sixty-five thousand flats in current market stock. The number of flats aged more than 31 years is relatively low. The main bulk of the residential units are constructed after 2013 in Istanbul, which is also the main bulk of the high-rise construction. The similarity of the ratio within the high rise of 20+ and 30+ story buildings is striking; by around half of high-rise construction is taller than 30 story.

Table 4.4. The housing stock in Istanbul. Table created by author [58]. Accessed 28 March 2022.

Number of Rooms	Total No of Flats	Presentage of Flats	Age	No of Flats	High Rise (20+Storey)	Presentage of High Rise 20+	High Rise (30+Storey)	Presentage of High Rise 30+
Studio Flats (1+0)	1835	1,38%	0-4	977	285	15,5%	183	10,0%
			5-10	568	119	6,5%	63	3,4%
			11-15	103	0	0,0%	0	0,0%
			16-20	55	0	0,0%	0	0,0%
			21-25	47	0	0,0%	0	0,0%
			26-30	33	0	0,0%	0	0,0%
			31+	51	0	0,0%	0	0,0%
1 Bedroom Flats (1+1 & 1.5+1)	16551	12,48%	0-4	8763	2944	17,8%	1678	10,1%
			5-10	5100	1788	10,8%	883	5,3%
			11-15	954	269	1,6%	150	0,9%
			16-20	387	65	16,8%	38	0,2%
			21-25	365	17	4,7%	6	0,0%
			26-30	383	4	1,0%	3	0,0%
			31+	610	4	0,7%	3	0,0%
2 Bedroom Flats (2+0 & 2+1 & 2.5+1 & 2+2)	52161	39,34%	0-4	27314	2882	5,5%	1290	2,5%
			5-10	11105	1533	2,9%	774	1,5%
			11-15	3247	193	0,4%	103	0,2%
			16-20	1827	40	2,2%	25	0,0%
			21-25	2737	10	0,4%	3	0,0%
			26-30	2799	3	0,1%	0	0,0%
			31+	3133	4	0,1%	1	0,0%
3 Bedroom Flats (3+1 & 3.5+1 & 3+2)	43160	32,55%	0-4	18576	1981	4,6%	772	1,8%
			5-10	8502	1303	3,0%	682	1,6%
			11-15	3677	207	0,5%	133	0,3%
			16-20	2523	50	2,0%	25	0,1%
			21-25	3375	18	0,5%	3	0,0%
			26-30	3490	1	0,0%	0	0,0%
			31+	3019	2	0,1%	1	0,0%
4 Bedroom Flats (4+0 & 4+1 & 4.5+1 & 4+2 & 4+3 & 4+4)	13915	10,50%	0-4	6779	454	3,3%	185	1,3%
			5-10	2955	420	3,0%	236	1,7%
			11-15	1307	73	0,5%	35	0,3%
			16-20	737	19	2,6%	3	0,0%
			21-25	868	11	1,3%	1	0,0%
			26-30	647	8	1,2%	0	0,0%
			31+	608	1	0,2%	0	0,0%
5 Bedroom Flats (5+1 & 5+2 & 5+3 & 5+4)	4031	3,04%	0-4	1906	48	1,2%	29	0,7%
			5-10	880	57	1,4%	39	1,0%
			11-15	476	18	0,4%	14	0,3%
			16-20	255	7	2,7%	2	0,0%
			21-25	246	1	0,4%	0	0,0%
			26-30	194	0	0,0%	0	0,0%
			31+	212	0	0,0%	0	0,0%
6 Bedroom Flats (6+1 & 6+2 & 6+3 & 6+4)	923	0,70%	0-4	457	10	1,1%	6	0,7%
			5-10	179	6	0,7%	4	0,4%
			11-15	120	1	0,1%	0	0,0%
			16-20	61	1	1,6%	0	0,0%
			21-25	70	0	0,0%	0	0,0%
			26-30	58	0	0,0%	0	0,0%
			31+	35	0	0,0%	0	0,0%

To be able to gain a general idea of the flats in Istanbul, the information in relation to the number of bedrooms, the construction period and the high-rise value is gathered above, on Table 4.4. Firstly, the units are grouped under the number of the bedrooms they contain with the types of; studio, one bedroom flat to two, three four, five and six bedroom flats and they are searched separately. The results indicate that the housing market is dominated with availability of two and three bedroom flats, followed by one and four bedroom flats respectively. After two bedroom units, as the number of bedrooms increase, the rate of them decreases; starting from around 40% and lowering down to approximately to 1% of six bedrooms.

Despite the low numbers of studio flats with above 1%, it is noted that the restriction on the construction of studio flats is to be accounted for and the section is highlighted in blue for the representation of interference growth.

Looking into the construction periods, the Table 4.4 shows the majority of construction have been built after 2013, which is indicated with red dotted lines. The market is flooded with flats constructed in the last ten years.

The subject of high-rise construction is evaluated in two columns with 20+ and 30+ storey buildings. While the buildings with 20+ and 30+ storey have been on the rise after 2013, the high rise structures show a rapid uprise after 2017, almost doubling the number of one and two bedroom flats, while tripling the number of studio flats. Most of the construction for 30+ high buildings were completed in the last ten years. The results also highlight that approximately 15% of studio flats and 18% of one bedroom flats are part of a high rise construction, followed by two and three bedroom flats with around 5% of their typology. This highlights the fact that the luxuries high-rise construction contains units with less number of bedrooms. For the larger units of four, five and six bedroom flats are relatively low within high-rise building around 1% to 3%. It may be claimed that larger units are generally covered with the penthouse flat design, towards the top of the high-rise construction with the benefit of the view.

One of the crucial outcome of this table is the amount of new construction on the market. There is a clear gap for the number of younger flats available on the market in Istanbul.

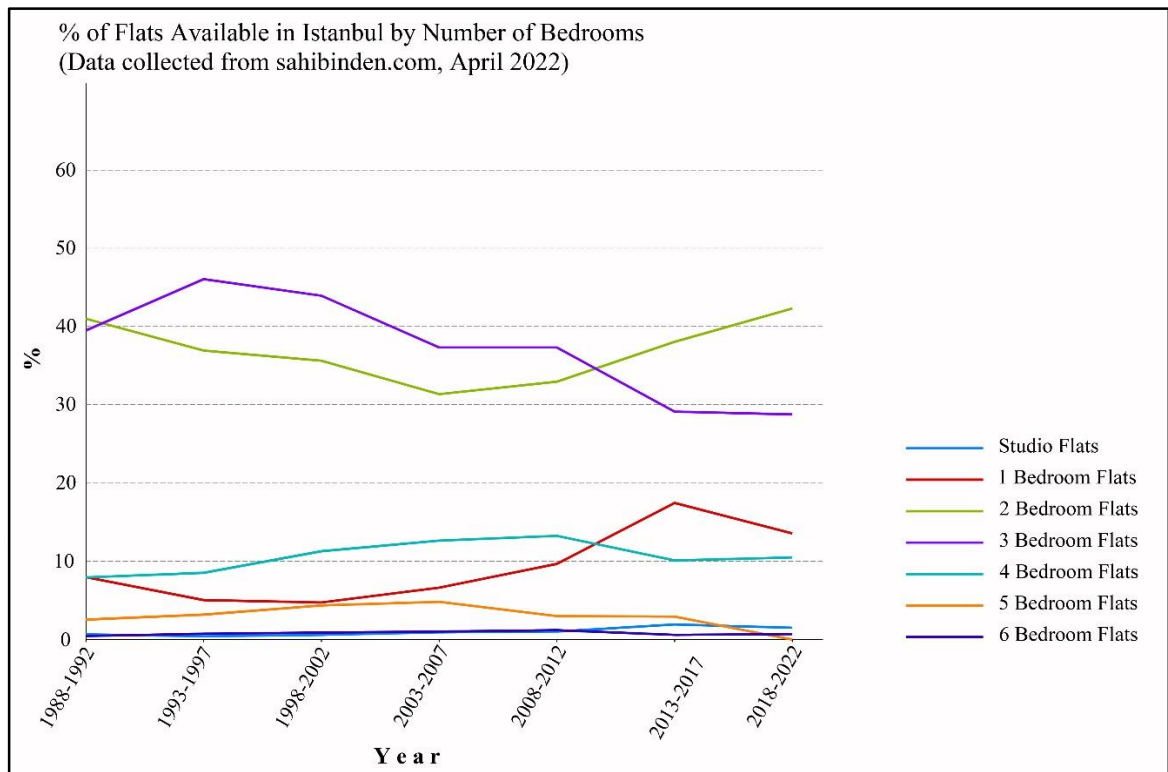


Figure 4.1. Flats Available in Istanbul by Number of Bedrooms. Image created by author [58]. Accessed 28 March 2022.

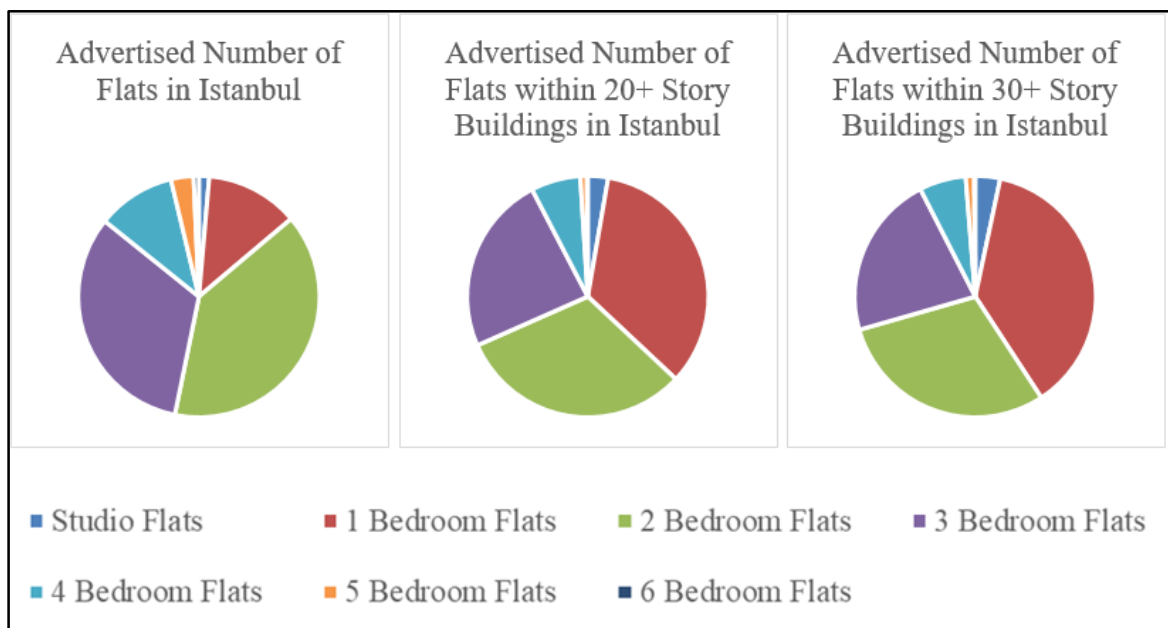


Figure 4.2. Number of bedrooms in high-rise in Istanbul. Image created by author [58]. Accessed 28 March 2022.

The be able to search into the results in relation to the number of the bedrooms, the line graph (Figure 4.1) is prepared. It aims to highlight the size of the units constructed in five year periods of time, in Istanbul. The representative lines in different colors symbolize the number of bedrooms. Overall trend in Istanbul indicates two bedroom flats available on the market shows a clear up move taking over the market. Three bedrooms were more constructed until 2003, which was overtaken by two bedroom flats after 2012. The increase on the one bedroom flats becomes apparent after 2012. All other sizes of units hover around and under 10% of construction. Studio flats and six bedroom flats are constructed the least through the thirty-year period.

The trend towards less bedroomed flats generally shows a rise apart from studio flats, that has taken place also due to government planning policies. The restriction of construction for studio flats in 2017, was reasoned for being not suitable for Turkish culture of larger family infrastructure [65]. While it is difficult to trace the effects in the context of this study, it is important to point it out.

The pie chart above (Figure 4.2), investigates into the breakdown of flats in relation to number of bedrooms followed by the breakdown of flats in high-rise buildings of 20+ and 30+ storey tall. According to the comparison chart, the number of one bedroom flats available on the market increases in parallel with the height of the buildings. The higher density of two and three bedroom flats in the city of Istanbul are replaced with one and two bedroom flats in 20+ and 30+ storey buildings. There is a slight increase on the number of one bedroom flats in 30+ storey buildings in comparison to 20+ high residential blocks. There is a clear reduction on the number of flats with four and five bedrooms within 20+ and 30+ storey housing buildings. On the other hand, there is a slender increase with six bedroom flats on 30+ buildings, that supports the popular trend on penthouse design.

After studying the general trend on the size of the flats with building age, building tall is examined among the districts of Istanbul. There are thirty-nine districts in the city, which all are being searched against the height filter of 20+ storey and the results are shown on Figures below (Figure 4.3 & 4.4). The information gained through these bar charts is transferred into maps of districts in Istanbul for the clearer view of the locations of the districts.

Two main ratios are studied, one being the ratio within the districts of 20+m tall buildings, followed by the ratios in relation to the city's high rise construction.

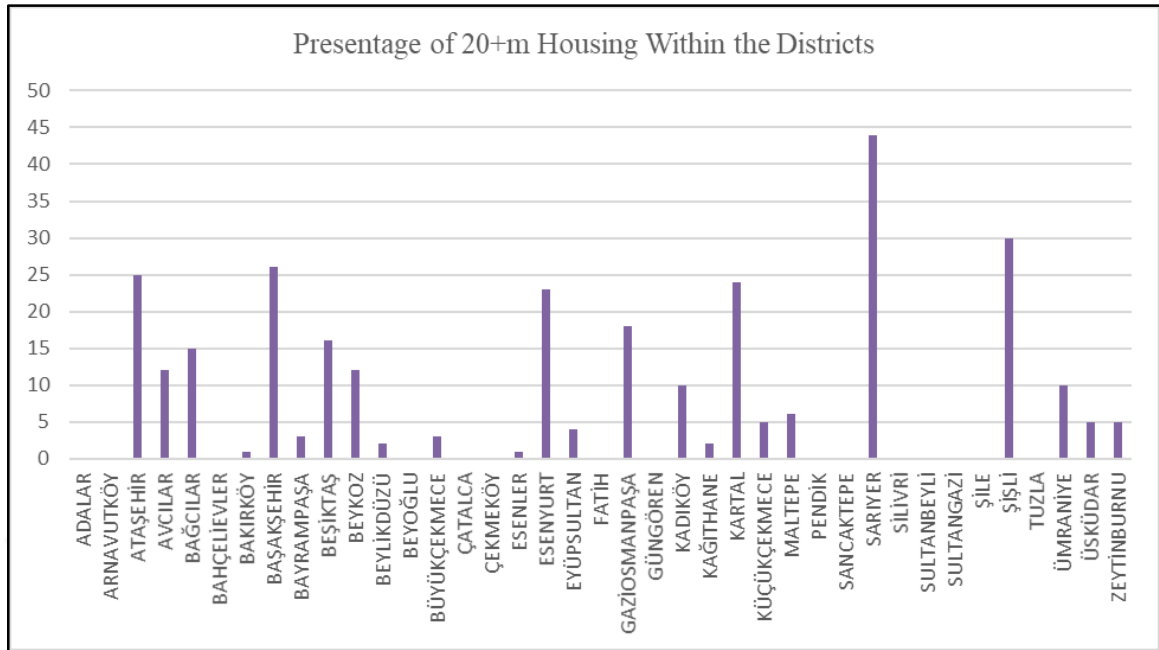


Figure 4.3. Percentage of 20+ units within the districts. Image created by author [58].

Accessed 28 March 2022.

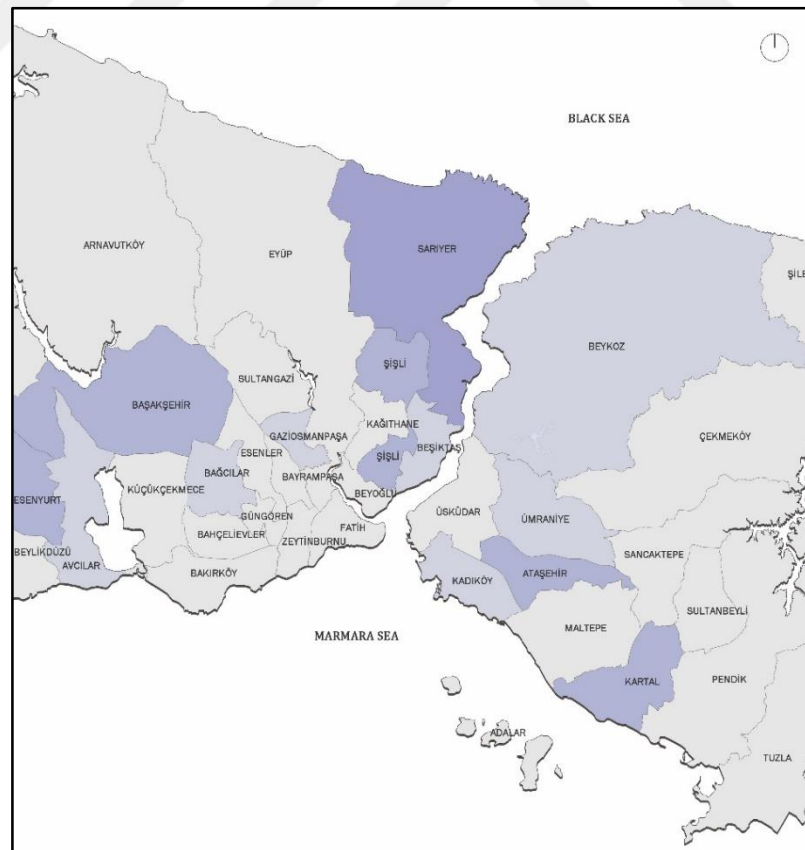


Figure 4.4. The Map of percentage of 20+ units within the districts. Map created by author [58]. Accessed 28 March 2022.

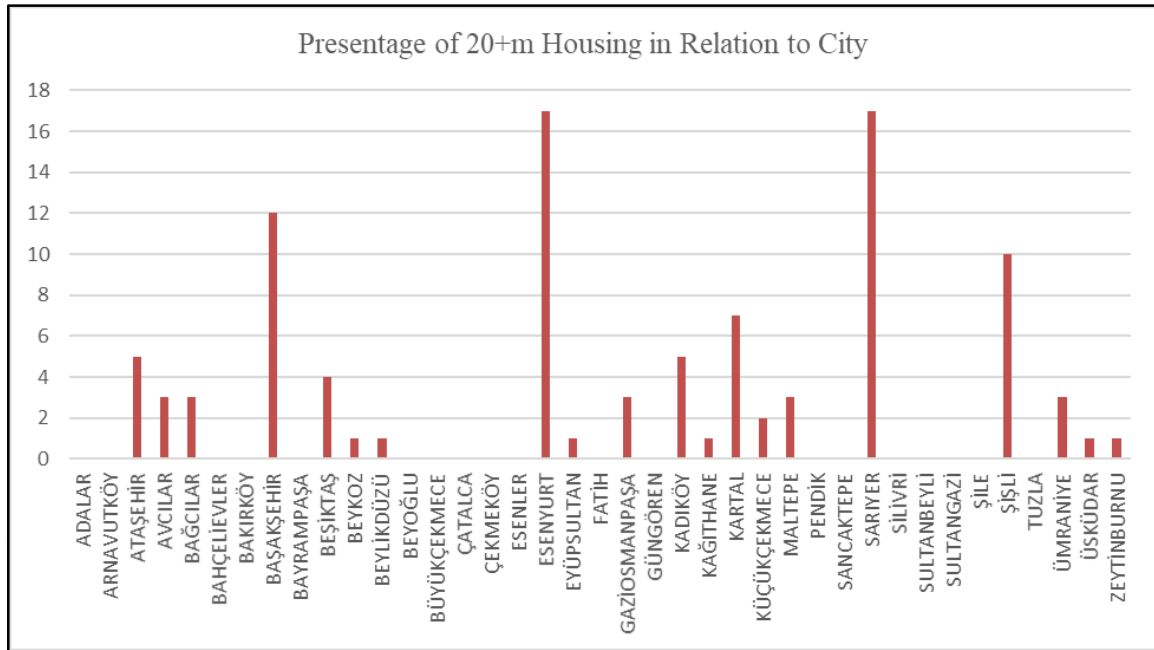


Figure 4.5. Percentage of 20+m units in relation to city. Image created by author [58].

Accessed 28 March 2022.

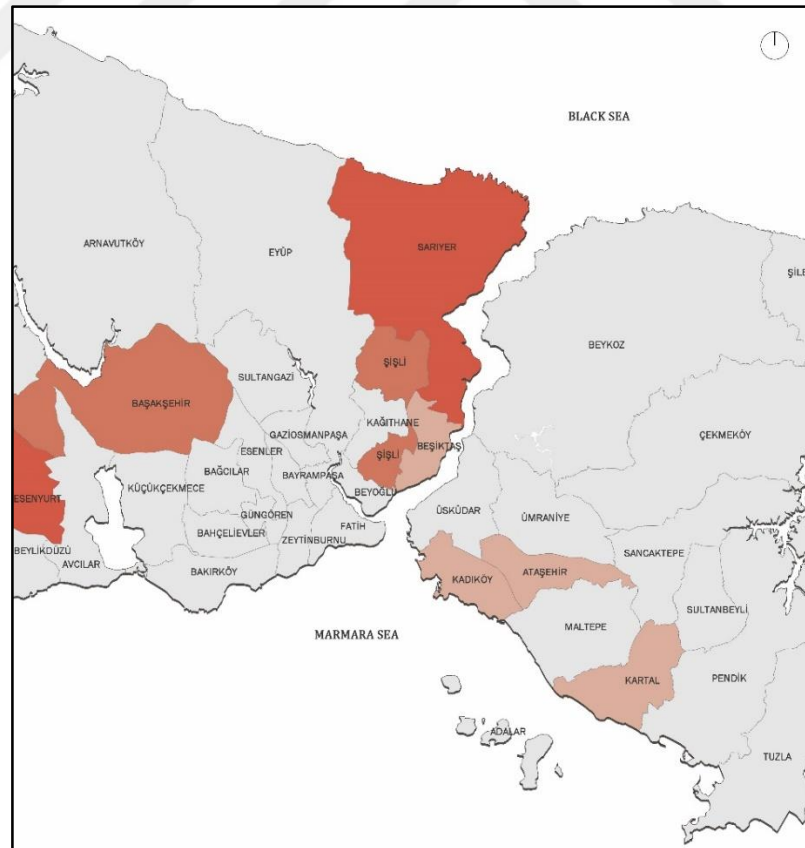


Figure 4.6. The Map of percentage of 20+ units within the districts. Map created by author [58]. Accessed 28 March 2022.

The bar charts of Figure 4.5 and the map of Figure 4.6 study the high-rise construction of units in relation to the districts of Istanbul. While Figure 4.3 focuses on the ratios within the districts, Figure 4.5 highlights the ratios in relation to the total numbers in the city.

From the research between the districts (Figure 4.3), the clear gap of height is noted in Sarıyer with around 45% of flats advertised in the district being within the high-rise buildings. Şişli, Başakşehir, Ataşehir, Kartal and Esenyurt districts follow with more than 20% of units being part of building tall. The next group of 10% to 20% of high-rise districts include Gaziosmanpaşa, Beşiktaş, Bağcılar, Beykoz, Avcılar, Ümraniye and Kadıköy.

The bar chart of Figure 4.5 studies the high-rise construction of units in districts, in relation to the total numbers in the city. Similar to previous results Sarıyer district is the one of the tallest districts along with Esenyurt district. Şişli and Başakşehir districts follow with above 10% of high-rise units, while Kartal, Kadıköy, Ataşehir and Beşiktaş are in the third category of tall construction density in between 4% to 10% of high-rise.

In general, both of the maps indicate that European side of Istanbul is vertically denser than Asian side. Kadıköy District is a relatively low area with partial high-rise construction, that is a part of third category for the vertical density within the districts. Kadıköy being approximately at the middle of both high rise charts is another reason for studying this district.

4.2. KADIKÖY DISTRICT AND BUILDING LARGE & TALL RESIDENTIAL BLOCKS IN THE AREA

Kadıköy region includes various kinds of urban fabric that contains traditional neighborhood as well as new constructions as Regeneration Project Areas. As mentioned under the previous title, there are different types of building large which dominate the neighborhoods. Despite the shanty housing areas in the district, the tall social housing is not a typical urban tissue in Kadıköy. Therefore, the units highlighted on this section is covered under luxuries flats.

Table 4.5, is arranged to group the age of the construction of the building stock in Kadıköy district. It shows, that the residential high rise units in the last five-year period has the highest numbers of advertised units in the market. The decline of the unit numbers around 20 years

back, shown with red dotted line, is in line with the depression in construction industry in relation with Marmara Earthquake and the economic crisis period started in 2001, similar to the results mentioned in Istanbul section. The total number of flats increased five times in the last five years in compressing to previous five-year period, reaching around to three thousand seven hundred flats in current market stock. This jump has a greater value in comparison to the numbers in the city, which identifies a later period of construction burst in the area. The number of flats aged more than thirty-one years is relatively high against the city's average, which highlights the district being an older settlement with more traditional urban tissue of housing units. The main bulk of the residential units are constructed after 2017, which is also the main bulk of the high-rise construction.

Table 4.5. Age of housing units in Kadıköy. Table created by author [58]. Accessed 28 March 2022.

Age	No of Flats	High Rise (20+Storey)	Presentage of High Rise 20+	High Rise (30+Storey)	Presentage of High Rise 30+
0-4	3807	787	20,7%	98	2,6%
5-10	770	54	7,0%	25	3,2%
11-15	307	5	1,6%	1	0,3%
16-20	152	2	1,3%	0	0,0%
21-25	518	0	0,0%	0	0,0%
26-30	1341	0	0,0%	0	0,0%
31+	1530	0	0,0%	0	0,0%

The diversity of the ratio within the high rise of 20+ and 30+ story buildings indicates a relatively low vertical urbanism in this part of Istanbul with a low ratio of 30+ buildings. Looking into the details of 30+, the ratio of units was higher between 2013 and 2017 against the later five-year of construction between 2018 to present. There is only a minor trace of 30+ construction before 2013 in Kadıköy district.

Table 4.6. The housing stock in Kadıköy. Table created by author [58]. Accessed 10 July 2022.

Number of Rooms	Total No of Flats	Presentage of Flats	Age	No of Flats	High Rise (20+Storey)	Presentage of High Rise 20+	High Rise (30+Storey)	Presentage of High Rise 30+
Studio Flats (1+0)	73	0,81%	0-4	27	24	32,9%	0	0,0%
			5-10	12	1	1,4%	0	0,0%
			11-15	8	0	0,0%	0	0,0%
			16-20	6	0	0,0%	0	0,0%
			21-25	6	0	0,0%	0	0,0%
			26-30	4	0	0,0%	0	0,0%
			31+	8	0	0,0%	0	0,0%
1 Bedroom Flats (1+1 & 1.5+1)	627	6,94%	0-4	457	314	50,1%	62	9,9%
			5-10	35	18	2,9%	2	0,3%
			11-15	15	2	0,3%	0	0,0%
			16-20	9	2	22,2%	0	0,0%
			21-25	13	0	0,0%	0	0,0%
			26-30	26	0	0,0%	0	0,0%
			31+	58	0	0,0%	0	0,0%
2 Bedroom Flats (2+0 & 2+1 & 2.5+1 & 2+2)	2003	22,17%	0-4	1012	250	12,5%	12	0,6%
			5-10	173	13	0,6%	12	0,6%
			11-15	62	0	0,0%	0	0,0%
			16-20	17	0	0,0%	0	0,0%
			21-25	46	0	0,0%	0	0,0%
			26-30	185	0	0,0%	0	0,0%
			31+	474	0	0,0%	0	0,0%
3 Bedroom Flats (3+1 & 3.5+1 & 3+2)	4705	52,08%	0-4	1661	159	3,4%	14	0,3%
			5-10	427	16	0,3%	7	0,1%
			11-15	176	1	0,0%	1	0,0%
			16-20	65	0	0,0%	0	0,0%
			21-25	263	0	0,0%	0	0,0%
			26-30	877	0	0,0%	0	0,0%
			31+	828	0	0,0%	0	0,0%
4 Bedroom Flats (4+0 & 4+1 & 4.5+1 & 4+2 & 4+3 & 4+4)	1296	14,34%	0-4	432	35	2,7%	10	0,8%
			5-10	107	5	0,4%	4	0,3%
			11-15	31	0	0,0%	0	0,0%
			16-20	41	0	0,0%	0	0,0%
			21-25	164	0	0,0%	0	0,0%
			26-30	224	0	0,0%	0	0,0%
			31+	146	0	0,0%	0	0,0%
5 Bedroom Flats (5+1 & 5+2 & 5+3 & 5+4)	269	2,98%	0-4	175	5	1,9%	0	0,0%
			5-10	10	1	0,4%	0	0,0%
			11-15	14	2	0,7%	0	0,0%
			16-20	11	0	0,0%	0	0,0%
			21-25	23	0	0,0%	0	0,0%
			26-30	20	0	0,0%	0	0,0%
			31+	15	0	0,0%	0	0,0%
6 Bedroom Flats (6+1 & 6+2 & 6+3 & 6+4)	62	0,69%	0-4	43	0	0,0%	0	0,0%
			5-10	6	0	0,0%	0	0,0%
			11-15	1	0	0,0%	0	0,0%
			16-20	3	0	0,0%	0	0,0%
			21-25	3	0	0,0%	0	0,0%
			26-30	5	0	0,0%	0	0,0%
			31+	1	0	0,0%	0	0,0%

To be able to study the housing units in Kadıköy, a detailed table of information gathered above, on Table 4.6. The results indicate that the housing market is dominated with availability of three bedroom flats, followed by two and four bedroom flats respectively. This indicates Kadıköy district contains larger units in relation to Istanbul with higher percentage of three bedroom flats, as well as having higher number of four bedroom flats in compressing to one bedroom flats.

On this table the results for studio flats is highlighted in blue as well, for the representation of interference growth.

Looking into the construction periods, the Table 4.6 shows the majority of construction have been built after 2018, which is indicated with red dotted lines. The market is flooded with flats constructed in the last five years which was noted as ten years in Istanbul.

The subject of high-rise construction is evaluated in two columns with 20+ and 30+ storey buildings. The buildings with 20+ storey have been on the rise after 2018, in parallel with the general construction trend in the area. Most of the construction for 30+ high buildings were completed in the last five years with one bedroom flats. It shows that half of the one bedroom flats are part of high-rise construction.

The results also highlight that approximately 72% of one bedroom flats, 33% of studio flats and 13% for two bedroom flats are part of a high rise construction, followed by tree and four bedrooms with around 3% of their typology. This highlights the fact that the high-rise construction contains units with less number of bedrooms. For the larger units of five and six bedroom flats are relatively low within high-rise buildings.

One of the crucial outcome of this table is the amount of new construction on the market. There is a clear gap for the number of younger flats available on the market in Kadıköy. The construction in the area is even younger than Istanbul which highlights a later stage of development in housing.

After studying the general trend on building tall in the district of Kadıköy, the size implication of bedroom numbers is looked into in relation to time period, followed by the relation it has with high rise construction.

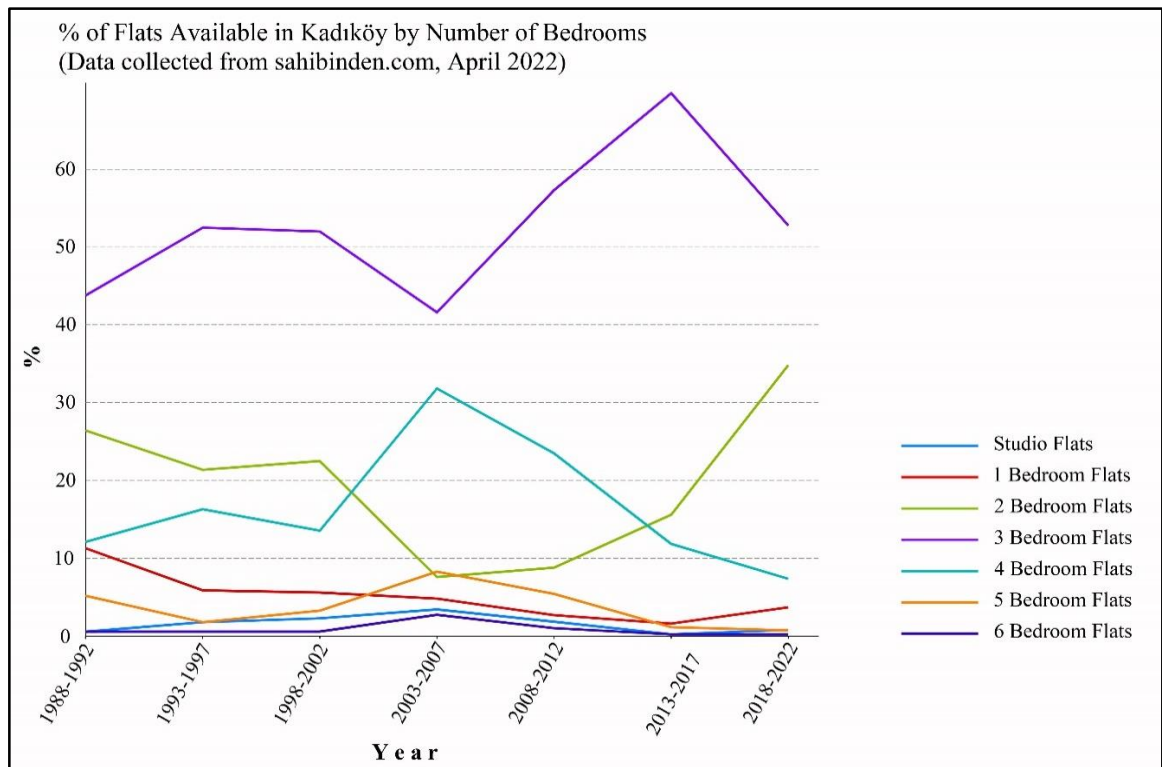


Figure 4.7. Flats available in Kadıköy by number of bedrooms. Image created by author [58]. Accessed 28 March 2022.

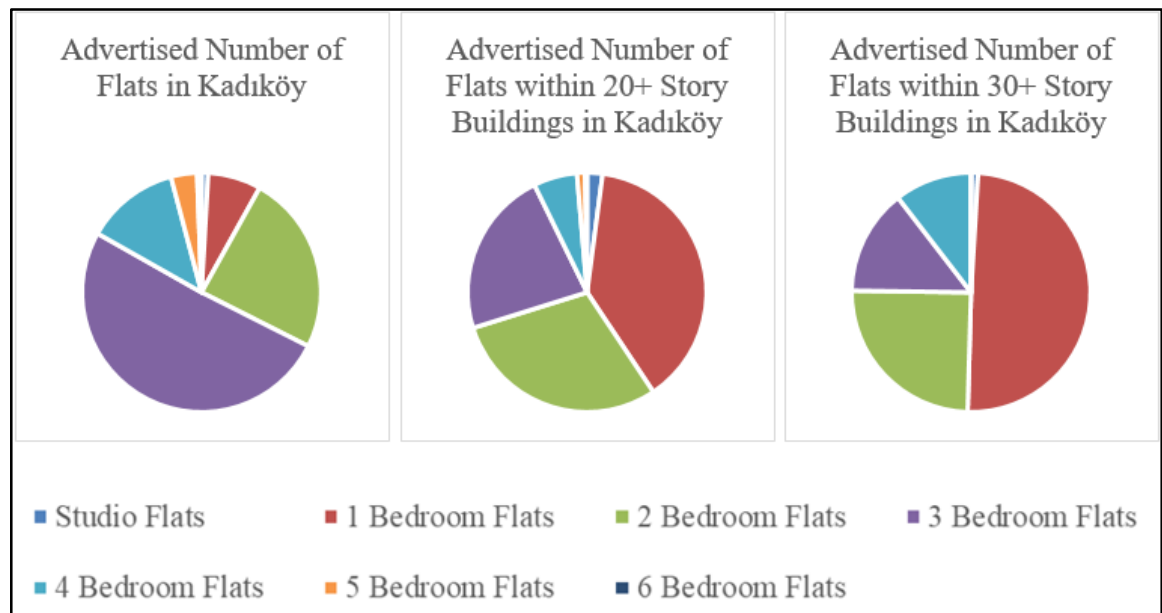


Figure 4.8. Flats available in Kadıköy with high-rise connection, by number of bedrooms. Image created by author [58]. Accessed 28 March 2022.

The be able to search into the results in relation to the number of the bedrooms, the line graph (Figure 4.7) is prepared. It aims to highlight the size of the units constructed in five-year periods of time, in Kadıköy.

Overall trend in Kadıköy indicates three bedroom flats available on the market shows a clear overflow. Three bedrooms have been the main typology of construction since 1988, as oppose to the general trend of two bedroom units, in the city. Three bedroom flats had a peak in 2013-2017 period with almost 70% of the market stock. The secondary widespread typologies are two bedroom and four bedroom units. While the number of four bedroom flats were higher in the period of 2003-2007, the numbers gradually decreased, ending up below 10% of the market. As opposed to this, two bedroom flats show an almost opposite move with an increase after 2003-2007 period, ending up approximately 35% of today's market. It can be estimated that the number of three bedroom units and 2 bedroom units will be equalized in the next five-year period.

Studios as well as, one, five or six bedroom units have a relatively low percentage in Kadıköy, hovering around and under 10% of construction.

The pie chart (Figure 4.8), investigates into the breakdown of flats in relation to number of bedrooms followed by the breakdown of flats in high-rise buildings of 20+ and 30+ storey tall. According to the comparison chart, the number of one bedroom flats available on the market show rapid increases in parallel with the height of the buildings. The higher density of three bedroom flats in the city of Kadıköy are partly replaced with one bedroom flats in 20+ and 30+ storey buildings, reaching up to half of the market stock in 30+ high buildings. On the other hand, two bedroom flats are remained around similar numbers in general market as well as in high rise buildings. Kadıköy having a more traditional area shows its traces in the number of larger units with 4 bedrooms. Despite a slight decrease on the number of four bedroom units within 20+ high buildings, the 30+ high buildings contain similar ratio of the general district. After studying the general trend on the size of the flats with building age, building tall is examined among the neighborhoods of Kadıköy. There are twenty-one neighbourhoods in the districts, which all are being searched against the height filter of 20+ storey and 30+ storey. The results are shown below (Figure 4.9 & 4.10). The information gained through these bar charts is transferred into maps of neighborhoods in Kadıköy, for the clearer view of the locations within the district.

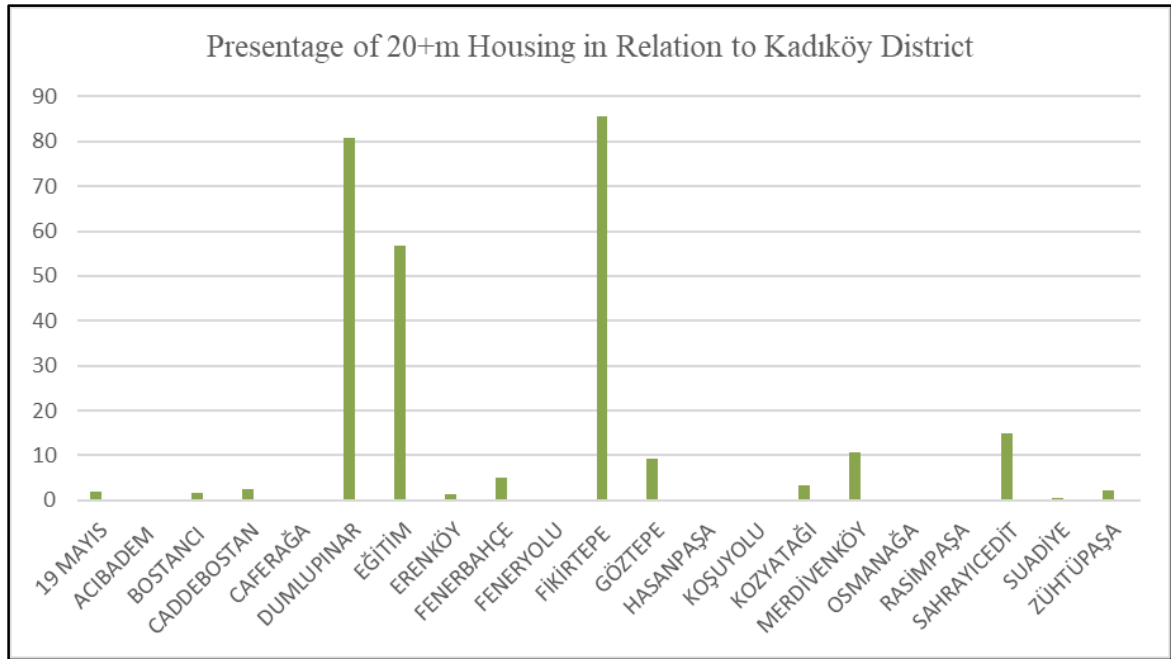


Figure 4.9. Percentage of 20+m units in relation to Kadıköy district. Image created by author [58]. Accessed 16 June 2022.

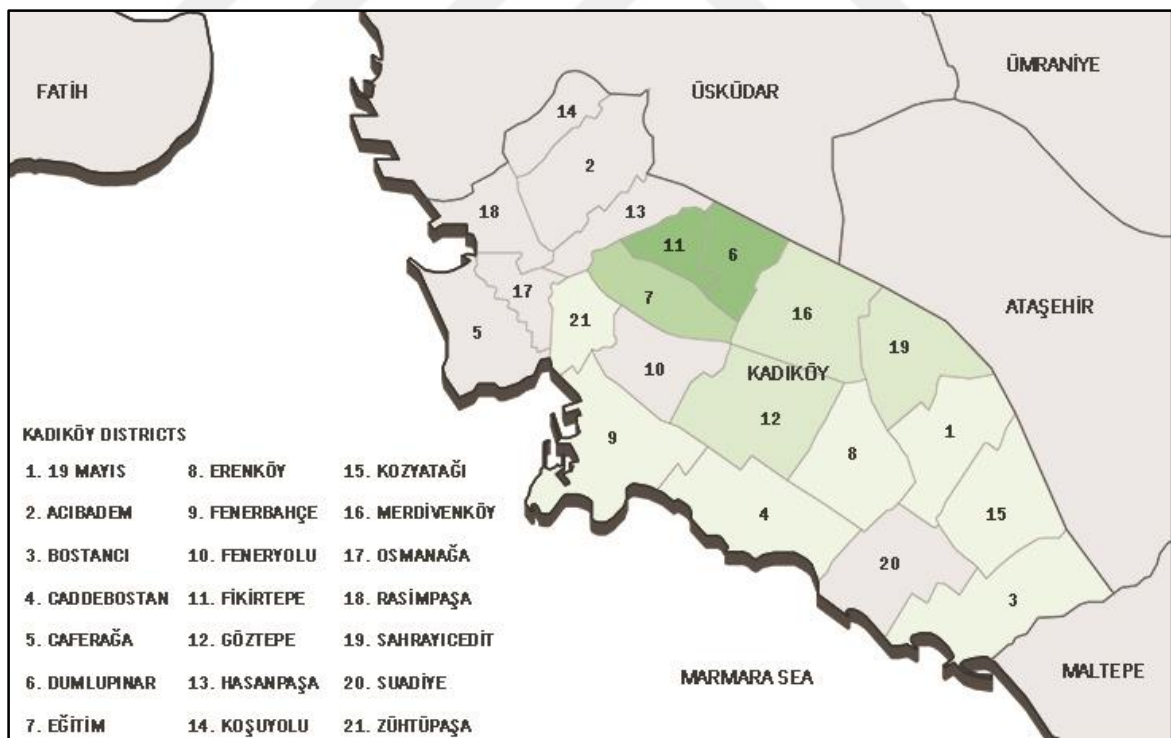


Figure 4.10. The Map of percentage of 20+ units in relation to Kadıköy district. Map created by author [58]. Accessed 16 June 2022.

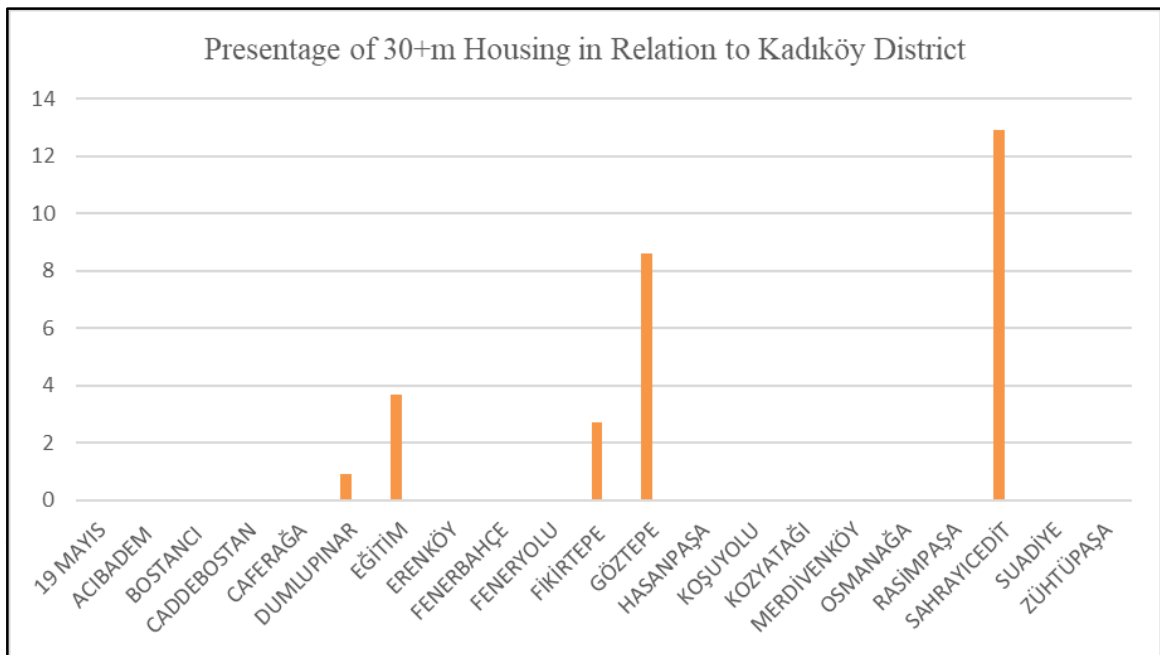


Figure 4.11. Percentage of 20+m units in relation to Kadıköy district. Image created by author [58]. Accessed 16 June 2022.

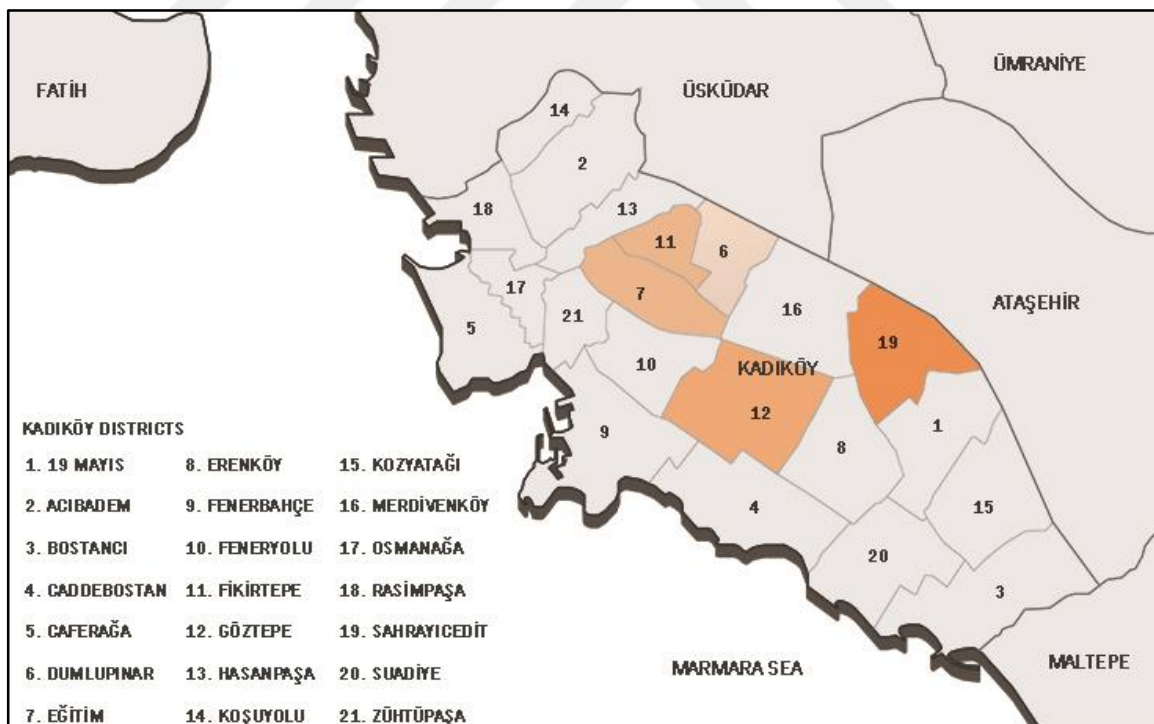


Figure 4.12. The Map of percentage of 20+ units in relation to Kadıköy district. Map created by author [58]. Accessed 16 June 2022.

The bar charts of Figure 4.9 & 4.11 study the high-rise construction of 20+ and 30+ high building units in relation to the neighborhoods of Kadıköy. While Figure 4.9 focuses on the

ratios for units within 20+ high-rise buildings, Figure 4.11 highlights the ratios within 30+ high-rise buildings. From the research among neighborhoods, the clear gap for the number of units within 20+ high buildings are noted in Fikirtepe and Dumlupınar, with above 80% of advertised units. Eğitim neighborhood follow with below 60% of units being part of building tall of 20+ storey. The next group hovers around 10% for 20+ high-rise neighborhoods include Sahracerit, Merdivenköy and Göztepe. The bar chart of 4.12 studies the high-rise construction of 30+ high building units, in the neighborhoods of the Kadıköy district. As opposed to previous results the tallest districts of Fikirtepe and Dumlupınar for the 20+ storeys are, relatively low areas of 30+ storeys with below 4%. On the other hand, Sahracerit and Göztepe have the most 30+ high rise units. Eğitim neighborhood is only area, which contains a balance between 20+ and 30+ storey buildings.

In general, both of the maps indicate that European side of Istanbul is vertically denser than Asian side. Kadıköy District is a relatively low area with partial high-rise construction, that is a part of third category for the vertical density within the districts.

Kadıköy District, having verifying scale of buildings along with old and new construction has around 8% of 20+ high rise buildings that is below the average of Istanbul, while around 1% of higher construction of 30+ storey, is distinctly lower than Istanbul's average. One of the reasons for being a relatively low district is the length of the coast line, it is covering. The higher construction in historical districts of Istanbul, generally planned towards the inner land, away from the coastline. Both of these maps of 20+ and 30+ storey supports the general notion of lower construction closer to the coastline.

Although, many of these examinations and results can be studied under the urban planning, building large and tall has an effect on the architectural design features. The form of buildings and the typology of construction also have an effect on these architectural features. The layout of units, the extra features of flats, the mixed used facilities within the housing states, the design options for security arrangements and the facade design in relation with layouts are some of the features that are affected.

With the results of high-rise construction, it can be claimed that the increase on the height is in parallel with the reduction of the bedroom numbers. Apart from this, it is important to investigate the quality of living through other features of flats, such as the balcony availability and the multiple bathrooms. Balcony is a crucial part of Turkish housing culture,

that is available within the search engine of sahibinden.com. The number of bathrooms is another filter built in the search engine. Lastly on this section the security concern of gated community availability is searched and all these features are cross referenced with high-rise construction of 20+ and 30+ storey of high-rise buildings as shown on Figure 4.13.

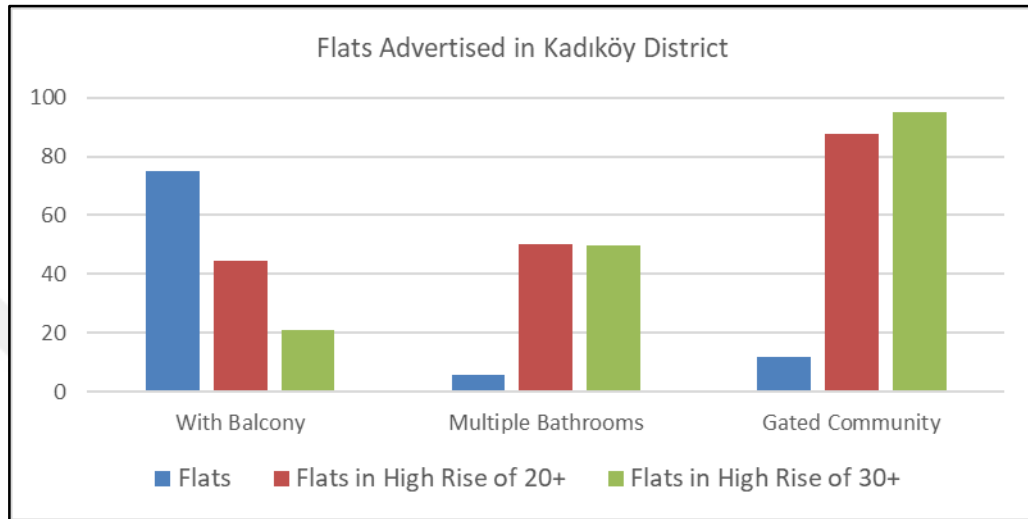


Figure 4.13. Balcony, Bathroom and Gated Community Features. Image created by author [58]. Accessed 16 June 2022.

According to the bar chart the general trend of flats in Kadıköy is shown in blue that has a higher percentage of balcony availability, while it has lower value of multiple bathrooms and gated community feature. Balconies have been part of housing projects from the early stages, as seen on Le Corbusier's Unite D'Habitation which is a crucial feature of housing units. It is noted that the high rise buildings have a higher percentage for the multiple bathroom feature. On top of that, it is clear that most of the high rise construction in the area is part of gated community culture, which is a significant feature of building tall.

From the high-rise building groups, the mass housing with 500+ unit numbers that is identified as a threshold for large housing by French planners in 1959 and by Vieillard-Baron [17] in 2004 are to be studied in the district of Kadıköy. Building large is identified with the height filter along with the number of units the building or the complex contain. The results of 20+ storey buildings on the market in Kadıköy is listed below (Table 4.6).

Table 4.7. List of high-rise buildings in Kadıköy. Table created by author [58,66].

Accessed 28 March 2022.

List of 20+ Storey High Rise Buildings noted on Sahibinden.com					
	Building Name	Neighborhood	Age	Number of Floors	Number of Residential Units
1	Ersoy Residence	19 Mayıs	2	20	66
2	Turkuaz Park Residence	Caddebostan	3	20	80
3	Concorde Istanbul (Uplife Kadikoy)	Dumlupınar	0	22	830
4	İstanbul 216	Dumlupınar	3	24	541
5	Yenitepe Kadıköy	Dumlupınar	3	23	450
6	Torkam Sitesi	Dumlupınar	1	23	880
7	Kentplus Kadikoy	Eğitim	3	24	1337
8	Dilman Towers	Erenkoy	5-10	26	104
9	Özen Residence	Erenkoy	4	21	50
10	Fb Kalamış Residence	Fenerbahçe	16-20	20	40
11	Ziverbey 34	Feneryolu	4	20	60
12	Optimist Residence	Fikirtepe	0	22	554
13	Şua Elite Concept	Fikirtepe	3	24	785
14	Evinpark Kadıköy	Fikirtepe	1	24	467
15	1071 Kadıköy	Fikirtepe	3	24	556
16	Anka Evim Kadıköy	Fikirtepe	3	24	250
17	Fortis Sinanlı	Fikirtepe	1	23	1100
18	Mina Towers	Fikirtepe	0	24	1500
19	The Mandarins	Fikirtepe	3	24	493
20	Pırlanta Göztepe	Fikirtepe	4	22	446
21	Haldız Transform	Fikirtepe	0	24	1080
22	Beyazıt Katlı Villaları	Göztepe	21-25	25	36
23	Ç.Havuzlar Kontek Duet	Göztepe	5-10	25	128
24	Park Residences/ Four Winds	Göztepe	4	30+	520
25	Brooklyn Park	Merdivenköy	1	25	731
26	Baytur Konutları	Kozyatağı	5-10	25	800
27	Altower Residence	Sahrayı Cedit	1	30+	330



Figure 4.14. Images of high-rise buildings in Kadıköy. Image created by author [58].

Accessed 28 March 2022.

The list identifies the building and complexes that has more than 500 units in blue. According to the table above almost half of 20+ storey buildings in Kadıköy are part of large housing complexes.

The 20m+ buildings' facade images are shown on Figure 4.14. Apart from the form and the function, another discrepancy between singular type construction and settlement projects, is the appearance of facades. The singular buildings have heavier appearance with a different balance of solid and transparent materials. In the next section shrinking spaces of large and tall housing blocks are studied with the implications of 'aiming large, gaining small'; facade design being one of them.

4.3. THE RELATION BETWEEN HOUSING AND SHRINKING IN SIZE & REPETITION

As population grows fast, the diversity decreases to compensate this growth. Mass production is depended on repetitions, notes Bilgin (2002) and suggests that this is a problem that can arguably be overcome by design solutions that allow variation and differentiation. As a result, housing should be reproduction of same elements resulting in diversity. Within the current market of housing units, diversity is hard to locate in form, function, plan layouts and the complex arrangements. However, in the context of this study, large constructions with high rise buildings are studied in Kadıköy district and the inverse ratio relation of large structures against repetitive shrinking units is observed.

As volumetric urbanism expands, the residential space per unit shrinks down. The number of bedrooms per unit is on the decline, as studied previously. Apart from the space itself, the facade area allocated for each units reduces with it. The plan layouts of traditional separate kitchens have been replaced with an open space design. Kitchens are designed as part of living spaces in smaller units, to be able to reduce the facade area per unit. This also helps to minimize the core area by having deepened units. The distance between the facade line and the building core has been one of the repetitive features of larger construction typology. As a result, larger transparent facades are growing to gain natural light for deepened units.

Two examples were chosen from the high-rise construction in Kadıköy, one being a settlement projects of a complex which is a mass housing project and the other one being a standalone building.

Mina Towers (Figure 4.15) is a complex with 1500 residential units, sauna, swimming pools and underground parking which is a similar concept to Maki and Othaka's (1964) mixed use idea, as well as Le Corbusier's Unite D'Habitation project. The complex includes unit types of studio flat, one, two, three, four and five bedroom flats.

Özen Residence Building (Figure 4.16) is chosen for being a standalone structure which is part of high-rise construction. It is a housing project with 50 number of residential units and the building includes unit types of three and four bedroom flats. Besides these buildings, the earlier examples of 1930's Ceylan Apartment and the Soyak Göztepe building was built 1992 are chosen for the Istanbul's residential units.

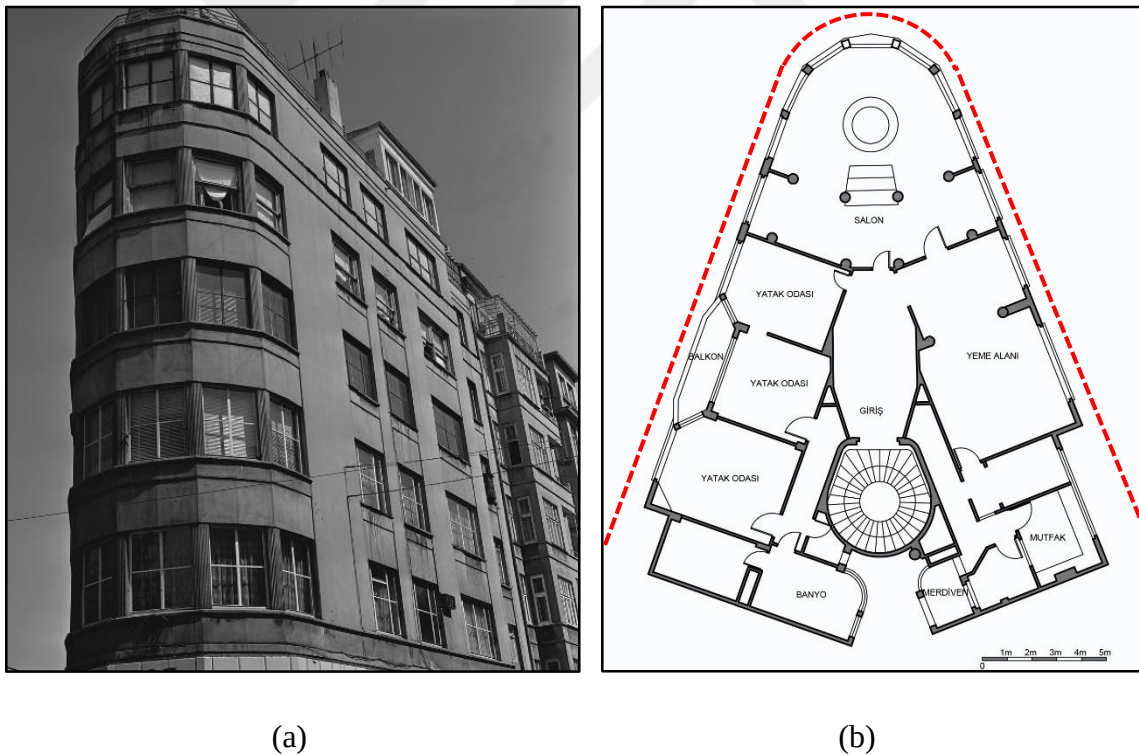


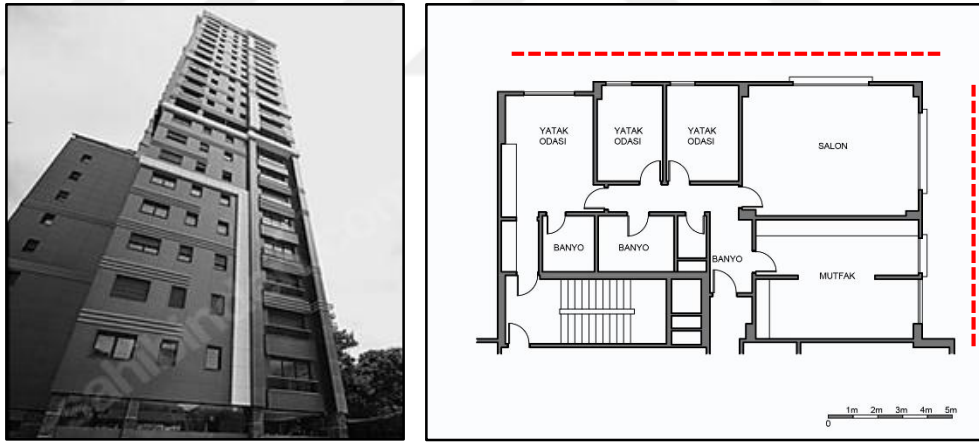
Figure 4.15. (a) Ceylan apartment [52]. (b) Ceylan apartment Unit Plan; Image created by author [52]. Accessed 16 June 2022.



(a)

(b)

Figure 4.16. (a) Soyak Göztepe [54]. (b) Soyak Göztepe Unit Plan; Image created by author [54]. Accessed 16 June 2022.



(a)

(b)

Figure 4.17. (a) Özen Residence [67]. (b) Özen Residence Unit Plan; Image created by author [67]. Accessed 16 June 2022.

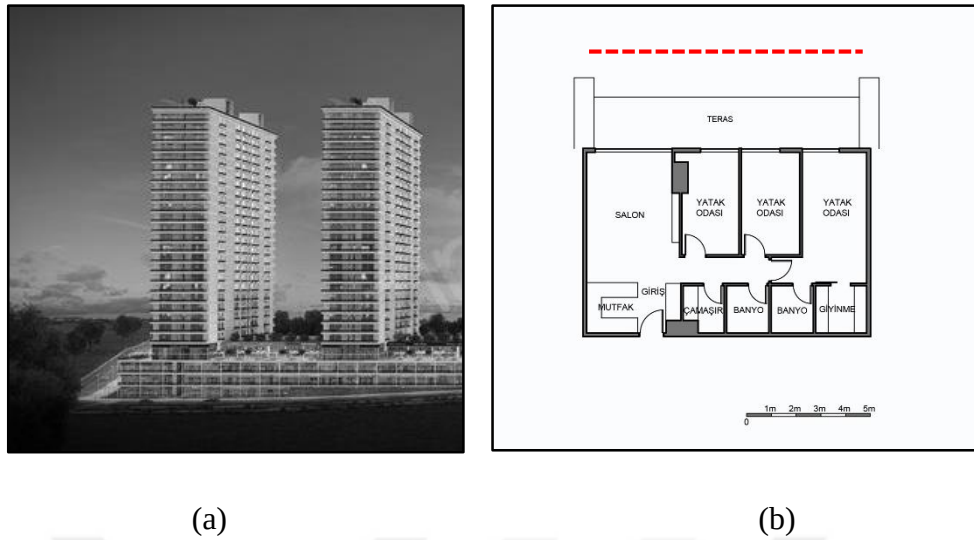


Figure 4.18. (a) Mina Towers [68]. (b) Mina Towers Unit Plan; Image created by author [68]. Accessed 16 June 2022.

Three bedroom flat layouts are shown (Figure 4.15, 4.16, 4.17 and 4.18) to be able to compare the kitchen designs and facade areas. Mina Tower has a kitchen designed within living area, while Özen Residence and earlier examples of Soyak Göztepe and Ceylan Apartment unit has a separate room allocated for kitchen. The perimeter of facades for each unit is highlighted in red dotted lines. Ceylan Apartment and Soyak Göztepe Building has longer facade allocated for units in relation to later examples. The transparency ratio in facade designs shows discrepancy, having a heavier appearance with larger facade area design. The deeper unit within Mina Tower complex is supported with more transparent face to gain natural light.

On the other hand, from the positive perspective, some features are added to improve the quality of live, such as increased number of bathrooms and balconies with the length of facades. All these factors routing designers to a common space, but the diversity is achievable. As mentioned, the example of Koolhaas's Headquarters building finds an unusual solution to escape with two-way exit is a variation in design. The task of design may be a space and a form where difference is generated. The difference is a key feature and a task of life, as well as design.

The design of standalone buildings and complexes have verifying relations with their surroundings. Besides the gated community that is a break in the urban tissue, the walkable neighborhoods which has a direct relation to building large and liveness of streets are the

issues. Apart from the shrinking repetitive inner units the belonging comes with surroundings.

Although the large structures have smaller living units to serve basic needs from the beginning of mass housing design, the improvement of flats with more luxury life style have not had an improving effect on the size of units, nor the repetition of inner spaces. While the aim is differentiation, the result is homogeneity.



5. CONCLUSION

As the technology in construction moves forward, the ability of creating larger structures takes its' full blast resulting in building large with wider, higher and more powerful building masses. As an outcome of this transformation, building large has become the formal vocabulary of the cities. In the history of architecture, the examples of larger structures show their existence in verifying forms and functions. The industrial revolution, modernism and neoliberalism have transformed the city by introducing new building types of large structures and by re-centering the City, to place of work, followed by the place of residential through building large.

Although building large and tall minimizes land use, the outcome of standalone volumetric structures with copied units and faded connection to urban surroundings becomes the new way of living in cities. However, there is more to these new structures; the increase on the volume of the structures, has an effect on inner units in relation to size, kitchen designs, facade area and the transparency of facades.

The forces such as building regulations to restrict and standardize the designs of housing in relation to escape, heating, ventilation and so on. Although these documents are published to ensure people do not live under specific space quality, they arguably create standardization and repetition beyond the ideal.

The connection with urban fabric weakens with building large, as it is not part of any urban tissue [20]. The identity of cities that was marked by the squares, living streets and the lifestyle is shifted to individual structures. Remembering Colquhoun [2], the representational elements of volume find itself in a power race. The feeling of belonging for occupants fades gradually, with an inverse relation to volumetric design of building large. The housing units with taller buildings along with increased unit numbers detached themselves from surroundings with mostly gated communities.

Sahibinden.com's research engine results indicate that the housing market stock in Turkey mainly consist of apartment culture as opposed to individual houses. This ratio grows further apart in the city of Istanbul, reaching a peak in the center of the city areas, such as Kadıköy. As the culture of living transforms, houses turn into apartments, apartments turn into

residences, enhancing the scale and the height in cities. While only around 4% of advertised flats in Turkey are within a high rise construction of 20+ storeys, in Istanbul it is around 7% higher than Turkey's average. With the results of high-rise housing construction in Istanbul and Kadıköy, it can be claimed that the increase on the height is in parallel with the reduction of the bedroom numbers. In general, the housing stock in Istanbul is flooded with two and three bedroom flats, as oppose to high rise construction which is dominated by one and two bedroom flats. Relatively low area of Kadıköy's almost half of housing stock consists of three bedroom flats, while high rise in the area is crowded with one and two bedroom flats. From the detailed study of Kadıköy district, it is noted that while the number of bedrooms are on reduction with building large, some of the qualities of units are improving, such as number of bathrooms and availability of balconies. It is noted that most of the high rise construction in the area is part of gated community culture, which is a significant feature of building tall.

This study investigates into the relation and association of the volume of building mass (as a whole) with the inner units of the structure. An issue for further research would be undertaken to highlight a clear relation by examining the actual size of structure volume against inner units. The footprint of floors against the number of units in one level with the number of bedrooms for each unit to be studied. Also the further investigation in relation to size of inner spaces against common areas such as building cores could be undertaken.

Standardization is taking its turn to minimize the indifferent lifestyles to overcome the increasing numbers; the repetitive construction expands in architecture while living units shrinking in size. The phenomenon of going larger and taller (in terms of volume) while getting smaller (units) is studied through housing market stock. It is observed that the increase on the height has an inverse ratio to the number of bedroom per unit (an indirect relation to size), that supports the vast increase on repetitive shrinking units. Combining functions within the housing units also reduces the number of rooms and the sizes of units, as studied with living room and kitchen transformation.

In many part of the world, while the diversity of the political/ organizational and architectural solutions of mass housing is shaping the urban settlements, the journey of mass housing also has common grounds in many countries [69]. The model embraced by Turkey is depended on the ultra- high- density solution and the aim of having with verifying size of buildings dancing within the city skyline is to be balanced. From this perspective, it is clear that the

governmental diversions and decisions take the priority over secondary causes of building large that to be managed for functionality rather than capital concern. On the other hand the facilities and sizes of inner units are more flexible with less restrictions, which should also be controlled, rather than leaving it to contractors' capital gain. The densified city spaces to be promoted, with a balanced volume of structure and inner unit volumes.

Similar spaces are created with increasing population and land prices, what might become the feature of standard module living. The facade areas for each unit decreases with compact layouts of building tall. The mass construction will support the efficiency, while it will minimize individuality, eliminating the personalization. Mass production is depended on repetitions and it should be considered by designers to allow variation and differentiation. The physical form influences human behavior and these designs aim to provide homes that is supposedly be a place of belonging. Building large stands in the way of belonging with a discrepancy of a home; rather it provides shelter by losing identities. The identical lives with minimal individuality and culture connection are taking over.

The effect of building large and tall on people's lifestyle is the main concern for this study. If architects' role is to design and maintain humanistic qualities with diversity, knowing that spaces impose upon the lifestyle to individuals, the search for such a design should be the main target for architects. As Kilroy Oldster quotes, 'we come from this earth and we will return to this earth' [70], meanwhile is it justified that we hangout far from earth.

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