IZMIR KATIP CELEBI UNIVERSITY ★ GRADUATE SCHOOL OF SCIENCE AND ENGINEERING

FUZZY DELPHI METHOD TO DIRECT URBAN REGENERATION PROJECT ASSESSMENT: BORNOVA- KIZILAY NEIGHBORHOOD

M.Sc. THESIS

Romjana ÇUPI

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Thesis Advisor: Assist. Prof. Dr. Yakup EĞERCİOĞLU

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İZMİR KÂTİP ÇELEBİ ÜNİVERSİTESİ ★ FEN BİLİMLERİ ENSTİTÜSÜ

BORNOVA - KIZILAY MAHALLESİNDE FUZZY DELPHİ YÖNTEMİYLE KENTSEL DÖNÜŞÜM PROJE DEĞERLENDİRMESİ

YÜKSEK LİSANS TEZİ

Romjana ÇUPI
(Y130201015)

Kentsel Dönüşüm Ana Bilim Dalı

Tez Danışmanı: Yard. Doç. Dr. Yakup EĞERCİOĞLU

HAZİRAN 2016

Romjana Çupi, a **M.Sc.** student of **IKCU Graduate School of Science and Engineering**, successfully defended the thesis entitled "**A METHOD TO DIRECT NEIGHBORHOOD REGENERATION PROJECT ASSESSMENT OF QUALITY IN KIZILAY NEIGHBORHOOD, IZMIR, TURKEY**", which she prepared after fulfilling the requirements specified in the associated legislations, before the jury whose signatures are below.

Thesis Advisor :	**Assist. Prof. Dr. Yakup EĞERCİOĞLU** İzmir Katip Çelebi University	.....
Jury Members :	**Assoc. Prof. Dr. Salih YILMAZ** İzmir Katip Çelebi University	.....
	Assist. Prof. Dr. Eray BOZKURT Yaşar University	.....

Date of Submission : 25.05.2016
Date of Defense : 09.06.2016

To My Family,

and to the memory of my grandmother…

I successfully accomplished this journey thanks to all of you.

ACKNOWLEDGMENTS

Firstly I would like to acknowledge the contribution of my thesis supervisor, Assist. Prof. Dr. Yakup Egercioğlu, for offering intellectual guidance and endless support, throughout the study. I am deeply grateful to him for giving me the freedom to explore on my own, and at the same time guiding me throughout the research and writing of this thesis.

I also wish to express my sincere thanks to Prof. Ahenk Yılmaz, for her support, long discussions and encouraging me to produce research-based, exploratory and innovative solutions.

I would like to thank my other faculty members; Assoc. Prof. Dr. Salih Yılmaz, Assist. Prof. Dr. Eray Bozkurt, Assoc. Prof. Dr. Mehmet Çete, Assist. Prof. Dr. Adem Eren, for their beneficial suggestions and comments.

I am also thankful to Assoc. Prof. Dr. Ayşegül Alaybeyoglu Yılmaz, for her encouragements and support while developing Fuzzy Delphy Logic. The thesis wouldn't be complete without her instructions of MATLAB program.

Special thank to all the teachers I met in my student life and who fostered my love for learning and to seek knowledge everywhere.

I would also like to give my expression of gratitude to all connections, acquaintances, interviewees and informants who have been good-hearted. My most sincere gratitude to Mr. Deniz Dayangac, Director of Urban Design Department at Bornova Municipality for providing relevant research data.

I am extremely thankful and greatly value my friends' invaluable presence and support throughout this journey. I have to give a special mention and heartfelt thanks to Ayshat and Dola.

Finally, I would like to express my gratefulness to my brother Ajnsli, my parents and also to my sister Romina, for their endless love, patience and support in my life and the fulfillment of the study.
This thesis would not be realized without the support and the contribution of these great people.

June 2016 Romjana ÇUPI

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ABBREVIATIONS

DRAR:	**:** District Revitalization and Regeneration
FDM:	**:** Fuzzy Delphi Method
MATLAB:	**:** Matrix Laboratory
TOKI:	**:** Turkish Housing Development Administration
UDCs:	**:** Urban Development Corporations
UR:	**:** Urban Regeneration
URP:	**:** Urban Regeneration Plan

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FUZZY DELPHI METHOD TO DIRECT URBAN REGENERATION PROJECT ASSESSMENT: BORNOVA- KIZILAY NEIGHBORHOOD

ABSTRACT

Resident satisfaction is an important issue in urban regeneration projects (URP). In the western countries, the resident satisfaction from residential environments continues to be an important topic for researchers and the data found well preserved and integrated into real projects. In Turkey, yet, there is little research on residential satisfaction in many urban regeneration projects implemented. In Turkey, up to the present, research carried out about urban analysis and residential satisfaction needed in any urban regeneration project, is little evident in implemented UR projects.

Izmir is the third biggest city in Turkey that has experienced rapid population growth due to the rural-urban migration. Urban regeneration is a multidimensional and coordinated process that can produce sustainable solutions for urban areas in physical, socio-cultural and economic aspects.

However, problems experienced in issues such as participation, legislation, organization and not preserving characteristic features of the region in implementation of the projects, impede the goal achievement of URP. As a result, while not meeting the needs of users, problems such as unqualified structures and spaces together with unfair profits, rental fees, social exclusion and lawlessness arise. Thus, according to the urban life quality, in order to achieve a holistic and successful urban regeneration is required, at the end of the UR process, to produce quality buildings and spaces that meet the needs of residents.

Bornova-Kızılay neighborhood is an area with low quality housing structures that has received the attention of municipality as a zone in need for urban regeneration. In this study, quality of life in Kızılay neighborhood is evaluated from the resident's point of view. A survey was conducted to collect data both at the building and neighborhood scale. Factors studied in **building scale** size are: (i) construction conditions and age of the building, (ii) architectural features, (iii) modifications done and the wish for repairs/renovation, (iv) physical condition and energy efficiency, (v) property condition. The factors for the **neighborhood scale** are; (i) social structure, (ii) amenities, (iii) economic structure, (vi) architectural features, (v) infrastructure status, (vi) public transportation and road quality, (vii) health and safety. The main purpose of this study is to show how, by evaluating building and neighborhood development criteria concerning the occupant's prospects, an effective process can be utilized for the Urban Regeneration Projects. It is crucial for the success of the UR projects to see and analyze each site from the point of view of its occupants. How they use and feel the neighborhood structures and environment can give necessary insights into how a successful urban regeneration project can proceed. What the residents of the selected site want to have in their neighborhood, what they want to protect, what they do not want, and what they are in need of, are used as core indicators for this study. The data gathered from questionnaires completed by the residents of Bornova-Kızılay neighborhood, selected as the area of study, are evaluated based on the Fuzzy Delphi Method (FDM). To ensure understanding of the

users' need for district revitalization and regeneration (DRAR), in neighborhood and building scale, the questions and indicators were formulated by a group of 33 (thirty three) professionals.

Through this study done in Bornova-Kızılay neighborhood; intended research is conducted and recommendations are made on how to achieve public participation and realistic needs assessment in urban regeneration projects.

Key Words: Urban Regeneration; Building Assessment; Neighborhood Assessment; Participation; Resident Satisfaction; Fuzzy Delphi Method (FDM); Bornova-Kızılay Neighborhood

BORNOVA- KIZILAY MAHALLESİNDE FUZZY DELPHİ YÖNTEMİYLE KENTSEL DÖNÜŞÜM PROJE DEĞERLENDİRMESİ

ÖZET

Kentsel dönüşüm projelerinde mahalle sakinlerinin (kullanıcıların) memnuniyeti önemli bir konudur. Batılı ülkelerde; kentsel dönüşüm projelerinde kullanıcı memnuniyeti, araştırmacılar için önemini korumakta ve elde edilen veriler değerlendirilerek, uygulama sonrası projelerle ilişkileri sorgulanmaktadır. Türkiye'de ise, şu ana kadar kentsel dönüşüm ihtiyaç analizi ve konut memnuniyeti için yapılan araştırmalar, kentsel dönüşüm projesinde küçük bir paya sahiptir. Türkiye'deki üçüncü büyük şehir olan İzmir, kırsal yerleşimlerden gelen aşırı göçten dolayı yaşanan hızlı nüfus artışını yaşayan şehirlerden biridir. Kentsel dönüşüm, sorunlu kentsel alanlarda fiziksel, sosyo-kültürel ve ekonomik yönlerden sürdürülebilir çözümler üreten çok boyutlu ve koordineli bir süreçtir. Ancak katılım, yasal mevzuat, örgütlenme gibi konularda yaşanan sorunlar ve bölgenin dinamiklerine yönelik uygulanmayan projeler, dönüşümlerin başarılı olmasına engel olmaktadır. Bunun sonucunda kullanıcıların ihtiyaçlarını karşılayamayan, niteliksiz yapı ve alanlar ile birlikte haksız kazanç, rant, sosyal dışlanma, hukuksuzluk gibi sorunlar ortaya çıkmaktadır. Dolayısıyla kentsel yaşam kalitesine uygun, kentle bütüncül ve başarılı dönüşümler gerçekleştirebilmek için kentsel dönüşüm süreci sonunda nitelikli yapı üretilebilmesi gereklidir. Bornova-Kızılay Mahallesi de, düşük kaliteli konut yapısı ile belediye tarafından kentsel dönüşüm için dikkat çekmiş olan benzer bir alandır. Bu çalışmada, Kızılay Mahallesi konut alanı yapı kalitesi bölge sakinlerinin bakış açısından değerlendirilmiştir. Hem bina ölçeğinde hemde mahalle ölçeğinde veri toplamak amacıyla bir anket düzenlenmiştir. **Bina ölçeğinde** incelenen faktörler: (i) yapı durumu ve bina yaşı; (ii) mimari özellikler; (iii) uygulanmış değişiklikler ve tamir/renovasyon istekleri; (iv) fiziksel durum ve enerji verimliliği; (v) mülkiyet durumu. **Mahalle ölçeğinde** incelenen faktörler: (i) sosyal yapı; (ii) imkanlar; (iii) ekonomik yapı; (iv) mimari özellikler; (v) altyapı durumu; (vi) toplu taşıma ve yol kalitesi; (vii) sağlık ve güvenlik. Burada yapılan çalışmanın amacı bina ölçeğinde ve mahalle ölçeğindeki kriterler ve kullanıcıların beklentileri doğrultusunda etkili bir kentsel dönüşüm sürecinin nasıl oluşturulabileceğidir. Projeyi, çalışma alanında yaşayan kullanıcıların bakış açısından görmek ve analiz etmek projenin başarısı için çok önemlidir. Mahalle sakinlerinin yapıları ve çevreyi nasıl kullandıkları, nasıl hissettiklerini anlamak başarılı kentsel dönüşüm projelerinin hayata geçirilmesinde gerekli fırsatlar sunabilir. Proje alanında yaşayanların ne istedikleri, neleri korumak istedikleri ve nelere ihtiyaç duydukları çalışma kapsamında ana gösterge olarak kullanılmıştır. Çalışma alanı olarak seçilen Bornova-Kızılay Mahallesi'nde elde edilen anketler ve veriler Fuzzy Delphi Metodu (FDM) yöntemiyle değerlendirilmiştir. Bina ve mahalle ölçeğinde kullanıcıların ihtiyaçlarını anlamak amacıyla hazırlanan sorular ve göstergeler arasındaki ilişkiler, konusunda uzman 33 kişilik bir grup tarafından belirlenmiştir. Bornova-Kızılay Mahallesi çalışması ile; kentsel dönüşüm sürecinde halkın katılımı ve kentsel dönüşüm ihtiyaç analizinin nasıl gerçekleştirilebileceğine yönelik araştırmalar yapılmış ve önerilerde bulunulmuştur.

Anahtar Kelimeler: Kentsel Dönüşüm; Yapı değerlendirme; Mahalle değerlendirme; Katılımcılık; Kullanıcı Memnuniyeti; Fuzzy Delphi Method (FDM); Bornova-Kızılay Mahallesi

CHAPTER 1

INTRODUCTION

1.1 Definition of the research problem

Humans in history have shown to settle in areas considered suitable for living good and continuously change these areas according to their needs. Humans as the most intelligent beings and because of the evolution of human intelligence, started to live permanently in sites where land is low, flat and fertile, satisfying the needs of human life and transforming themselves from hunter-gatherers to farmers. Adapting and continuously changing their living conditions for a higher standard of life they abandoned their nomadic lifestyles and developed sites according to their needs and perspectives using the resources they had. The agricultural economy rose and during this time cities and towns grew. Gradually up to 20th century when industrial labor force exceeded the declining agricultural labor force due to the introduction of power-driven machinery and other energy resources the society developed into an industrial one. This development brought its own negative aspects such as overcrowding in cities due to a large number of people moving to urban settings to be close to factories.

During this time, driven by the rapidly and intense increase of city populations, rural-urban movement of population, urbanization became a popular topic across the globe. The role and importance of urban planning seen as a tool in the process of organizing human settlements and forming the urban environment in the city and its districts started to grow. The study of different examples from the birth and growth of cities, the diverse natural, social, and cultural characteristics, special, economic and political factors that contributed to urban evolution started to proliferate. However studies based upon the town, city or particular places go back to classical ancient times.

Urban society itself started to grow more complex and so the ways of reading, interpreting and knowing the city increased.

World War II created severe damages in all life aspects. Buildings such as hospitals, schools, offices, warehouses, shops, factories or homes that have been destroyed, taking with them jobs or even lives, influenced on the wellbeing of the largest number of civilians. People lost all of their dreams and the areas, neighborhoods and city on itself lost its function. This situation indicated by destroyed cities, social legacy of depression, a remarkable change in demographics and the larger government interest in housing development resulted in the growth of suburbs.

The world experience is full up with cases of people moving from one place to another to adjust their economic, social or political conditions. At the end of the Second World War, this phenomenon appeared again when a large number of civilians moved toward suburbs, leaving the cities and rural areas. This massive movement into new suburbs caused cities to suffer again a loss of population.

WWII consequences and the suburbia growth raised the need to improve, rebuild and redevelop the city itself. This problem becomes a concern between citizens, professionals and governmental institutions too. The massive efforts to rebuild and improve the city had just begun. The concept of urban renewal came to play.

Demolished areas, inhabited by the poor, with unhealthy living conditions or the old industrial areas where low-income groups were sheltered were the first ones where the improvement interventions happened.

In Turkey, the industry growth, economic growth, population growth, and natural disasters that have happened led to a massive housing development inside the city itself and suburbia too. Turkey has experienced rapid city population growth due to the rural-urban migration as a result of economic and social opportunities that urban life offered at that time. Apartment housing development, slums and squatter housing or illegal settlements have been the typical reaction to the housing shortage that people faced because of this migration. The rapid increase of urban population was an input for rapid increase in housing construction in Turkey. Legal and illegal construction was spread in residential areas inside the city and suburb areas too, that mostly resulted in empty apartment blocks, under-occupied housing stock. The under-occupation of these newly constructed areas is dependent on household income and the ability to purchase and/or rent these new housing units. Due to

affordability problems, these occupants select to reside in less expensive neighborhoods. In general, these neighborhoods where lower-income households are located tend to be overcrowded, with low construction quality and an increased incidence of illegal interventions due to the need for appropriate housing.

The problems that rose from migration, rapid and unplanned urbanization, different forms of illegality, disbalance in population concentration, creation of slum areas, infrastructure problems, lack of protection of historical values and natural disasters, highlighted the need for immediate intervention. With the aim to improve what

already was done, government institutions and professionals gave a significant contribution to make urban transformation part of Turkish legislation through cooperation and participation.

However, Turkey has considered these issues as important for only last 20 years and the concept of urban regeneration was first introduced in the early 2000s, under the concept of urban transformation. It was presented as an approach that could solve the urban problems of rapidly growing cities in Turkey. Urban transformation projects were seen as the physical, social and economic solution for problematic urban areas. The goal was to achieve areas that offer qualitative urban life, meeting residential needs, where the physical conditions were promoters of good social and economic empowerment. According to changes that have happened in time and the nowadays concern that urban regeneration should protect characteristics of the zone it is clear that in the past the focus was in protectionist or interventionist approaches.

The actions taken in the past with the partial aim to renovate, redevelop, regenerate, recover, revitalize areas, show that today implemented urban regeneration projects have a more comprehensive and different sizes, providing urban-related integrated planning and participation.

Urban regeneration should be strongly related with the local users and the selected place during the whole process. Taking into consideration the number and kind of people living there throughout public hearings including local users and ensuring the involvement of the civilian population and institutions of the city is influential in the success of URP.

Despite the fact that participation in developed countries is so intense, Turkey still is experiencing problems and having different approaches about urban regeneration strategies, Turkey and other countries have achieved different results via urban regeneration projects.

At first city shaping in western countries was carried out by small public intended intervention.

In time, concepts of urban citizenship, democratic self-government, community were developed in Greece, and Italy. Social dynamics and community-specific institutional structures were created and so the public participation was gaining importance. Physical, socio-cultural, economic and environmental factors were implemented within the framework of URP and so were important the social participation, legal and administrative requirements. While attempting to produce sustainable solutions for problems in a specific area, ensuring the participation of users in all URP phases and thinking about their life in the regenerated area, should be aims of the regeneration. Only with the UR models which organize and involve different actors, a healthy and able to be monitored, urban regenerations can happen. Urban regeneration today involves all stakeholders, is not restricted to a limited number of individuals, authorities or boards. Public participation is considered as a main ideology in United Kingdom urban laws and there is a lot to learn from British experience in urban regeneration.

To date, legislation in Turkey around urban transformation has resulted in fragmented and unconnected projects inside and in the peripheries of the cities, supporting gentrification, social isolation, and exclusion (Müge Akkar Ercan, 20XX).

In Turkey urban regeneration is not seen as a conscious strategic planning concept but it seems like a main topic because of political, physical or economic reasons. Usually changes done in urban areas as physical interventions or total renewals implemented in the form of regeneration and at the same time not being successful in the urban and social context, focusing in rants and unfair profit are good examples to learn from their negative feedback.

As long as the users are excluded or after the regeneration they are forced to leave the area and the rents are increased due to the project or some individuals or organizations have ill gotten gains, the public confidence in the urban regeneration projects undertaken by public institutions and organizations will reduce. To ensure the trust of the ones affected by URP, their participation in the legal framework, their inclusion in implementation must be ensured and production of qualified structures is required. Evaluation of solved physical, social and economic problems through regeneration projects, the quality assessment of produced buildings and spaces strongly depends on whether local users are satisfied or not. Because of this impact in user satisfaction, building and space assessment from the local users should be done and urban regeneration projects should start by taking into consideration these found out criteria.

Squatter housing or illegal interventions are a general phenomenon in Turkey, it has been the common reaction to housing shortage that people faced because of migration during the 1960s. All this individual interventions, because of lack of experience, low economy income, has caused the decay of the overall life quality of neighborhoods, showed in low satisfied residents. Despite the housing shortage, Turkey is a seismic zone and a case to remember is Marmara Earthquake. According to the loss assessment state, the 17 August 1999 Marmara Quake damaged 244,383 buildings in total, 213,843 of which were housing and 30,540 were Office buildings. The number of housing and office buildings that were collapsed, seriously and moderately damaged was 154,511 (Sengur, Atabeyoglu & Erdem, 2015). To make people forget what had happened, a lot of new constructions started and many foreign star architects were invited to participate in different architectural and urban competitions. Urban regeneration projects were generated and they were limited in time of completion, to shelter as fast as possible the residents that were affected by earthquake. The aim was to shelter them, forgetting that these new constructions would determine their everyday life quality.

In urban regeneration practices providing user satisfaction should be one of the most critical factors. To do this, the designing and planning criteria should take into consideration the users need in their overall individual and public life, in physical, psychological and socio-cultural environments. This study aims to determine the

problems that new projected urban regeneration projects can avoid, through listening the voice of residents. All the collected data could be beneficial from the design phase to application phases and their use will decrease the probable problems and increase residents' satisfaction. The vision of the users for improving their neighborhood will give the professionals the needed traces to start with. Since the 1970s researchers have increasingly examined the relationship between resident satisfaction and physical and social aspects of the residential environments (Berköz and Türk, 2009).

Physical environment, not being an independent variable, is the reflection of the sociocultural and socioeconomic structure of the society on the space (Tas and Cosgun, 2007). The best scenario given by the professionals can result to be an unsuccessful urban regeneration project if it does not strength the relationship user-built environment interaction. It is stated that users generally refuse a physical environment that is inconsistent with their own sociocultural and socioeconomic structures or transform them into a form suited to their own structure. For this reason, trying to form new physical environments disregarding the needs of the society and spending great amounts of money in the disaster area may not always turn out satisfactory (Dulgeroglu, Aydinli & Polat, 1997). This is the exact situation even for many implemented urban regeneration projects in Turkey, in disaster areas or in cases of urban decay. New physical environments disregarding the needs of residents, even spending a lot of money, have resulted unsatisfactory. An individual's sense of belonging to the neighborhood s/he lives in, and feeling his own identity in it, directly increases the satisfaction with the built environment. The aim of this study is to emphasize the role of the residents in guiding designs and applications that will be implemented in an urban regeneration project.

1.2 Scope and objectives of the study, research question and propositions

Some areas that have undergone urban regeneration by taking into consideration the importance of city characteristics and the whole complementary effects, have earned quality, by improving the content of any kind of space; while some other ones are only focused on physical regeneration, producing new structures to replace existing ones. In this case, where regeneration makes no difference in city`s value with its solutions in the context of construction, disjointed urban areas are emerged. Urban regeneration projects done in urban areas aspire to have agreements to ensure inclusion of the users; the exclusion attitudes during the regeneration process prevent the production of quality buildings. In some cases the local users, despite being part of the process are able to leave the regenerated areas. This happens because of newly produced structures and spaces are not appropriate to their previous lifestyle. Therefore, in the urban regeneration processes, a model that aims to produce quality buildings, involving the local users with the intention to ensure their stay in the regenerated area should be followed. The intention of the research carried out is to contribute in the creation of sustainable urban and architectural spaces in the context of livable, healthy and high quality built environment.

In addition to this study done for quality building/space production during the UR process, the contemporary design and practices are supported in the construction industry, encouraging new creative ideas, develop solutions, and emphasize design studies that come to the solution by cognitive approach.

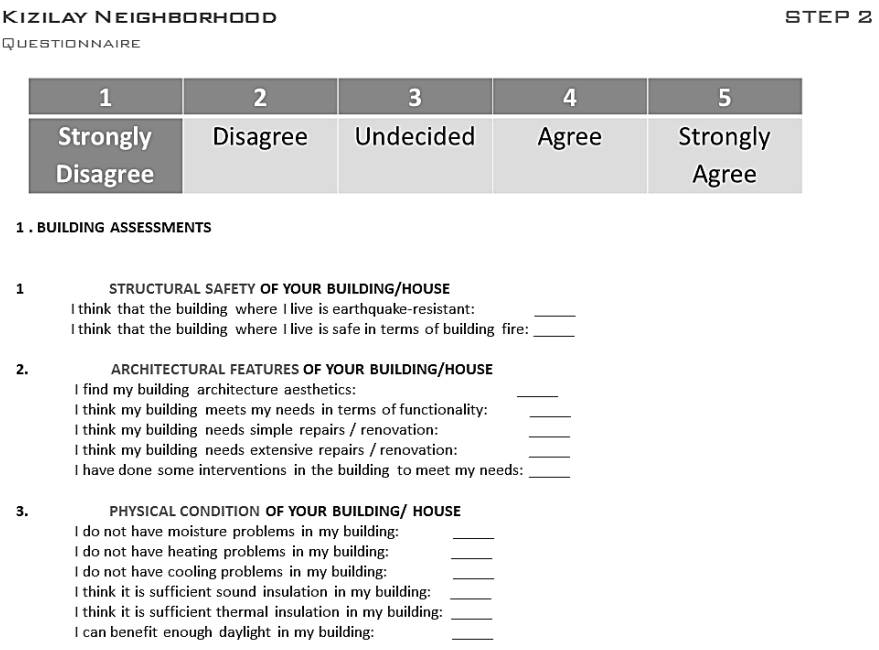
1.3 Research methodology

A case study method is used as a research strategy of this research. In this study the assessment of residents' satisfaction was used to find the needed traces that are crucial to lead an urban regeneration project before it starts in a specific area. During the study, many site trips were conducted to observe and understand the site. After the site trips, the second phase of the study was to distribute questionnaires to the residents. Examination and face-to face questionnaire surveys were carried out in the selected area to measure the residential satisfaction. Short interviews and closed

questions were used too. The selection of appropriate questions for the questionnaires was widely discussed among the professionals. The decision was to use three main categories for the questions, with sub questions under each category. Generally, the focus was to evaluate the building quality, the neighbourhood quality, and the residents' approach to the urban regeneration project.

The questionnaire began with a General Information category, which included several questions to obtain information about the building's age, the number of apartments in one building, the number of rooms in one apartment, the heating and air conditioning systems, and how hot water is supplied. Next, the Building Assessment category included questions about structural safety, architectural features, physical conditions, energy efficiency, and property condition.

The Neighbourhood Assessment category included questions about neighbourhood earthquake resistance, social structure, architectural features, infrastructure, transportation, health, and safety. Finally, the Urban Regeneration Project Assessment category included questions about public participation in the Urban Regeneration Project, financial costs, neighbourhood characteristics, and identity protection, as well as who would be preferred to direct the Urban Regeneration Project. These 62 questions were asked of a total of 50 people. The grading system for each question is shown in Fig. 1.1.



KIZILAY NEIGHBORHOOD STEP 2

QUESTIONNAIRE

1	2	3	4	5
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

1 . BUILDING ASSESSMENTS

1 STRUCTURAL SAFETY OF YOUR BUILDING/HOUSE

I think that the building where I live is earthquake-resistant: ____

I think that the building where I live is safe in terms of building fire: ____

2. ARCHITECTURAL FEATURES OF YOUR BUILDING/HOUSE

I find my building architecture aesthetics: ____

I think my building meets my needs in terms of functionality: ____

I think my building needs simple repairs / renovation: ____

I think my building needs extensive repairs / renovation: ____

I have done some interventions in the building to meet my needs: ____

3. PHYSICAL CONDITION OF YOUR BUILDING/ HOUSE

I do not have moisture problems in my building: ____

I do not have heating problems in my building: ____

I do not have cooling problems in my building: ____

I think it is sufficient sound insulation in my building: ____

I think it is sufficient thermal insulation in my building: ____

I can benefit enough daylight in my building: ____

Figure 1.1 Grading system used in questionnaires

The study focused on people who experience the neighbourhood in an active way, the ones who use the urban space in everyday life and the housewives. The housewives were asked with the purpose to understand better the satisfaction from the building scale. The survey was done in March 2015, in the streets of the selected site on working days and weekend, morning and afternoon hours. The data obtained from the questionnaire survey were firstly evaluated in Microsoft Excel Program and through maps, tables and charts, all the results are presented. The survey structured in **four sections**:

(i) General information about occupants-building relationship,

(ii) Building,

(iii) Neighbourhood,

(iv) Urban Regeneration, UR.

Factors studied in **building scale** section are:

(i) Construction conditions and age of the building,

(ii) Architectural features,

(iii) Modifications done and the wish for repairs/renovation,

(iv) Physical condition and energy efficiency,

(v) Property condition.

In **neighbourhood scale**,

(i) Social structure,

(ii) Amenities,

(iii) Economic structure,

(iv) Architectural features,

(v) Infrastructure status,

(vi) Public transportation and road quality,

(vii) Health and safety.

In UR section factors studied (i) public participation (ii) financial help (iii) leader of URP. Evaluation of these results will make it easier to distinguish the new requirements, in building and neighbourhood scale, according to residents' satisfaction for the URP. Kızılay Neighbourhood was selected as the study area in this study.

The case study is based on the fuzzy Delphi method (FDM), which was used to analyse the data gathered from questionnaires completed by the residents. The questions were formulated by a group of professionals to ensure understanding of the users' need for district revitalization and regeneration (DRAR), in neighbourhood and building scale. Thirty-three professionals, all of whom know and have observed the selected site, evaluated the ranking and relationships between all identified indicators from the questionnaires administered at the site. There were 8 architects, 8 city planners, 8 civil engineers, 5 building technicians and 4 mapping engineers among the professionals. The members of this professional team were 13 from Izmir Katip Celebi university, faculty of Civil Engineering and Architecture, and 20 of them official workers of Bornova Municipality, Department of City Planing and Department of Urban Design.

The further details about the research method of this study are given in Chapter 5.

1.4 Structure of the thesis

This research consists of 6 (six) chapters. Chapter 1 aims to define the research problem, to clearly define the scope and objectives of the study. The research methodology used for this study is included in this chapter too, but details about Fuzzy Delphy Method are explained in the chapter 5. Chapter 2 based on intensive researches, strives to identify urban models used in time as approaches to solve different urban problems. An attempt to define the concept, evolution, properties and objectives of urban regeneration is carried out. Urban regeneration importance as an approach that could solve urban problems of cities that are rapidly growing in Turkey takes the last part of this chapter.

Chapter 3 focuses on the urban development of Izmir. It starts with historical background of urban development and focuses in Bornova district. Sizmicity risks,

` gecekondu` phenomena, and spatial features of this district are elaborated. Profile of the case study, with key, urban, environmental and social characteristics is further explained.

Chapter 4 identifies a part of the research methodology of this study. In this chapter first, the importance of resident participation in urban regenereation projects is highlighted. Secondly, the quality of the residential environment in the Izmir-Kizilay neighborhood is evaluated from the residents' point of view. How the occupant`s questionnaire survey wass formulated to collect the data in dwelling scale and neighborhood scale is explain ed and the results are represented by graphs. The third part is the assessment of resident willingness to participate and the trust they put in different urban regeneration actors in Turkey.

Chapter 5 concentrates on the examination of the data gathered, using Fuzzy Delphi Method. This chapter starts with the explanation of the FDM, and the approach used in this study. It is clarified how the main steps of FDM, 1) Fuzzification; 2) Inferency based on fuzzy rules; 3) Aggregation of the outputs; and 4) Defuzzification, are implemented. Fuzzy General Systems and the process of generating rules for Neighborhood Assessment, Building Assessment and Urban Regeneration Project is explained in detail.

Chapter 6 includes results and discussions about the methodology used in this research study. Values of the input parameters and assessment output of each General Fuzzy are shown with figures generated by the simulation of the program.

Chapter 7 concludes the thesis. It starts with an overview of the research objectives and aims, mentioning the research question and propositions. The methodology used for this study is summarized and findings of the research are revealed.

It underlines the success level of this method used to help the assessment of quality of life in Kızılay neighborhood, evaluated from the resident's point of view. A recommendation for future usage of the results by different stakeholders responsible for urban regeneration projects is stressed. The appendix of the thesis includes the questionaire asked to professionals to evaluate the criteria importance and the one delivered to local residents of Kizilay Neighborhood, as the case study area participants.

CHAPTER 2

DEFINITIONS AND PRINCIPLES OF URBAN MODELS

2.1 Urban models

Urban models are important to explain urban structure concerning land use, population, transportation, employment, and also the PPP (Public and Private Partnership). Although most projects of urban development done in different countries are described with differ terms, mainly these terms are synonymous. The terms used for urban models are often contradictory, and according to Remo Dalla Longa writings in Urban Models and PPP, this happens mainly due to two reasons 1) the evolution and change of terms meaning over time; 2) misused terms as a result of some standard theories. There are substantial differences between cities in Europe and American cities, which often cause some confusion among the terms and their respective meaning according to the location that a project is being developed or by whom.

To describe urban phenomena there are different models:

- Renewal
- Redevelopment
- **Regeneration**
- Recovery
- Revitalization
- Gentrification
- Restructuring

Sometimes, these terms overlap each other. For example, Renewal and Redevelopment or Redevelopment and Regeneration. A model often might be a specification of another model, for example Framework compared with Renewal.

These terms take their meanings based on the culture where they have been put to practice. It is not easy to define these terms because they could mean different things in Europe compared to the United States. Some are different in different European countries example, Italy vs. France or different among English speaking countries such as U.S and U.K. Renewal in U.K might be different from the same term applied to Italy or France.

Urban Models are developed because in the process of rapid urbanization there is a need to address certain shifts in population or need for housing, land use, transport, travel logistics and industrial spacing. The locale or city then implements policies around these models. Policies that are discussed in this paper are taken from the rapid growth of 1960s and 1970 but also from the second wave of economic and population booming, late 1980's and 1990s.

Let us now look at each term/model and try comparing them to one another.

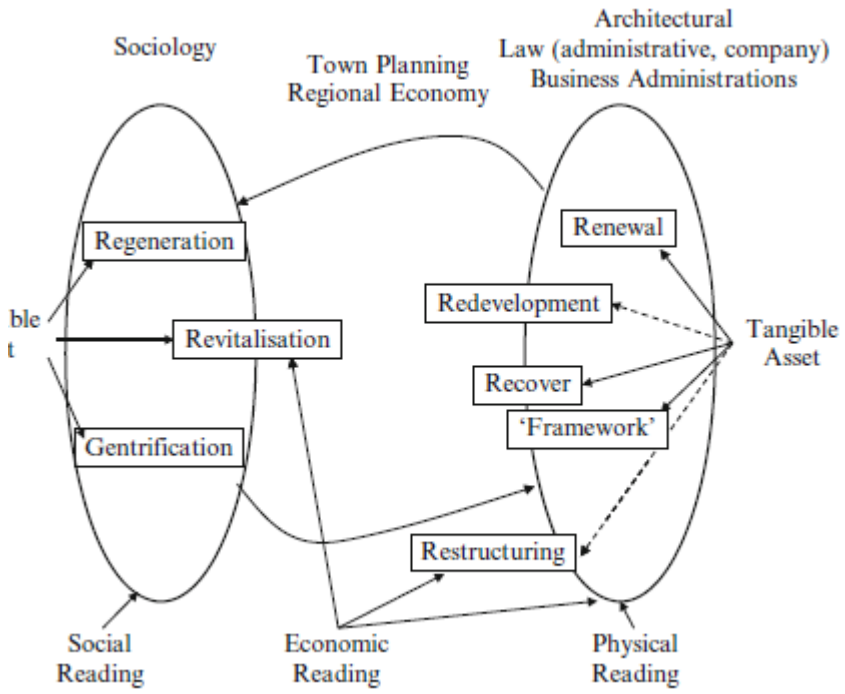


Figure 2.1 Classification of the different urban terms, Urban Models, pg.40

2.1.1 Renewal

In North America the terms Renewal and Redevelopment are almost identical in meaning. They are often used interchangeably. Renewal applies to housing and redevelopment had to do with what is called “Projects” or low income housing in America, particularly big cities like New York City and its Boroughs or Boston. In Europe Renewal was used to explain the transformation after WW2. In its standard definition Renewal is a program of land redevelopment in areas of moderate to high density urban land use. Renewal has had both achievements and failures. Its modern manifestation initiated in the late 19th century in developed countries and experienced an intense increase in the late 1940s – under the category of reconstruction. Many urban landscapes were highly affected by this process and it played an important role in the history and demographics of cities around the world.

The definition of Renewal changes as PPP is applied to urban models and global cities. A non-overlapping method is then applied, which means renewal stands in its unique as a separate entity. Renewal from now on is utilized widely, and strongly influences the deteriorated urban functions that significantly characterize the city or major parts of urban areas. Therefore, the term renewal is connected with derelict industrial areas, abandoned port cities that once were important, brownfield areas, residential zones identified as empty urban areas or in particular, to central areas tube reconverted. Thanks to its entity, the Renewal is able to give a new image to the city or at least to a significant part of it. Renewal projects include radical actions, generally evolve the destruction of abandoned buildings or the ones which do not fulfill the new functions anymore and have as end result the new constructions that fulfill the asked functions. Through “emptying and refilling” operations, the goal is to introduce functions and activities that are able to trace new paths of development, including economic ones: Cities are looking for push factors which play an important role in urban global competitiveness. (Remo D. Longa, Urban Models, pg.23)

The Renewal projects therefore represent a large opportunity for rethinking the city role, and their successful implementations have a great impact on urban and metropolitan level. Formal and environmental aspects, large concentration of capital and newly given functions, generate social exclusion of residents who generally wait

for the site renewal for a long time. For these cases an inclusion policy can be a solution.

2.1.2 Redevelopment

In some cases, the term (Redevelopment anticipates the term Renewal and the reference is initially made to housing. In the USA the term “redevelopment” was initially used to express the ethnic interventions versus the ethnicities living there, mostly versus the slum of African Americans. Large areas became part of “ad hoc” programs for establishing “ad hoc” bodies prior to or immediately after the Second World War. Domination of economic class, race, gender and social reputation were important for urban redevelopment process.

Redevelopment has to be connected with the development of a new elite (Le Gale`s 2002). New networks of decision-taking and the power of elites in the redevelopment programs had a great role in the dislocation of homeless from important city zones. Local law implementations together with city government have approved redevelopment policies that criminalized the homeless.

The Public–Private-Partnership (PPP) phenomenon was introduced by redevelopment program. The term Redevelopment is the most used one by urban specialists because it expresses a specific set of rules and partly because it overlaps with other terms. Redevelopment does not deal only with the decay of buildings; it includes also urban, environmental, economic, social, and functional decay.

Redevelopment sees as the solution of a declining urban area, the replacement of function, giving a space a specific function that can emphasize all areas potentials. Through the change of function, the qualities, characteristics and values of the selected site are changed, so the ways people will use it. Function replacement in redevelopment produces a new way of using urban areas and changes the identity of it.

Industrial areas, underused or abandoned sites, low quality residential areas that have lost their potential to generate job opportunities or offer services are generally selected to undergo redevelopment. The Redevelopment projects, even if applied to

small-sized areas, try to achieve the mixed use functions, not only restoring the built environment but also improving welfare and community services for a positive social impact.

2.1.3 Regeneration

Regeneration originates in Post-World War 2 England; it is regarded as the interdisciplinary intervention aimed at removing urban decline and decay due to physical, social, economical and environmental transformations. The process of Regeneration tries to solve complex urban problems and emphasize the site potentialities at the same time.

Urban regeneration moves beyond the aims, aspirations, and achievements of urban renewal, which is seen as a process of essentially physical change, urban development (or redevelopment), with its general mission and less well-defined purpose, and urban revitalization (or rehabilitation) which whilst suggests the need for action, fails to specify a precise method of approach (Coach,1990, p.2.)

It is an approach that aims to solve urban problems such as degradation of built environment, unemployment, social inequality, crimes, etc. The focus is not to solve only the physical nature problems. It is an attempt to improve the economy of a selected site through physical intervention too. Regenerations are done in areas that new opportunities can be developed by implementing projects that have integrated programs, including public and private actors and defining specific urban policies. There exist a theory that believes urban and neighborhood areas undergo an inevitable cycle, similar with the `lifecycle`, with its start and its decline. Regeneration takes part when the publicly owned area is near or in the decline phase to reduce the arose disadvantages. Regeneration very often affects low income neighborhoods that are experiencing multidimensional problems, abandoned or deteriorated areas. These areas because of the structural, social, economic problems are in need of a regeneration process as an attempt to reverse that decline.

Regeneration projects not successfully realized, in some countries have resulted as projects that take years to be done, causing long delays, cost overruns and painful replacement or dislocation of the original occupants.

2.1.4 Recovery

The term urban Recovery refers to physical process of improving urban areas, mostly immovble property such as infrastructure or a particular part of it, without demolishing or rebuilding them. Recovery generally is combined with other urban model terms such as urban conservation or rehabilitation, and has some common characteristics with the term urban Restructuring. Despite these ones, it is also related with Regeneration, which, is connected to the participation of inhabitants in the process of transformation/ modification of the (external/internal) built environment. Being so connected with the other models, the term had an international usage, firstly in French, German and Danish cities, and later it was applied to Italy.

Recovery different from urban renewal, is an approach that aims to improve a damaged, broken or outdated existing physical structures. Through this process, in various cases, the structures are transformed, remodeled, its functions are revised or new ones are added, but demolition is not part of recovery. Even in those cases where new elements/functions are added the main scope of the recovery is to bring back in good condition the existing ones. There are many examples of successful recovery approach in different countries like England, Spain, Italy, etc.

2.1.5 Revitalization

Revitalization is a similar approach with Regeneration, and in some countries it is known as the same, but it does not include involvement and participation processes, which are part of Regeneration. Revitalization is a process that emerged as a response of urban decline and aims land redevelopment and the improvement of urban areas that have lost their importance or are undergoing economic stagnation. The program of revitalization, as regeneration, does not aim the physical transformation. Despite the fact that physical changes are part of revitalization, facilitation of nonphysical aspects such as economical improvement and general welfare are more important. In Revitalization program the physical interventions are instruments to make the selected area more dynamic and vivacious.

2.1.6 Gentrification

Gentrification is the term used to describe the trend of residential replacement that happened in London in 1960s. This phenomenon, at the beginning was hard to measure and its impacts were hard to predict. The term gentrification in time and different countries is used negatively to identify different urban phenomenon such as Regeneration, colonization by global cities or the private actions of developers and investors. Differently from Regeneration, gentrification has as component exclusion. Inclusion and participation are not part of gentrification process.

Smith, (1987, p.463) stated: The crucial point about gentrification is that it involves not only a social change but also, at the neighborhood scale, a physical change in the housing stock and an economic change in the land and housing market. It is this combination of social, physical, and economic change that distinguishes gentrification as an identifiable process/ set of processes.

Through this statement it is clear that gentrification changes the social composition, affecting the housing and residents of the area. Gentrification changes the unique social structure of the selected site.

By the 1930s, many American cities were experiencing increasing physical deterioration of their core neighborhoods and commercial districts, forced concentration of inner city blacks into crowded areas, and loss of population and industry (Banfield & Wilson, 1963; Silver, 1984; Mollenkopf, 1983; Teaford, 1990).

This phenomenon is widespread in many cities in the world. Its negative and positive aspects are intensively discussed by researchers and politicians too.

Rypkema,(2004) lists gentrification positive results encouraged by public policy:

- ✓ reinvestment
- ✓ increased levels of homeownership
- ✓ improved public services
- ✓ improved commercial activities
- ✓ renovation of vacant and abandoned properties
- ✓ adaptive reuse of "white elephant" structures

- ✓ increased income tax revenues
- ✓ neighborhood jobs
- ✓ property value appreciation
- ✓ economic integration

and the negative consequences of gentrification phenomenon:

- ✓ rising rents
- ✓ rapidly rising property taxes
- ✓ potential change in the human character of the neighborhood
- ✓ loss of sense of "power" and "ownership" of long-term residents
- ✓ potential conflicts in priorities between new residents and long-term residents

These negative aspects inevitably, cause replacement or displacement of long-term residents, renters or homeowners, replacing them with middle class or higher-income groups.

2.1.7 Restructuring

Restructuring a major strategy and orientation, influenced by the impact of post-Fordism/globalization around 1950s, used in older areas of towns and cities, later in suburban, generally following a master plan. This phenomenon was presented with the revision of city, metropolitan areas due to integration with global market. It is an approach used in urban areas of Eastern European cities where economic and social changed have happened quickly.

Dalla Longa, (2011) shortly defines:

"Restructuring" is placed in between "Redevelopment" and Recovery; it refers to the modernization of parts of the city and does not always refer to the existence of either weak functions, as typical of "Redevelopment," or functions which need new spaces inside mono-function areas, as typical of Recovery. New needs require new functions and physical structures. Investing to transform city centers, in order to be

distinguished from suburban areas was the main focus of recovery, which was achieved through combination of physical, social and economic interventions.

2.2 Concept of Urban Regeneration

"Comprehensive and integrated vision and action which leads to the resolution of urban problems and which seeks to bring about a lasting improvement in the economic, physical, social and environmental condition of an area that has been subject to change." (Roberts and Sykes, 2000)

Urban Regeneration is ``a largely comprehensive vision and action ensuring analyzing urban problems and targeting to provide permanent solutions to economical, physical, social and environmental conditions of a region exposed to change`` (Thomas 2003)

Therefore, a site is in need of urban regeneration intervention, when it is experiencing social, economical, physical and environmental problems, and its implementation should meet the user's needs. The process of urban regeneration starts together with the desire for change and it tries to produce lasting solutions for raised problems through investigation of causes and existing site dynamics.

During this process, (Turok 2004) defined three major distinguishing features of the urban transformation.

First, changing the nature of the place and aiming to incorporate in the process of urban regeneration all main possible actors involved directly or indirectly, such as governmental representatives, private sector (developers), social organizations (activists), professionals and local residents that have a stake in its future.

Secondly, related to specific site`s particular problems and potentials, it should embrace various intersected objectives and activities that cut across the state`s main functional responsibilities.

Thirdly, it usually involves some form of partnership working amongst different stakeholders, although the form of partnership can vary.

If the process associated with institutional structures show variability also requires the establishment of partnership working between different interest groups (Turok, 2004).

Urban regeneration projects with these characteristics, after determining the desired goals to be achieved, bringing together different components that contribute to the solution, are attempts to create qualitative, contemporary sustainable cities.

While performing actions towards this goal, creation of appropriate meeting environment between different people, institutions and organizations, ensuring interdisciplinary coordination, is very important for the successful execution of the regeneration process and for obtaining accurate results.

In another definition, Roberts (2000) has stated that, ‘‘urban regeneration is a comprehensive and integrated vision and action to address urban problems through a lasting improvement in the economic, physical, social and environmental condition of an area’’.

In other words, regeneration deals with the improvement of economic activity, solving problems with social character; ensuring social integration where social exclusion is present; and bringing back the lost ecological balance or environmental quality (Roberts 2000).

Urban settlements; change over time under the influence of living conditions, and they transform. This changes and transformation are necessary to be managed and controlled via a duty and responsibility sharing, organized plan. Because the regeneration, is not possible to transform the region with a single applied method, and with decisions taken not committed to the region. Therefore, the characteristics and needs of urban areas should be the guiding elements to determine the UR method that will be applied. The unique identity of urban area, the potential of space and structure, economic situation, social values, physical environment, the users profile and current dynamics should be considered in urban regeneration process to get successful results.

The reasons why urban regeneration is needed in different cities of the world, differ between developed and developing countries, mostly because of different development stages of the countries and depending on their level of integration with the global system.

In its modern sense concept of urban transformation refers to a comprehensive restructuring approach directed towards overcoming social, economical and spatial wracks triggered in cities by the dynamics of post-Fordist era in particular and problems of post industrial period developmental stages (Sökmen, 2003),

In developing countries, regeneration of illegal residential areas, reconstruction of damaged urban areas as a result of natural disasters, upgrade of the residential areas belonging to low income groups, and in recent years protection of qualitative historical city centers by giving new functions, are done in a not all-comprehensive way dealing only with some aspects of regeneration.

Despite these differences, the main reasons why regeneration is needed, including demographic, physical, macro-economic, technological, political and socio-cultural changes can be examined under different groups. (Ergenekon 2003)

Urban Regeneration process can be generally divided in three phases: Preparation, planning and implementation. First, before starting the planning of regeneration strategies and policies, it is necessary to understand the context and dynamic characteristics of the area in which URP will be implemented. In this phase topics such as, the determination of the groups that will participate in the regeneration process, understanding of political characteristics, identification of the needs of local people are done, and if necessary more residents and social activists are included. Secondly, the process of planning the regeneration.

The future design of the area is done together with the local claim owners, the purpose of the project, including the development of strategies and project`s action plans are identified in this phase. The final stage is where the implementation of the regeneration decisions, monitoring, evaluation, and if necessary changes in the decisions are done. (Ataov and Osmay 2007)

In this stage of UR, the result of the collaboration of many different actors of urban regeneration takes place. The study will be implemented with well defined

coordination and planning methods and by taking solution-oriented decisions. In order to achieve these objectives, firstly, the scope and the objectives of the selected area to be regenerated should be identified.

2.3 Objectives of Urban Regeneration

The main objective of urban regeneration is the intention to find solution to physical, economic and social city problems; to be able to produce permanent solutions for these problems, to meet users need, and to create healthy, sustainable cities. Social deterioration occurring in urban areas and factors that give a negative impact to the physical and social environments lead to physical breakdown of the environment. Urban regeneration, tries to find solutions for this deterioration through researching the causes of the problems. In addition to this distortion, regeneration generates qualified areas, providing users with a high quality of life, and economic viability.

To achieve the wanted results from this process, coordinated and well planned urban regeneration policies should be carried out; protection of current values of the area must be done that way that can be passed on to future generations. In order to achieve these goals, it is important to determine in a good way the scope and purpose of the regeneration. According to Roberts, (2000), urban regeneration principles should be;

- ✓ Be based upon a detailed analysis of the condition of an urban area
- ✓ Be aimed at the simultaneous adaption of the physical fabric, social structures, economic base and environmental condition of an urban area.
- ✓ Attempt to achieve a comprehensive and integrated strategy dealing with the resolution of problems in a balanced, ordered and positive manner.
- ✓ Develop the strategy and the resulting programmes in accord with the aims of sustainable development.
- ✓ Set clear operational objectives and demonstrate in a practical way (+quantified whenever possible)

- ✓ Make the best use of natural, economic, human and other resources, including existing features of built environment.
- ✓ Ensure full participation of all the stakeholders with a legitimate interest in the regeneration; this may be achieved through partnership or other modes of working.
- ✓ Measure the progress of strategy toward the specified objectives and to monitor the internal and external forces which act upon urban areas.
- ✓ Be flexible to revise the initial programmes in line with the changes that will might occur
- ✓ Recognize that the different elements of the strategy progress at a different speed and to provide a balance between the aims in order to achieve all the strategic objectives.

These problems should be adapted according to the characteristics of the selected area and decided decisions through a comprehensive, multidimensional process between many different actors.

Physical, social and economic objectives can be defined as the main once, since they are part of any urban regeneration project goals.

Apart from these, depending on the problems and potentials of urban regenerated areas different objectives can be included in the project process. For example, URP (Urban Regenerated Projects) implemented in sites with high natural disaster risk or risks related to nature, objectives to prevent damages that may be given to the nature or to reduce the impact of natural disasters can be defined.

According to Roberts (2000), from the beginning, urban regeneration process should consider five main objectives as listed below.

- ✓ Establishment of a direct relationship between social problems and the city's physical conditions. One of the most important reasons that an area becomes depressed is the social collapse or distortion. Urban regeneration projects,

research into the causes of social breakdown in basic and should make appropriate recommendations to prevent this deterioration.

- ✓ Urban regeneration; should fulfill the continued needs for the physical replacement of many elements of the urban fabric like housing and industrial areas. In other words, the city's urban regeneration projects according to the needs of rapidly growing cities, changing, and deteriorated tissues, should allow the redevelopment of parts of the city emerging new physical, social, economic, environmental and infrastructure aspects.

- ✓ Highlight the importance of economic success in the increase of urban progress and social growth.

- ✓ As well as physical and social degradation, the lose of economic viability, is one of the most important reasons that cause the collapse of the urban areas. UR should enable urban policy to be shaped through the collaborative planning process pursued by a multi-agency approach, and develop strategies to bring back economic vitality and increase the welfare and quality of life.

- ✓ Make the best possible use of urban land and to avoid unneccessary sprawl in order to ensure optimum beneficial and effective use of land within the urban area.

Urban Regeneration can achieve its goals, improve local life and environmental conditions, strength social and economic aspects, remove the areas weaknesses, with the permit and participation of public and local residents through cooperation with the private sector. (Özden 2008).

The purpose of urban regeneration projects would be summarized; an approach that can be used in urban areas that have problems with physical, social, economic aspects and a life quality decline ; by generating permanent sustainable solutions to create healthy, functioning, qualified, environmental compatible urban spaces and bring back their potentials. In line with these objectives, the process of urban regeneration, being in accordance with the law, evaluating and preserving the potentials of the site, based on common ideas, carried out as a comprehensive and integrated vision and action are important factors to successfully achieve its objectives.

Actually, urban regeneration is an effective tool for providing safe and habitable environment which has a particularly high natural disaster risk and many more problems and increasing the quality of life for cities. Urban regeneration can be described as "removal of problems ruining the city texture" (Egercioglu and Ertan, 2014). Many descriptions of urban regeneration have been stated in related works. These descriptions vary according to the vision, target, cause, strategy and methods they emphasize. However, no matter how it's described, the general approval is that the urban regeneration is the integrity of strategies and acts to recover the corrupted and collapsed areas of the city, with carefully handling the situation economically, socially, physically and environmentally. Urban regeneration projects does not only contain the many advantages of living in a healthier neighborhood and planned urbanization, but also offers people who were living in unfit conditions to develop a more respectable personality revaluating themselves, and preventing the social excluding.

2.4 Urban regeneration examples

Case study research method is an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not evident; and in which multiple sources of evidence are used (Yin, 1984, p. 23).

Urban regeneration case studies from different cities of the world help us answer many questions about the UR process. Understanding suitable UR case studies makes possible to pick out the details that are needed and identify what makes the case study approach successful/unsuccessful.

2.4.1 Case study - London Docklands

A large-scale property led regeneration approach is used in this case study. During 80`s Urban Development Corporations (UDCs) were set up as a scheme to help regeneration of urban declined areas in the physical, social, economical, and environmental aspects. UDCs had planning approval power above the local authorities and by 1993 more than 40% of URP was done through UDC. The London Docklands is a typical example of this approach. The London Docklands used to be one of the busiest ports in the world during 19th century, at 1950 faced the urban decline. There were mainly three reasons that caused the urban run down and increased rates of unemployment such as: damages done by the war, increase in ship sizes not proper to the area and containerization for which fewer dockers were needed. Many of residents left the area because of poor housing quality. In 1981, urban regeneration started as the solution to reverse the urban decline.

Figure 2.2. London Dockland before and after regeneration.
(Source: http://econgeogblog.blogspot.com.tr/2015/04/urban-regeneration-property-led.html)

The London Dockland regeneration project resulted successful creating 120 000 jobs, 25 000 new homes, a new national indoor sports center, a city airport, network of pedestrian and cycle routes were done and 160000 trees planted. The unemployment decreased from 14% to 7% and the area in now one of the world's main financial centers.

Despite successful results also there were criticism about the physically and socially exclusion and displacement of many local residents due to affordability problems and not offering job opportunities for the old dockers. The main critic was the reduction of community spirit, somehow characteristics of the area were lost, and a lot of tension was between the newcomers and old local occupants.

Through this regeneration project, the social, economical and environmental conditions of London Dockland were improved.

2.4.2 Case study - Hulme City Challenge

Hulme, located in the southern part of Manchester city center, is an ex-industrial suburb area. During 1960s, 1970s and 1980s Hulme experienced urban decline and to reverse this situation the urban regeneration was seen as a solution.

Figure 2.3. Hulme before the slum clearance.

(Source: http://peter-jacobroden.blogspot.com.tr/2011/05/hulme-manchester.html)

The process of regeneration took place in 2 phases, the first attempt was during 1960s and the second one in the 1990s. The second try of urban regeneration was known as one of the biggest regeneration projects in Europe.

The URP of 1960 was mainly a slum clearance approach, replaced with curved rows of high rise tower blocks. The crescent called blocks at 1970s were categorized as bad innovative design and construction. The shape used, was thought to be the cause of not generating the sense of community. Soon, mainly of households were single persons, single parents or people with social difficulties that increased the crime rates.

Figure 2.4. Hulme`s crescent blocks of 60s regeneration project.

(Source: http://peter-jacobroden.blogspot.com.tr/2011/05/hulme-manchester.html)

In 1990s, it was the time when the second regeneration project was needed in Hulme. This time the focus of the project was not only in housing typology (2 storey houses with gardens and 2/3 storey blocks of apartments), but also in offering, shopping areas, youth centre, parks, roads and other community facilities. Hulme Arch Bridge is also one of this URP achievement, known as a much more successful attempt than 1960s, making the area a better place to live.

Figure 2.5. Hulme after URP of 1990.
(Source: http://www.geographylwc.org.uk/GCSE/Year4/4settlement/innercity.htm)

Hulme is a great case study to understand that the failure of first regeneration attempt at 60s was because of not considering the needs of the people for whom it was aimed to be done. Learning from what worked and what not from the first try, the 90s URP, through public consultation, giving the occupants the opportunity to participate in all steps of URP, results in successfully regenerated areas where people want to live and feel the sense of ownership.

2.4.3 Case study - New Islington

In the case study of New Islington, an urban regeneration project is started in 2002, to develop sustainable community and appropriate quality of life in inner-city area of Manchester. The project was dealing mostly with housing typologies, urban amenities, community facilities, waterway infrastructure, environmental and sustainability issues. It offered new houses, ground floor flats, 2-3 story apartments, 1 and 2 bed apartments, workshop areas, new office spaces, hospital etc,. New job

opportunities created because of new shops, pubs, restaurants, cafes. New bus lines, bus stops, metrolink stop within 10 min walking; enough on-street and underground parking spaces improved the urban amenities of the area. Bridges, canopies, canalside facilities, new trees, garden islands, orchard, play areas, football pitch, primary school, health centre, private gardens, courtyard gardens, village hall, healthy and secured areas were part of the success. Providing naturally filtered water, generating central heat and power and recycling domestic waste.

Figure 2.6. New Islington URP.
(Source:http://www.manchestereveningnews.co.uk/news/greater-manchester-news/changing-face-new-islington-ancoats-9923673)

This urban regeneration project aimed to produce communities that can enjoy appropriate homes at an affordable price, have satisfying living and working environments with secure open and green spaces. It resulted to be a successful URP of 21st century, achieving strong sense of community.

2.5 Urban regeneration in Turkey

Today, residential transformation is seen widespread in European countries and in Turkey. In Europe, for 60 years, have been taken various precautions to reduce the bad impact of residential transformation. In Turkey, urban regeneration notion was firstly introduced, in the early 90`s, under the concept of urban transformation, believed as an approach that could solve urban problems of cities that are rapidly growing in Turkey. The trajectory of development in Turkey in the past 75 years is characterized by the growth of urban population, increasing inequality, and increasing the number of informal settlements.

Squatter housing or illegal interventions are a general phenomenon in Turkey, it has been the common reaction to housing shortage and difficulties that people faced because of migration during the 1960s. Migration is the movement of people from rural areas or small towns to larger cities in search of new opportunities. Availability of cement and steel permitted the expansion of building production together with the evolution of specific forms of property ownership, which allowed the concentration of capitals of modest size in a coordinated manner and accelerated growth of cities at unprecedented rates (Balamir, 1975, 1996)

Every new opportunity is always associated with new challenges, so the creation of any new area is a challenge in itself for all of us as citizens first, and as professionals too. All this individual interventions, because of lack of experience, low economy income, has caused the decay of the overall life quality of neighbourhoods, showed in low satisfied residents. Over a third of all inhabitants in Turkish urban areas are squatters whose vast settlements ex-contravention of many laws and regulations. *Ronald Parker, Turkish Cities: In search of Sustainability., Pg 12.* This raises an alarm on the importance and attention that we need to show with the integration of identified informal areas.

Similarly with the American Housing Act, 1949 'A decent home and a suitable living environment for every American family," the Constitution of Republic of Turkey states that: ``The State shall take measures to meet the needs for the housing within the framework of a plan which takes into account the characteristics of cities and environmental conditions and shall support mass housing projects``, stating that; ``every citizen has the right to live in a healthy and balanced environment`` In USA

the urban renewal program resulted as "failure" because "too many local and Federal officials in it and too many of their allies and supporters either did not understand its major purposes or did not take them seriously.' (Marc A. Weiss, The origins and Legacy of Urban Renewal, pg.254) Turkey passed through the same steps and did the same mistakes not keeping in mind that the statement was for every Turkish citizen, including low and moderate income city residents. After a period of 30 years Weiss says that many people in USA have propounded or accepted the view that urban renewal was "a slum clearance program with the avowed purpose of improving living conditions for slum residents," and thus that the program had failed. (Frieden and Kaplan, 1975, p.23)

Because of this lack of balanced healthy life and environment, in Turkey, to fulfill their everyday life needs, occupants have generated the informality as a solution based on local practices. Since 1950 squatter housing has made its first remarkable appearance on the urban scene in Turkey and till now is a problematic issue, 'gecekondu' is the term used for squatter (*gecekondu*) settlements and their inhabitants. A good helper was the industrial development and the introduction of reinforced concrete in building construction. Availability of cement and steel permitted the expansion of building production together with the evolution of specific forms of property ownership, which allowed the concentration of capitals of modest size in a coordinated manner and accelerated growth of cities at unprecedented rates. (Balamir, 1975, 1996). In the neighborhoods where the *gecekondu* phenomena is existing, urban, physical, socioeconomic and health problems such as urban exclusion, urban density, urban poverty, struggle for land, degradation of the urban environment, loss of natural resources, lack of amenities, unemployment, low income and low cultural groups exist too.

Despite the housing shortage of those years, Turkey is a seismic zone and a case to remember is Marmara Earthquake. According to the loss assessment state, the 17 August 1999 Marmara Quake damaged 244,383 buildings in total, 213,843 of which were housing and 30,540 were office buildings. The number of housing and office buildings that were collapsed, seriously and moderately damaged was 154,511

(Sengur, Atabeyoglu & Erdem, 2015). To make people forget what has happened, a lot of new constructions started and many foreign star architects were invited from government to participate in different architectural and urban competitions. Urban regeneration projects were generated and they were limited in time of completion, to shelter as fast as possible the residents that were affected by earthquake. This rapid rise of housing construction in Turkey and being beyond the control of urban governments has resulted in housing stock with a leading character of under occupation. The under occupation of these new constructed areas is clearly dependent on household's income and the lacking ability to afford the purchasing and/or the renting of these housing units. Due to the affordability problems, these occupants select to dwell in such neighborhoods that are appropriate according to their income.

In general, the neighborhoods where the lower-income households are settled result to be more overcrowded, with low building construction quality and show more illegal intervention due to their need for the appropriate dwelling.

It is the Law of public Works of Turkey that legislates the works related to construction standards (in national level), land use, spatial planning, and settlement permissions. Ministry of Public Works and Settlement, other Ministries, Foundations and Municipalities have the rights to create, modify and execute other regulations and standards too. The Turkish Housing Development Administration (TOKİ) is the forerunner housing project builder, and has a great importance in the housing production of Turkey, and should take in consideration the sustainability issues that have been in most cases partial or superficial and the improvement of existing buildings looks like a second line method.

Legislation of urban transformation in Turkey has resulted in fragmented and not connected projects inside and in the peripheries of the cities, supporting gentrification, social isolation and exclusion. (Müge Akkar Ercan, pg.20) Consequently it is clear that there is a need for a fundamental change in the way of approaching urban space. The city is the organism, which not only meet the basic needs to live, but creates opportunities and the potential for cooperation and development. Individuals are part of this environment and have to rethink it as a

common space where everyone's contribution brings benefits to the whole community.

One of nowadays challenges, remain urban regeneration of specific districts, urbanization of informal areas and the integration of these communities. Turkey in these 24 years, as well as many other countries has undergone a significant transformation of the territory and the creation of new residential centers, and faces new challenges in the territorial development and urban regeneration. The model of individualization – whether, in the context of informality or the way to approach the city as an isolated entity – brings a high cost for the society on the morphological aspect of urban space; the more it negatively impacts the social and economic aspects of cities.

The shrinkage of the market for developed land in the inner city due to the creation of new districts in the limits of urban/ rural areas has not only resulted in an increase of number of population, especially, in major cities where opportunities for employment and prosperity are larger, but has diversified their social and economic development too. To avoid this division and difference between neighborhoods or areas it is needed to undertake policies that enable social cohesion that aims to provide all citizens equal access to public services such as education, health, social services, security, access to public transport, road infrastructure, energy, water and technology. This situation raise the questions like: what instruments should we develop with the goal of ending urban chaos and improving the quality of life for all of us? How we can formalize informal settlements and to transform them into centers of social and economic development?

Social cohesion is associated with equality, justice, and sustainable development. The lack of cohesion is associated with conflict, tension, lack of security. Urban planning and urban regeneration are tools that serve to social cohesion.

What we are able to highlight it is that the lack of local plans, failure of structures and public institutions or the mismanagement of urban governance has resulted in the run-down urban neighborhoods in one side and the neighborhoods that have undergone urban regeneration. Generally the regenerated areas in Turkey have resulted in totally newly constructed neighborhoods not taking into account the

existing characteristics or environmental conditions, neither supporting mass housing. Totally against the statement of Constitution of Republic of Turkey, these projects have supported gentrification and have grown the division between the rich who can afford to live in these areas and those too poor who are forced to relocate themselves in affordable ones.

Urban regeneration projects in Turkey, planned and implemented, with the approach that urban regeneration is a tool used with the avowed purpose of improving living conditions for its resident is undoubtedly one of the most tangible issues, seen in the context of social, economic, urban, and environmental effects on country development.

CHAPTER 3

URBAN DEVELOPMENT IN BORNOVA

3.1 Historical Urban Background in Bornova

Bornova, has been a preferred area for people to settle since Neolithic times.

Undoubtedly, in this period geographical location and geographical features of Bornova valley have been largely influential. Indeed, the city, is surrounded by fertile lands, from the north Menemen and the east Kemalpaşa plains with the fertile lands of Gediz Plain, from the south Melez Çayı valley with Küçük Menderes Plain.

The city's high agricultural potential as well as the proximity to great plains, and waterfront and having a protected port, with appropriate climate factors have increased the attractiveness of the city and, its continuity is ensured overtime. Thanks to geographical advantages, with a settlement history of thousands of years, today in various locations of the plain, there are the remains of the old settlements. Among them, the most studied and best known ones are the Yeşilova and Bayraklı mounds. Located in the historic central part of the plain, Yeşilova mound is Izmir's oldest known settlement, whose history stretches back to 8500 years. Meanwhile, the Bayraklı mound (Symrna) located northwest of the plain, with a settlement history that goes back 5000 years, is another important settlement in archaeological context of the plain.

While Bornova Plain has seen human settlements since historic times, Izmir today is an area where a significant proportion of the urban population lives.

At the beginning of XX century, residential areas were spread in a narrow belt around the bay, today as a result of urbanization and rapid population growth, from Belkahve in the east to the Kalabak hill slopes in the south and expanding up to the slopes of Yamanlar Mountain in the north, the whole plain is covered.

Figure3.1 Bornova Kızılay Neighborhood

Considering the historical and instrumental earthquake data, between 496 BC-1949, in Izmir Gulf and its surroundings, 20 medium-sized devastating earthquakes has been identified. Research indicates that the 1668 earthquake occurred on the fault line of Izmir. This earthquake was effective at the eastern end of the Gulf of Izmir, damaging more than the half of Izmir city and caused the deaths of 19,000 people.

Simultaneously, it is well known that 1778 dated earthquake, destroyed the city of Izmir. Based on these data, despite the lack of field findings, the Izmir fault line should continuously monitored as an active fault. (Sözbilir and ark., 2008).

Indeed, in the area of research, through examined historical and instrumental earthquake data, it is observed that many earthquakes with magnitudes between 4 and 7, which occurred in that period around Bornova Plain and in the southern part of Izmir, are recorded.

The Karşıyaka fault is a fault developed in neotectonic period, and there are no available data that show the activities on Quaternary period. Therefore, earthquake potential in the region is evaluated as law faults (Emre et al, 2005). Studies done on earthquake risks around Izmir, reveal that in Gulf of Izmir and in the Aegean graben, some large earthquakes up to 6.5-7.0 magnitudes may happen, because of short fault movements triggering each other.

In addition, in cases when close faults trigger each other, the probability of an earthquake of medium size was determined to be higher. According to this situation, it is very important that research done about earthquakes in Izmir region, should take into account the probability of major earthquakes.

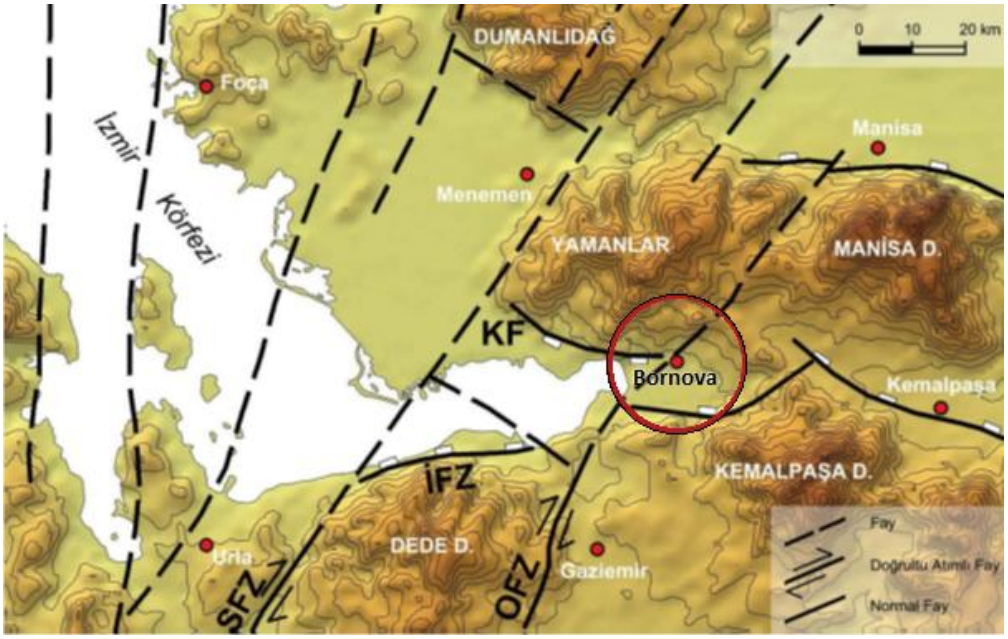


Figure3.2 Bornova and its surrounding Fault Lines

3.2 Urban Structure Development in Bornova

Borvona in 1881 became a municipality, and in 1957 became a district. Its height above the sea level ranges between 20 and 200 meters. In mountainous regions, this height goes up to 600 meters above the sea level. The vast plain located at the south of district centre is called Bornova Plain. Bornova Plain was formed from the merged plains of Bozalan, Hacılarkırı, Karasuluk, Mersinli and Bayraklı, with a district area of 220 km^2. In 2015 the district`s population has reached 435.162 people. Bornova, as a rapidly growing residential area and a university district, is as well developed industrial region.

Today, being a base of industry-trade-education and logistics is among the most developed districts of Izmir. Also in the district, there is the Ege University with an

area of 3,700 acres and 60 years of experience, and in 2001 the Yaşar University was established.

Figure 3.3 Bornova Republic Square-2016

The findings from excavations done in the district, at Yeşilova mound, have proved that it is one of the oldest settlements in Anatolia. The Yesilova mound Visitor Center, built by the Bornova Municipality is open to visitors, free of charge, for 5 days per week.

Yıkık Minaret Mosque in Erzene neighborhood, Catholic Santa Maria Church and the Protestant Church believed to be constructed in 15th century, the Great Mosque (Hussein Isa Bey Mosque), Sultan 2 built in 14th century, the Floral Village Mosque done by Abdülhamit at 1878`, the Roman bridge over the Nif stream built around year 300 A.D., and Manisa-Izmir-Aydın caravan (Ottoman Road) are some of the works of this settlement. Located in the Erzene Neighborhood, Dramalılar Köşkü was purchased and restored completly in 2012 by Bornova Municipality, now used as Bornova Municipality Archive and Museum.

3.3 `Gecekondu` phenomena in Izmir

According to Ilhan Tekeli, the first `*gecekondu*` squatters in Izmir began on the slopes of Kadifekale, overlooking the bay, then climbed the ridge of the western slopes of Meles stream up to the back of Kadifekale. Northern and eastern slopes of Kadifekale, were the first focus of the squatters. The next progress was directed to the east of the railway Bayraklı.

The hilly segments of the Samantepe, Ferahlı, İstiklal, Boğaziçi, Gültepe, overlooking the plain of Bornova, together with the neighborhoods in the south part of the valley of Meles stream,Ballıkuyu, Gürceşme,1.Kadriye, 2.Kadriye, Kadifekale, were the target of the squatters. This expansion took place in the 1960s. After 1960, these squatter settlements were spread to their surroundings. The spread of new squatter settlements took place in regions of Bayraklı and Yamanlar mountains, in the east Çay and Çiçek neighborhoods, and in the north, in M. Erener neighborhood. Another `gecekondu` development was seen in the west-southwest slopes of Kadifekale, in İmariye, Yeşilyurt, Cennetoğlu, Vezirağa and Bozyaka neighborhoods, including the old village Altındağ and Çamdibi and Mersinli neighborhoods that are extended from Bornova plain. After 1970s, in Karşıyaka-Gediz plateau, Naldöken in the south , Emek in the north, a part of Örnekköy, and Cumhuriyet, Yamaç, İmbat, Maltepe, Gümüşpala, Balatçık and Güzeltepe neighborhoods were converted in squatter housing areas. They emerged also in the easter parts of Buca, in the north-east Ufuk, Camlık, Bahçekapı, Adatepe neighborhoods and in the north-west plain, Kozağac, Gediz, Fırat and Çaldıran ones.

The southward extending Buca gecekondu settlements, reaching the gecekondu settlements in Gaziemir region, 9 Eylül and Irmak gecekondu settlements were formed. Also in steep slopes of Narlıdere, 2.İnönü, Çamtepe, Narlı and in Güzelbahçe region Şafak and Yaka squatter housing areas developed. Consequently, 40 per cent of the urban population began to live in squatter housing areas. (Tekeli, 2014)

Figure 3.4. 1880`s Kadifekale (Beyru, 2011)

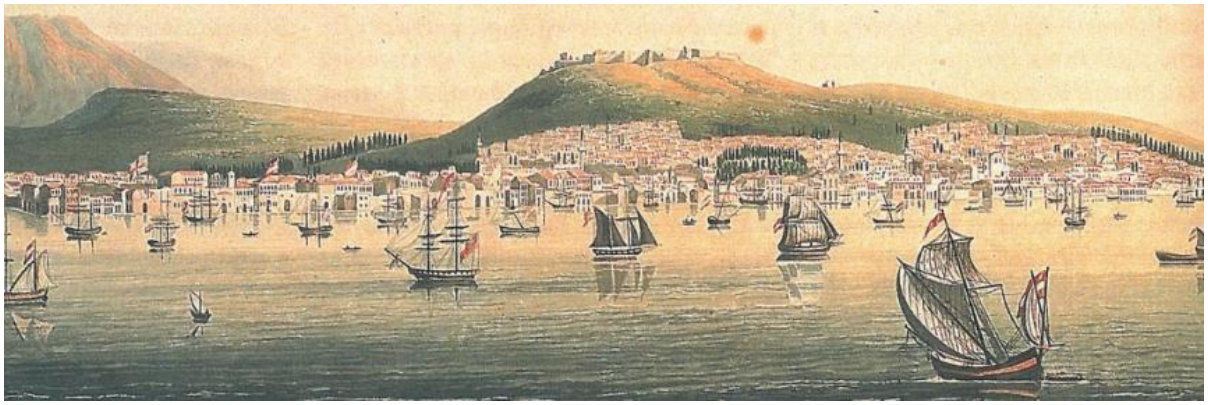


Figure 3.5. 1900's Izmir (Havil 1818, in Maeso&Lesvinge, 2013)

During 1970s, the growth of the city, in general, with the addition of single buildings, along the highways that connect city with other parts was spread immediately. Together with this dynamism, industrial agglomerations along the main roads began to be observed.

Throughout the city's industrial development between1950-1960; extension of axis from Halkapınar to Bayraklıya and Işıkkent-Pınarbaşı occurred. After 1960, the three new axis; the first axis in the north extending from Bayraklı to Menemen, the second one, along Izmir - Ankara highway, and the third one, in the south Karabağlar-Cumaovası, emerged clusters. Of course, with these developments, there should be a mutual determination between the spread of squatter housing settlements.

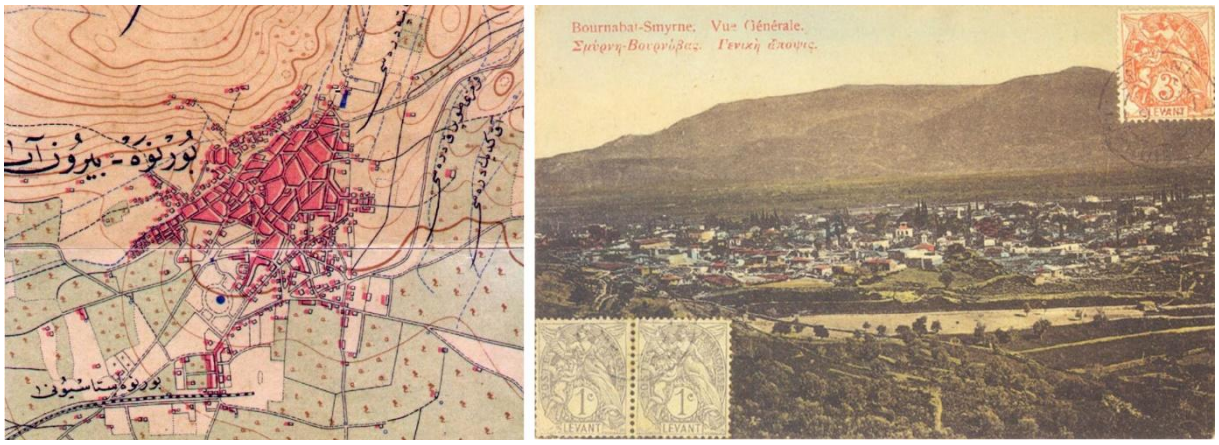


Figure 3.6 1900's Bornova (Yılmaz & Yetkin, 2003)

Contributing to city life, in order not to threat the healthy-livable urban fabric of Izmir, because of increased squatter housing areas and their population, and due to the problems encountered in the creation of new residential areas following busy, unplanned model of construction, it has been mandatory to have an urban regeneration working plan of this squatter housing areas.

The first urban regeneration project in Izmir, in accordance with the first and largest squatter housing areas in Izmir, is planned for Bayraklı and Kadifekale districts (Karadağ & Miroğlu, 2012).

In the urban development plan of Bornova, it is observed that significant interventions and decisions are taken on ownership issues. Regarding the development plan carried out in 1964; it is observed that the region's property texture is ignored by large blocks.

Ege University Campus Area is the largest property in the region. The city's commercial centre is located in between the historical bazaar of the district.

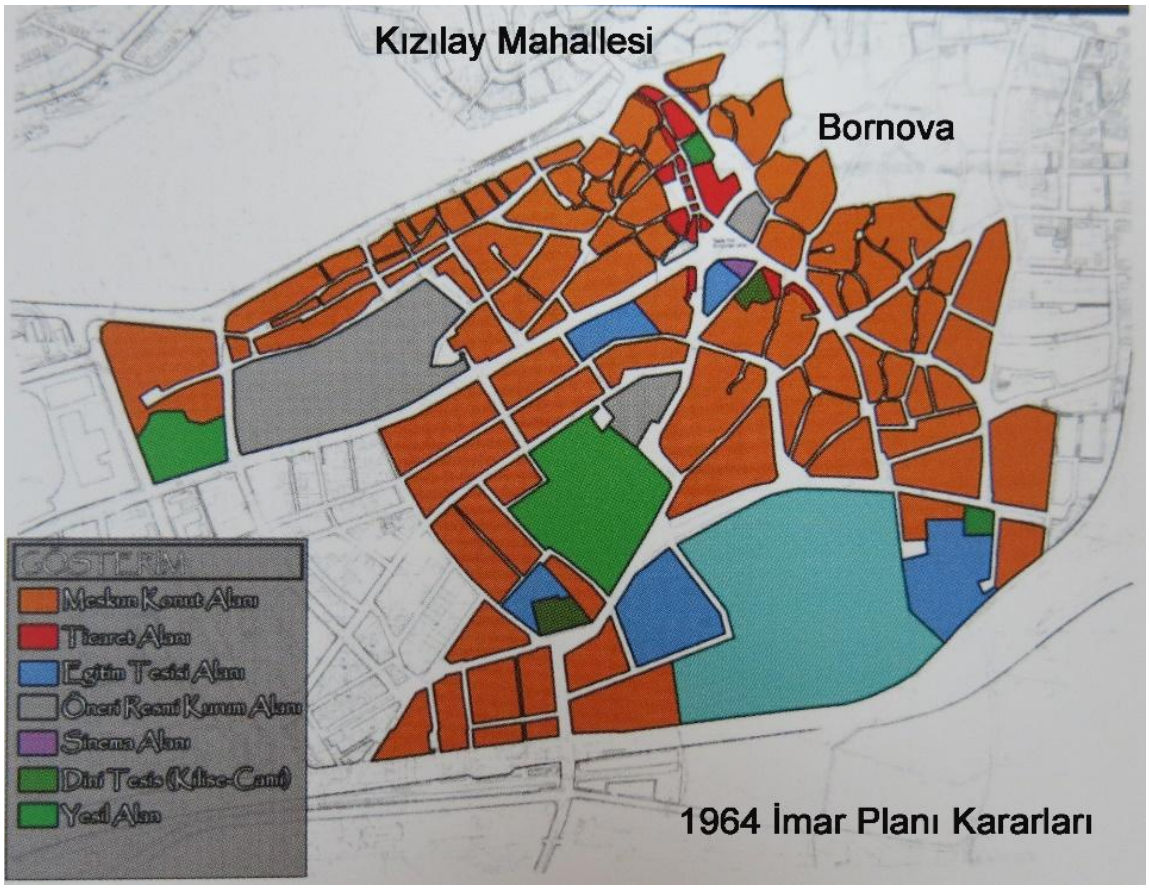


Figure 3.7 Master Plan, 1964, scale: 1/5000 (Altınörs and ark., 2015)

Together with the 1979 plan has come out the formation of clusters. This period, as consequence of urban plans, constitutes the beginning of high-density urbanization. Traditional market passages surrounded by equally intense residential areas have been created. The urban plans of this period, introduced the Atrium concept inside the Niızılay, Ergene and Erzene Neighborhoods borders, where traditional organic pattern was found. The reason for this is, to protect the traditional pattern of the region and low-density structures with a typical typology of courtyard, two storey high buildings. In 1983, a special Atrium Plan has been produced. In this plan the existing cadastral parcels are identified as developing parcels. The 1983 Atrium Plan covers Kızılay, Erzene and Ergene neighborhoods. These prepared plans intended to protect the traditional clusters of the region.

Figure 3.8. 1979`s Master Plan, scale: 1/5000 (Altınörs ve ark., 2015)

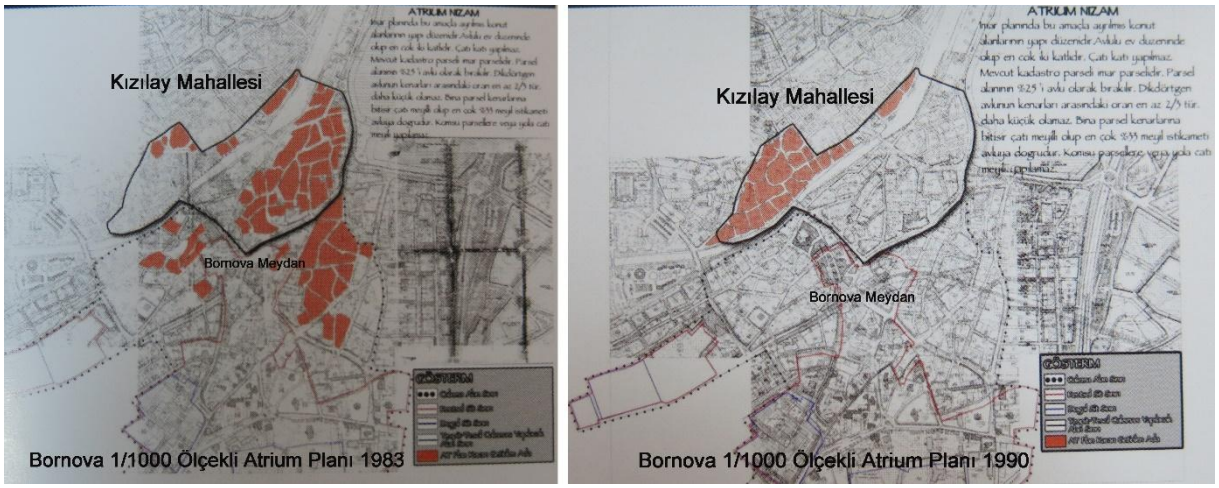


Figure 3.9 Atrium Plans of 1983 and 1990, scale: 1/1000 (Altınörs and ark., 2015)

The revision of the 1983 Atrium Plan, done in 1990 removed the atrium from a large portion of areas, only in Kızılay neighborhood Atrium Plan did not change. This

performed revision caused the quick development of 8 storey high buildings in residential areas with high land value.

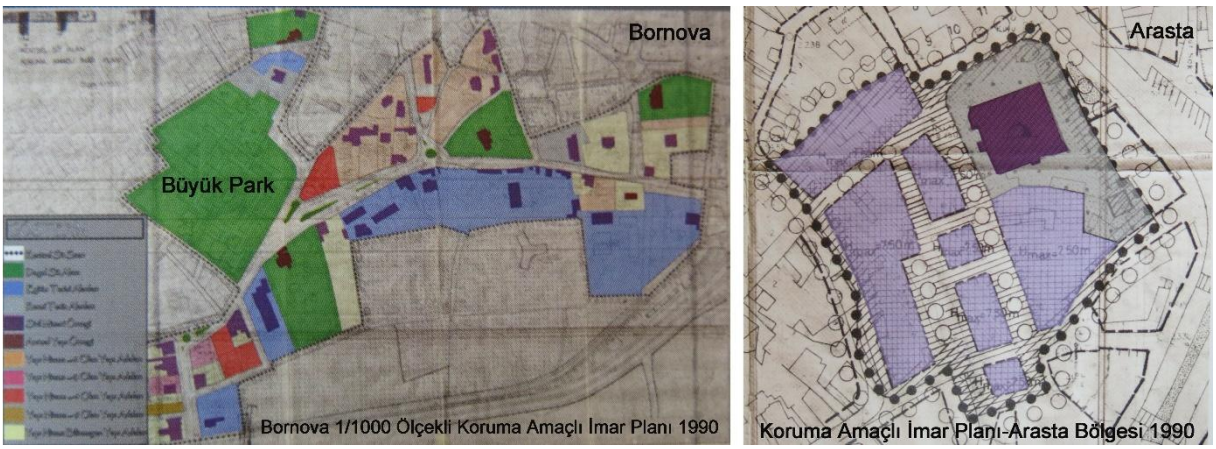


Figure 3.10. 1990`s Conservation Plan, scale: 1/1000 (Altınörs and ark., 2015)

Bornova in relation to the historic city centre, in 1990 with approve of Conservation Plan at 1/1000 scale, the buildings and area were put under the protection. From 33 neighborhoods found in Bornova district, in Erzene, Erghene and Kızılay neighborhoods the history traces can be easily read. Important administrative buildings such as Bornova Municipality, Government House, educational buildings such as Ege University, socio-cultural centers, parking areas and commercial areas are located in Bornova district.

Figure 3.11 Bornova Historic Center – Bazaar Area

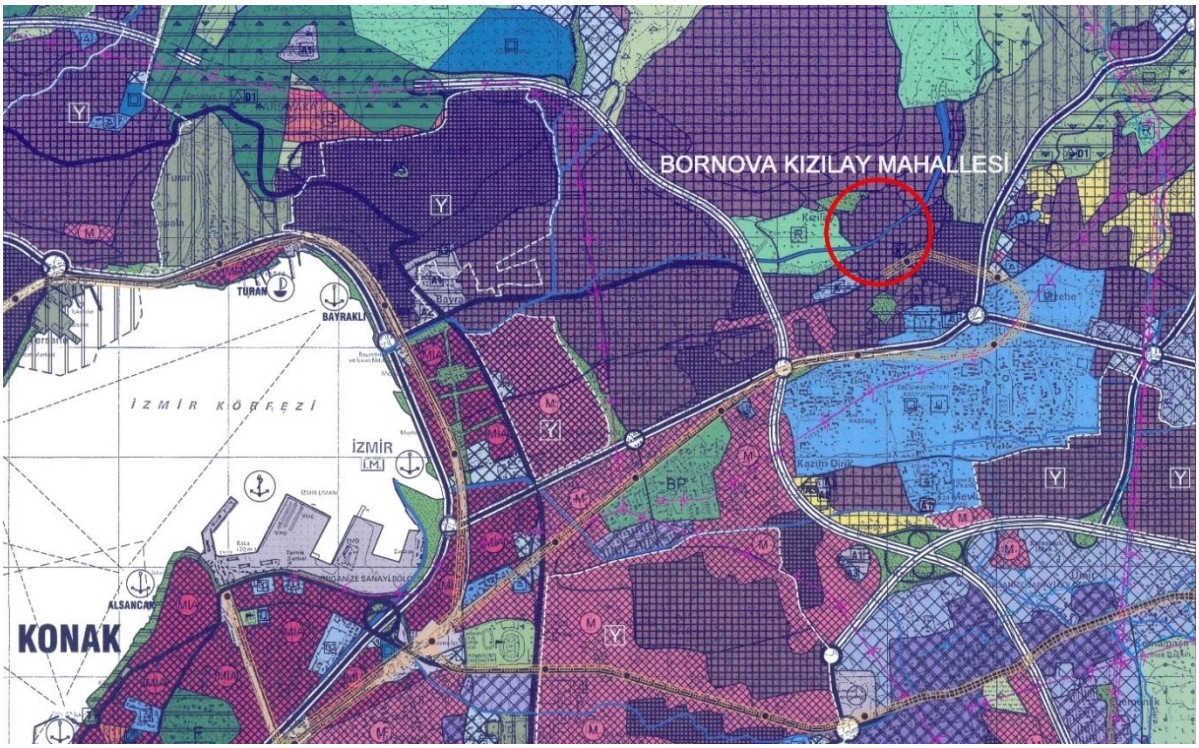


Figure 3.12 Environment Plan in Bornova and Kızılay Neighborhood (scale: 1/25000)

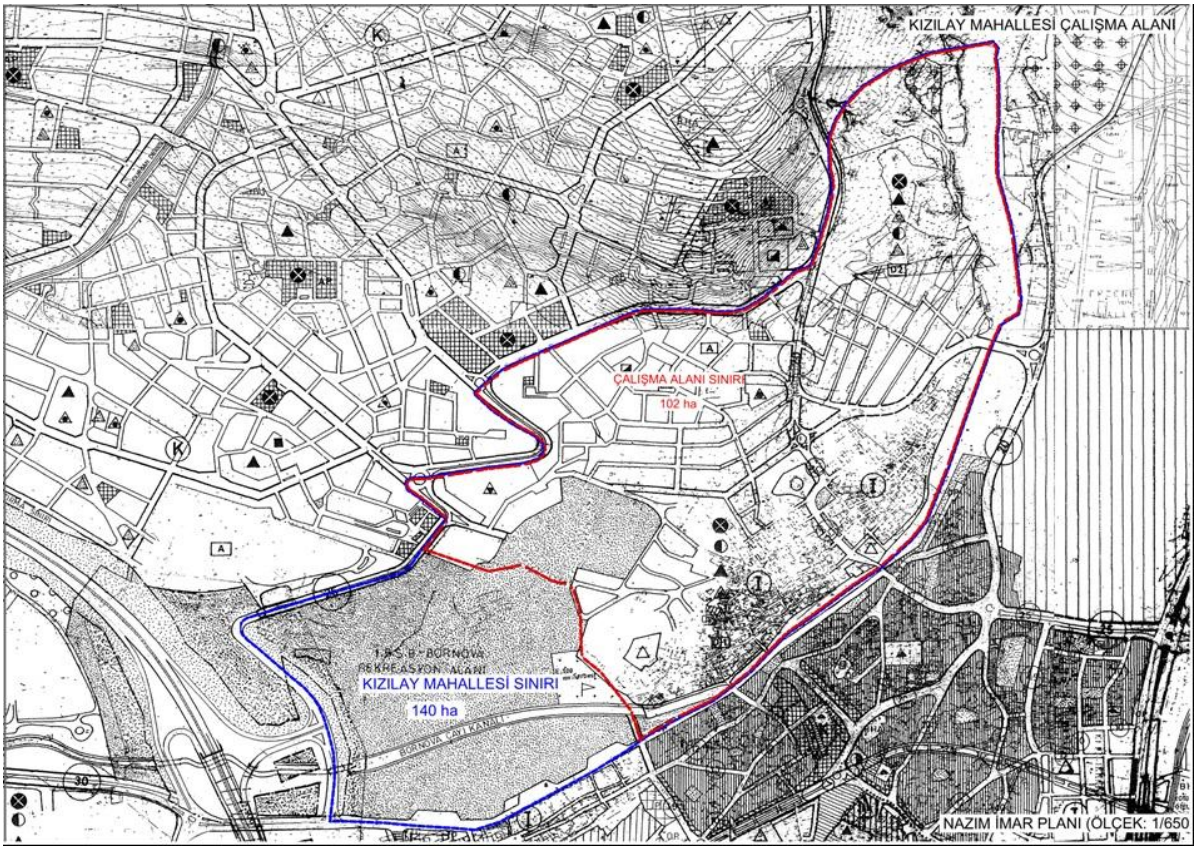


Figure 3.13 Master Plan of Bornova and Kızılay Neighborhood

Kızılay neighborhood in Bornova, chosen as the study area, in the Environmental Plan has been identified as a recreation and residential housing area. Similarly, the Master Plan identifies it as a zone with recreation and residential housing functions.

Kizilay neighborhood, selected as the study area, is located right next to the Bornova district center.

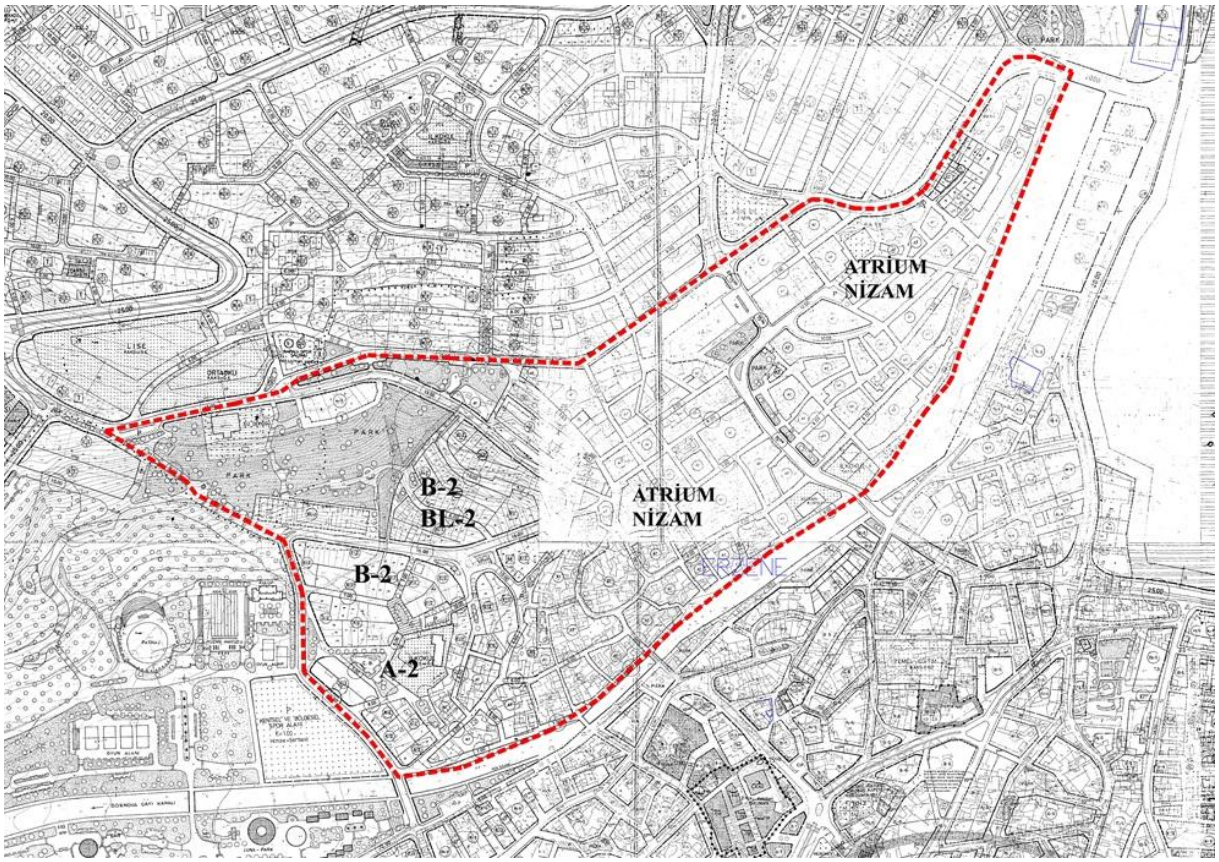


Figure 3.14 Bornova and Kızılay Neighborhood in the implemented Development Plan, scale 1/1000.

The current Bornova 1/1000 scale Implementation Plan was approved in 2010. However, this plan, does not bring new decisions, it maintains a big part of the decisions belonging to 1/1000 scaled Development Plan of 1983. Based on the decisions taken by 1983`s Master Plan, new high-density, adjacent and block shaped districts took form. However, unlike throughout the district, through the 1983`s Atrium Plan, the selected site has preserved the typology of two story high courtyard houses.

The design and construction conditions of Atrium typology:

- ✓ The housing typology should have a courtyard and not exceed two-story high.
- ✓ Attic storey not allowed.
- ✓ Existing cadastral parcel should be defined as a developing plot.
- ✓ 25% of the plot area is left for the courtyard.
- ✓ The ratio between the sides of the rectangular courtyard should be 2/3.

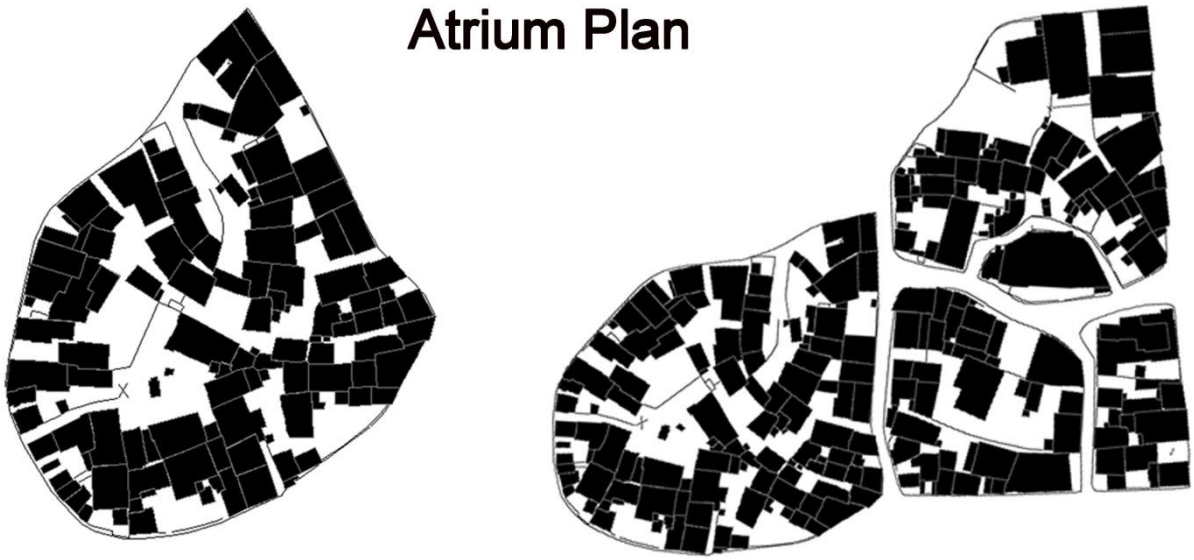


Figure 3.15 Bornova and Kızılay Neighborhood Atrium Plan-Detail

3.4 Analysis of Spatial Features in Kızılay Neighborhood

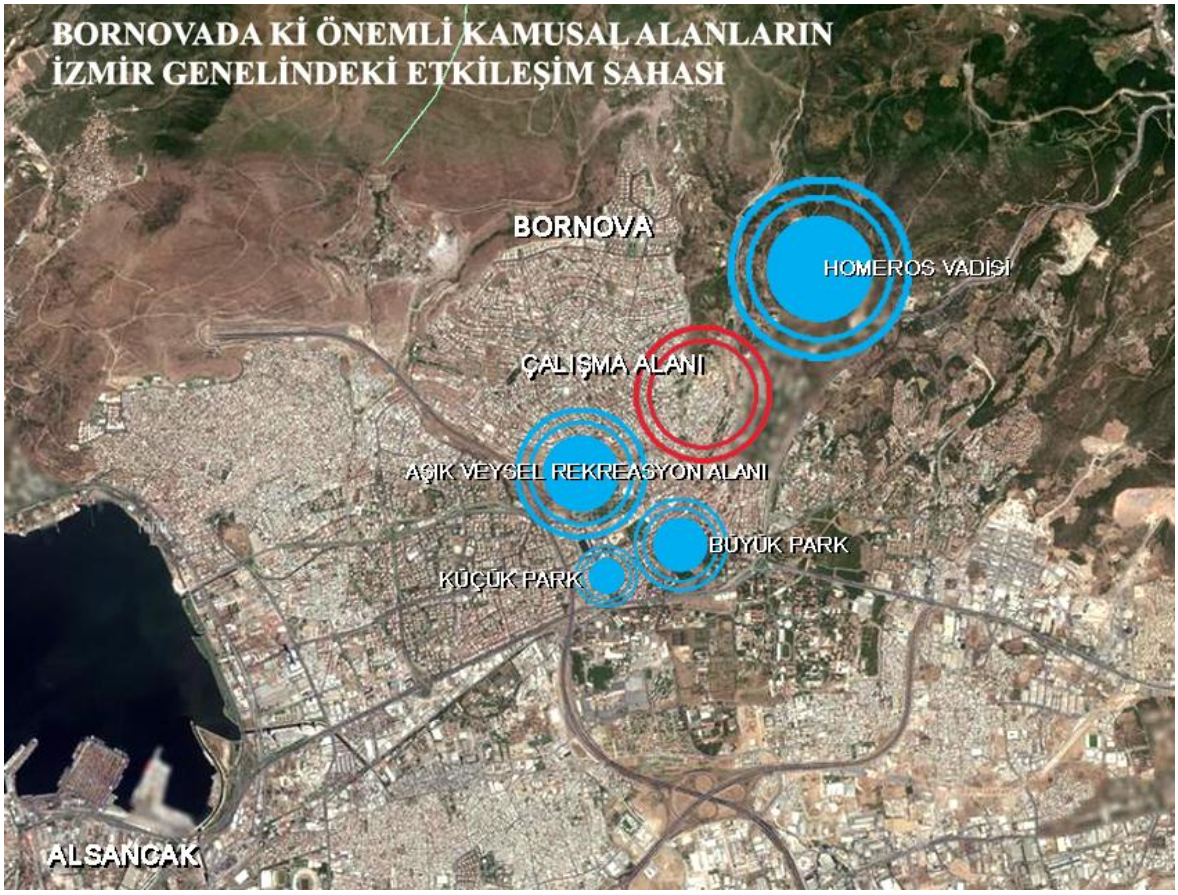


Figure 3.16 Research Area and Public Spaces in Bornova

Kizilay neighborhood is located right next to the historical city center of Bornova district, reaching the intense commercial areas within a walking distance. Similarly, the Government House, Bornova Municipality, Great Park, Small Park and Asik Veysel Recreation Area are located near to the selected site.

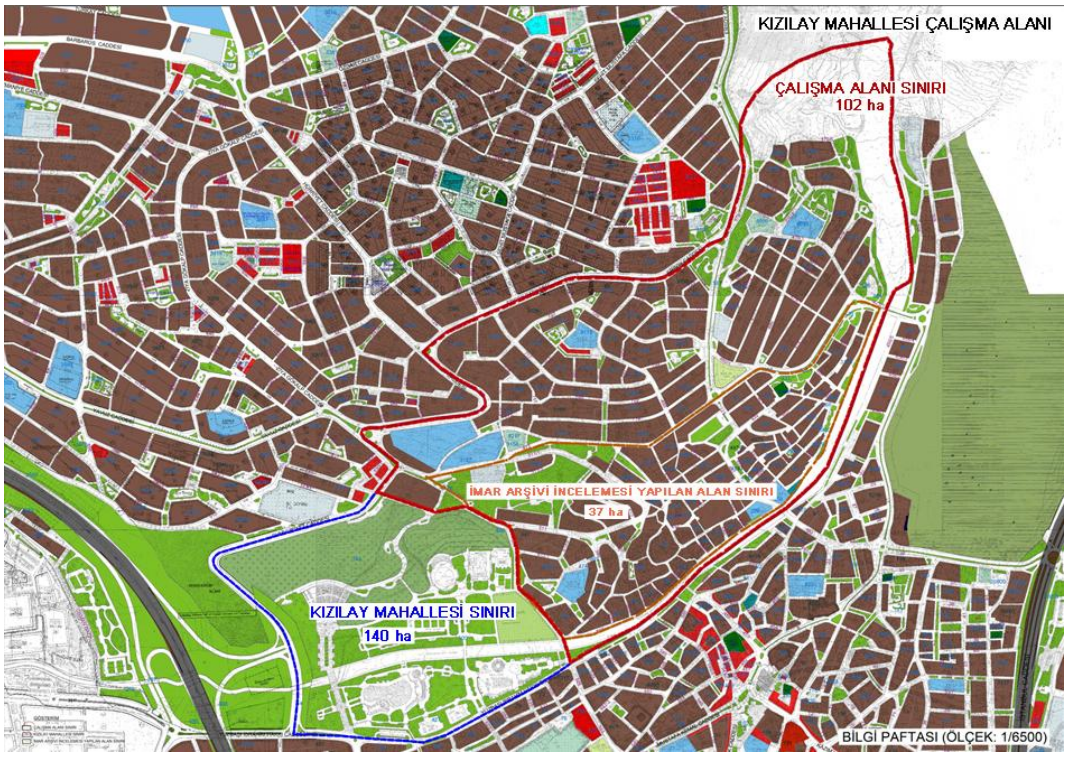


Figure 3.17 Study area in Kızılay Neighborhood

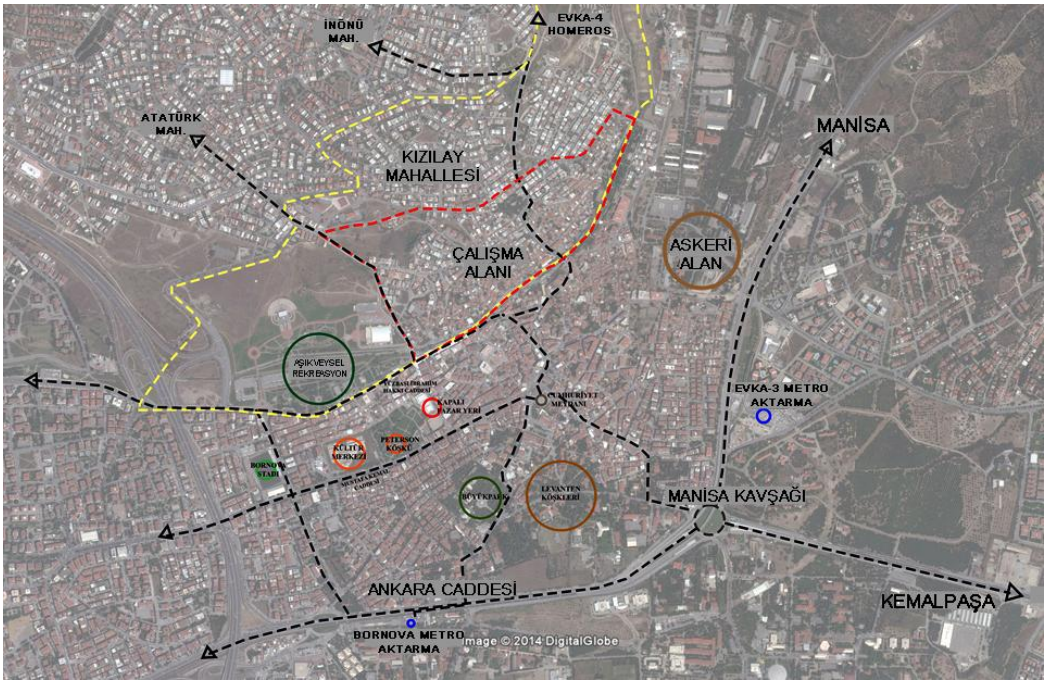


Figure 3.18 Study area in Kızılay Neighborhood and surroundings

Figure 3.19 Aerial photo of the selected study area in Kızılay Neighborhood

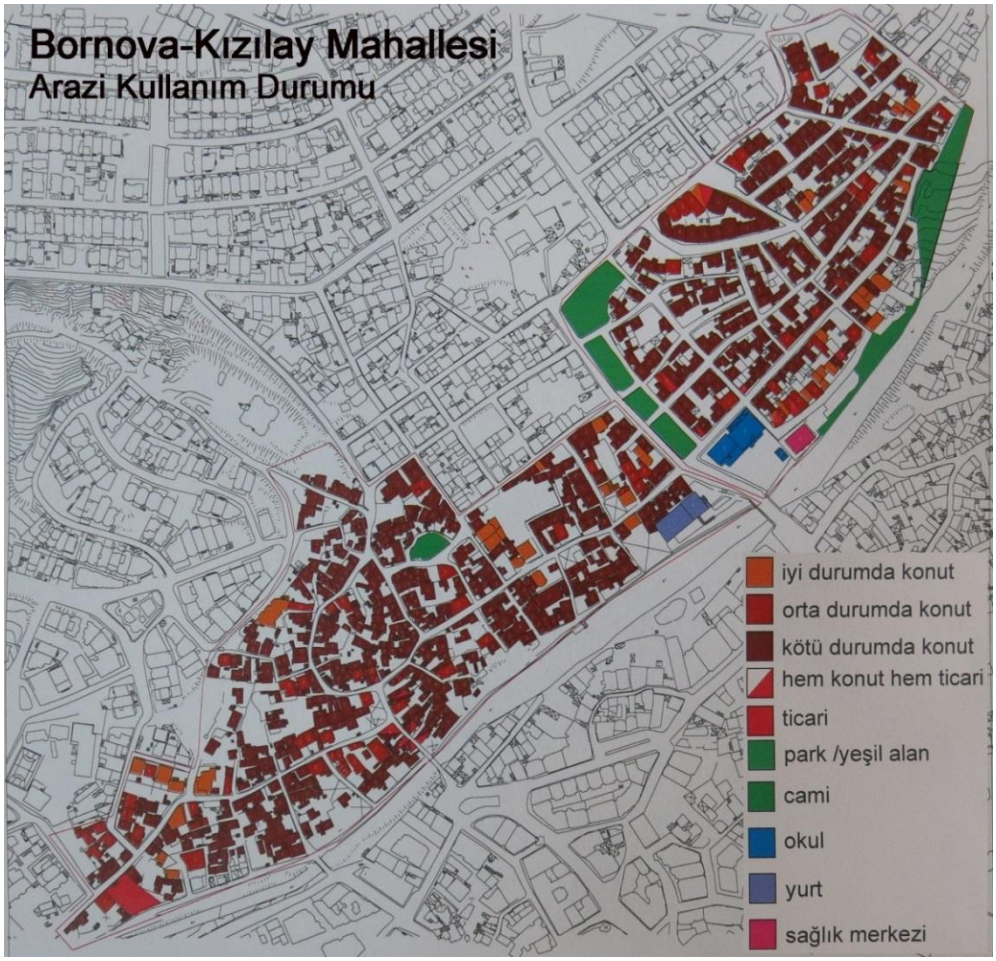


Figure 3.20 Land Use Situation of Kızılay Neighborhood

It is observed that the first and second floors of buildings, based on land-use decisions, generally are used for residential purposes. Based on the studies done, the assessment of housing structures is classified in three categories: good, moderate, and poor housing conditions. From the field studies performed, despite the fact that plot layout and parcel-structure relationship has changed, it is clear that the streets pattern is preserved. Despite the unregistered buildings in the study area, organic street pattern and the formation of small open spaces has been observed, in the social context the neighborly relations are still present, but weakened.

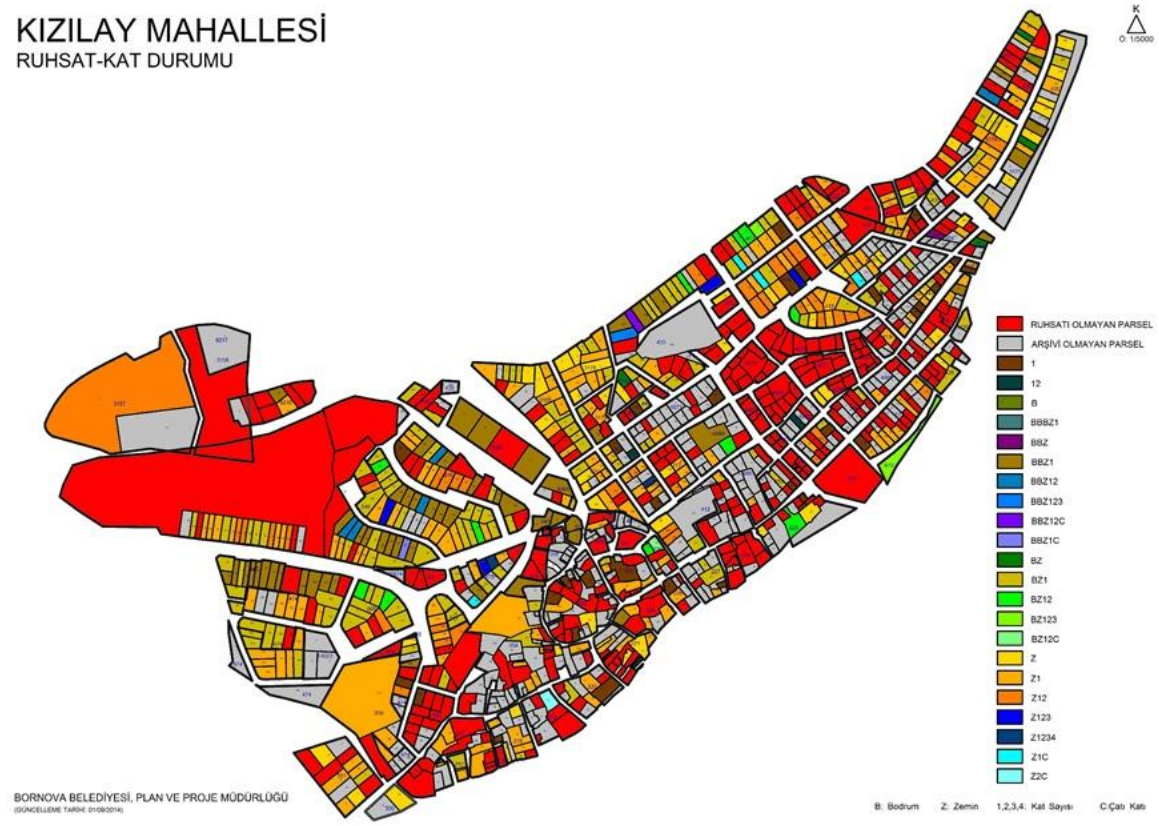


Figure 3.21 Floor Status for Legal buildings in Kızılay Neighborhood

Figure 3.22 Road views in Kızılay Neighborhood

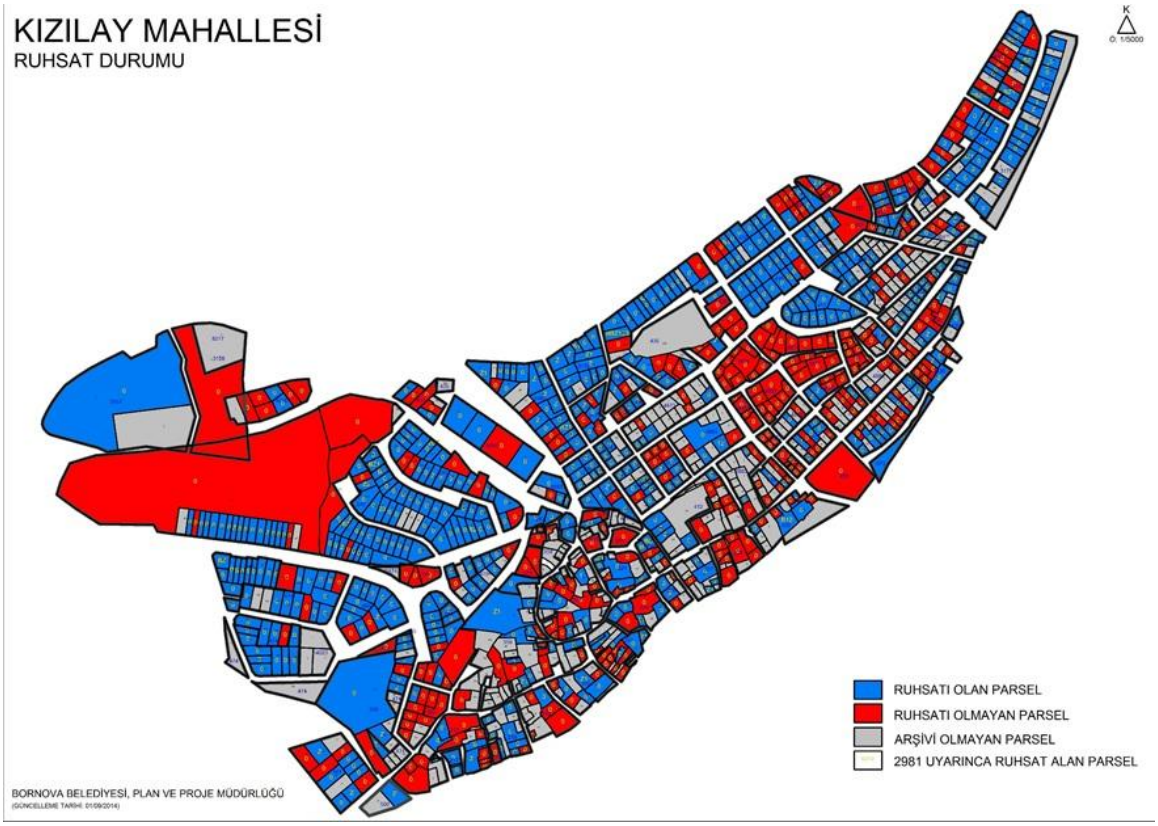


Figure 3.23 Legal Status of Buildings in Kızılay Neighborhood

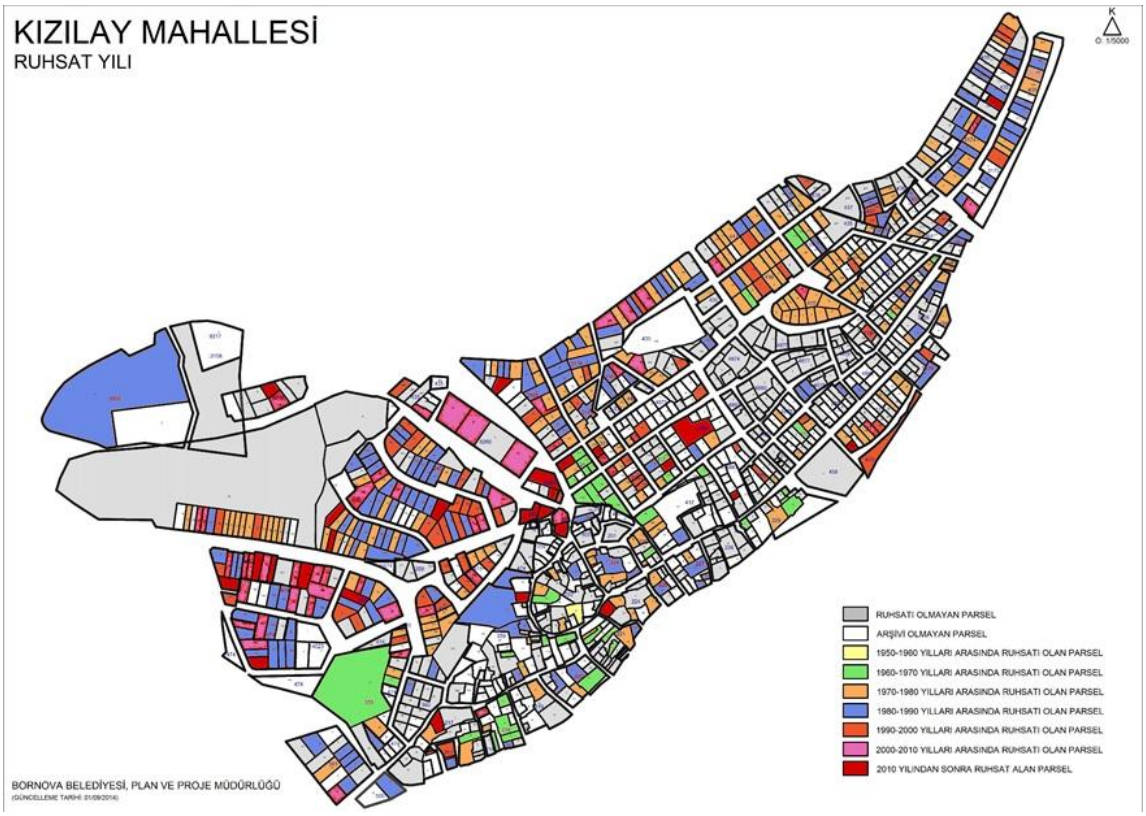


Figure 3.24 Acquiring Legal Status by year in Kızılay Neighborhood

Figure 3.25 The Yüzbaşı İbrahim Hakkı Road passing near the selected site.

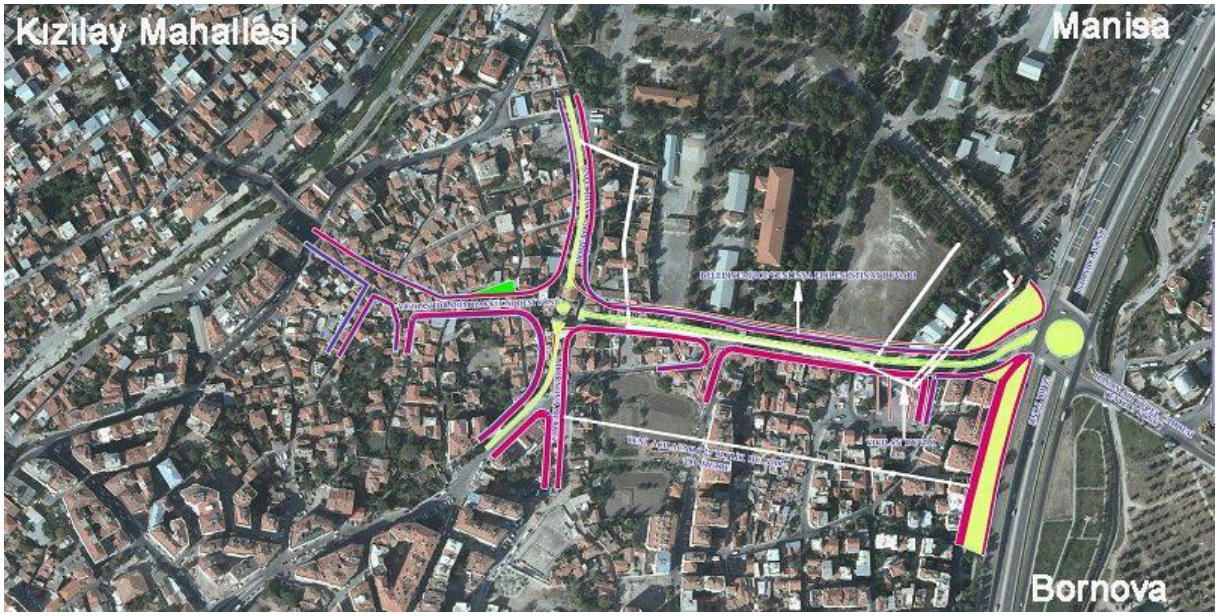


Figure 3.26 Working progress for connecting Yüzbaşı İbrahim Hakkı Road with Manisa Road

3.5 Profile of the case study area

The Kizilay neighbourhood in the Bornova Municipality district is one of the oldest neighbourhoods in Izmir, Turkey. In last three decades, from the 1980's, Izmir has undergone an outward expansion. Based on the data from the Turkish Statistical Institute, the population of İzmir in 2012 was 4.005.459, and the population of Bornova district, where the Kızılay neighbourhood is located, was approximately 426.000.

Until the 19th century, Bornova used to be a small village whose economy relied on forestry. Currently, it is a metropolitan district of İzmir with an urbanization rate of 98.6%. The Bornova district centre is situated at a distance of 8 km to the northeast from the Konak Square (the traditional centre of İzmir) and 5 km from the coastline at the tip of the Gulf of İzmir to the west. In Bornova, there are three universities: 1) Ege University, 2) Yaşar University, and 3) Şifa University. This shows that Bornova is the educational centre of İzmir, with many important transportation roads passing through.

Kizilay was once perceived as a neighbourhood located at the outskirts of this district node, but today, it is less than 0.7 km away from the Bornova district centre, reachable within 7 minutes by foot. The Kızılay neighbourhood's primary plan was approved in 1982, with courtyard houses no more than two stories high. Because of the near proximity with the old Bornova bazaar, there was no planned space for commercial facilities in this area. Through the outward progression of growth, these areas, once at the edges of the city, were transformed into in-between settlements. Kizilay is one of those areas, as it is positioned between the old district centre and newly developed areas. Kizilay and other similar areas are presently undergoing urban renewal and regeneration because of increased land value.

Kizilay has an area of 1.4 km^2, of which only 0.37 km^2 is under study in this paper. The assessment of building quality and neighbourhood scale will consider only this select area. The criteria used to select this area include natural borders, such as the Bornova Stream to the east, and physical borders, such as major roads to the north and south. The different typology of the buildings in the neighbourhood, from low to high, was the criterion for defining the west border of the study area.

The selected site, despite its location near the Bornova district centre, has good proximity to the Aşık Veysel Recreation Area, the Ice Sport Centre, Peterson Mansion, Big Park, the Military area, and the Cultural centre. There are also two schools inside the study area: Omer Seyfetin Primary School and Malazgirt Primary and Middle School. Additionally, there are three private dormitories for boys and two mosques: Merkez Şehitler and Laltepe. Near the last mentioned mosque and the Bornova stream, there is a recreational area with football and basketball fields constructed last year for the residents. Figs. 2 and 3 illustrate the selected site and its surroundings.

Figure 3.27 Street life

Figure 3.28 Borders

Figure 3.29 The study area in Izmir-Kizilay district.

In total, there are 594 structures that were assessed for building quality, with a projected total population of 2 400 people. The neighbourhood is positioned at a site where the topographical levels are clear. An organic pattern dominates the southwest

part of the site, while a more regular one exists in the northeast. The low-raised buildings included in this study area, which have between one and four floors have undergone illegal additions over time, known as '*gecekondu*' in Turkish. Vertical and horizontal extensions clearly show the need for more space. Information from the Bornova Municipality Archives shows that 261 buildings out of 594 were illegally constructed. Figs. 4 and 5 illustrate this situation. The facades of the buildings show signs of structural instability and an improper match of materials. Illegal additions by the owners show a poor level of architectural value as well.

Figure 3.30 Illegal additions

Figure 3.31 Building quality

CHAPTER 4

RESIDENTS SATISFACTION

4.1 Resident's satisfaction through building quality assessment

In Turkey, especially in recent years, through a partnership of local governments, private companies, as well as TOKI are implemented urban regeneration projects ignoring the multi-dimensional nature of the concept. The project areas are only seen as a physical space in need for regeneration. In these cases, unfortunately, the exceptions of the concept contents have caused inability to perform the objectives set at the design level.

Despite the lack of order, positive development is noticed due to legal arrangements made for urban regeneration in recent years. However, the content of the concept, the methods and principles are not mentioned in a clear manner in legislation. Urban regeneration projects do not only change the space, changes will occur in the lives of local people too. Regardless of the public interest, laws only dealt with the principle of public participation in the form of informing. Ignoring the local people to be actively involved in the process has been criticized by various professional organizations, experts and academics. Participation of local communities in urban regeneration processes, through various consultation sections taking place in the environment, will influence the routing decisions through all project steps.

Fairness, dialogue, consensus, development of democratic and participatory society, as well as the establishment of participatory organizations, play an important role in decision-making process of UR, providing several benefits. Involvement of central and local government, private sector, civil society organizations, professional organizations, experts and the participation of local people can deal with a holistic approach based on environmental improvements and result in successful urban regeneration projects.

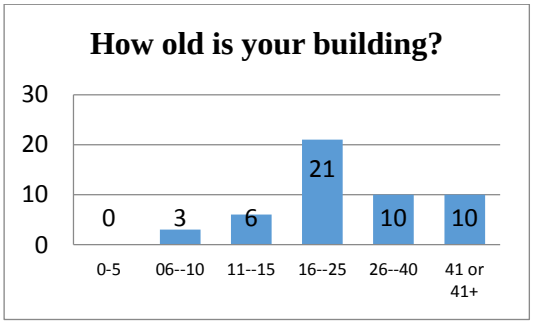
In this study, describing the contents of the concept of urban regeneration is drawn attention that UR projects implemented in Turkey for the renewal of the physical space should take in consideration the economic, social and environmental needs too. Especially local residents 'participation', living in the project area, should be a basic

principle in the process of planning and implementation of projects. Through analysis, the main actors of UR projects have to develop a variety of opportunities and recommendations for encouraging the locals to participate. Urban life of the implemented projects depends on what they share with the public, exchanging views and support.

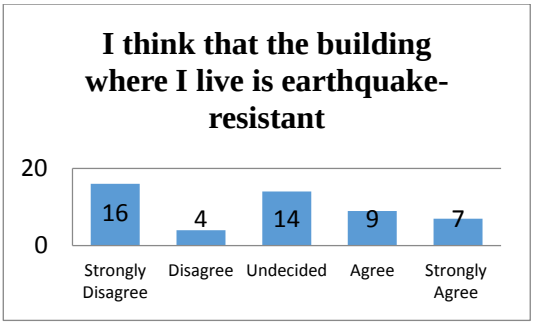
Based on questionnaires results, is obvious that residents are aware of physical needs as well as economic, social and environmental condition, emphasizing that all of them are factors to decrease the overall happiness in this area.

4.1.1 Construction conditions and age of the building

The level of satisfaction with the building/house quality according to analysed criteria results to be low for building safety, and noise control in the housings is low. According to the survey results, around 42 % of people are living in houses 16 to 25 years old and only 18 % live in less than 15 years old buildings that are considered as secure structures, 20% of them are living in 26-40 years old buildings and 20% in buildings older than 40 years old. 32 % strongly disagree that their buildings are earthquake-resistant and safe in terms of building fire, but only 14% of them strongly agree.



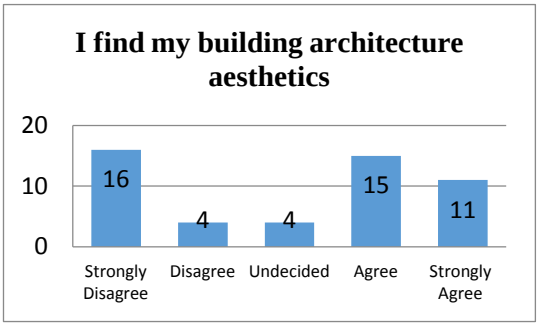
Graph 4.1. Building age



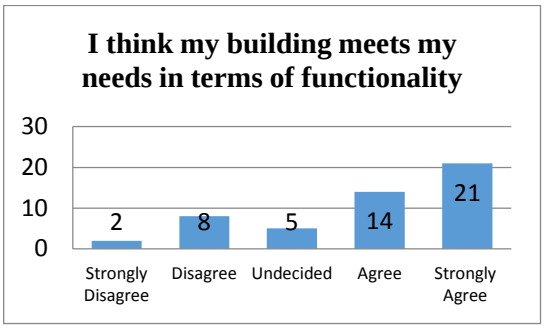
Graph 4.2. Earthquake-resistance.

4.1.2 Architectural features of building/house

The level of satisfaction with the aesthetic architectural features seems to be in the same levels with building safety where 32 % strongly disagree that their building satisfies them according to aesthetics but they are happier in terms of functionality.



Graph 4.3. Architecture aesthetics



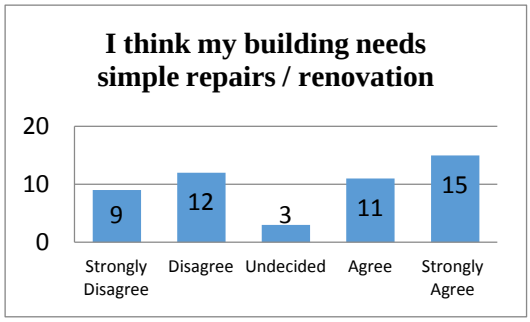
Graph 4.4. Functionality.

Only 4% of them strongly disagree that inner spaces of the house are not proper for their way of living, but 42% strongly agree that they are happy with the solution of the house's plans. 54% of the people say that they live in a house where there are 2 bedrooms and 1 living room so the typology 2+1, and 40% say that they live in a 3+1 house typology.

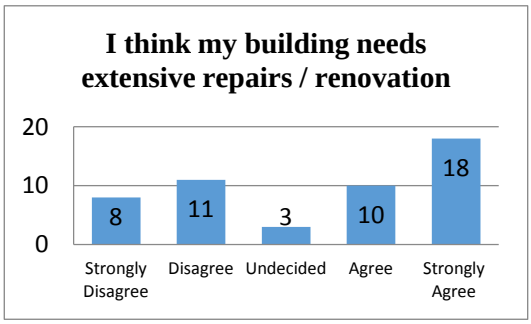
4.1.3 Modifications done and the wish for repairs/renovation

Modifications/ interventions that users think/ consider to be made or have been made by users' show that the user is not satisfied with what he has, it doesn't fulfil the day life needs. Structural interventions are the ones that attract the intention in Kızılay neighbourhood, enclosing balconies, vertical and horizontal extensions are a common solution founded by users to adapt the space they are in need for. Maintenance–repair work, materials used and the low quality of workmanship make 30 % of them to strongly agree and 22% to agree that their building needs simple repairs/ renovations but because of structural instability, visible cracks, fine works problems and lack of installing systems make 36 % of the people strongly agree that their building needs extensive repairs/ renovation. 28% strongly agree and 22% agree

that to meet their needs they have done interventions in their building but 26% strongly disagree and this was generally because of low economic conditions.



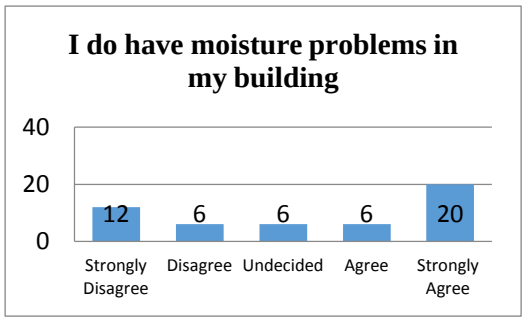
Graph 4.5. Simple repairs/ renovation



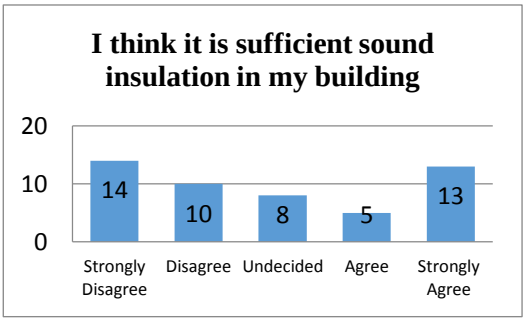
Graph 4.6. Extensive repairs/ renovation.

4.1.4 Physical condition and energy efficiency of your building/house

Resident's satisfaction is low because of physical conditions of the buildings. They strongly agree in a 40% amount that there are moisture problems in their buildings and 28 % strongly disagree that there is sufficient sound insulation compared with 26% who strongly agree that there is enough sound insulation to control inner noise. The level of satisfaction with the daylight control is very high compared to other criteria. Around 58% strongly agree that they can benefit enough daylight in the building, 22% agree and only 4% strongly disagree. Energy efficiency questions show that 44% of the people do strongly disagree to have heating problems compared to 26% that strongly agree. Around 64% of them use wood-burning stove for heating and the others use air-conditioning 14%, natural gas 10%, natural gas 8%, and radiator 4%. 50% of them strongly disagree to not have cooling problems and only 22% are strongly satisfied.



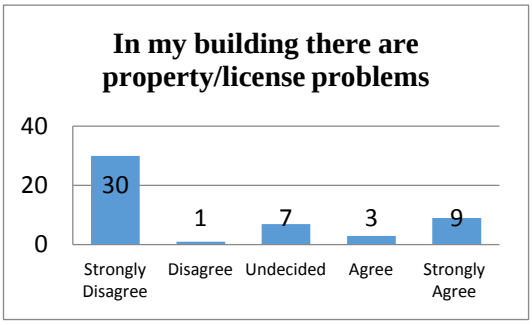
Graph 4.7. Moisture

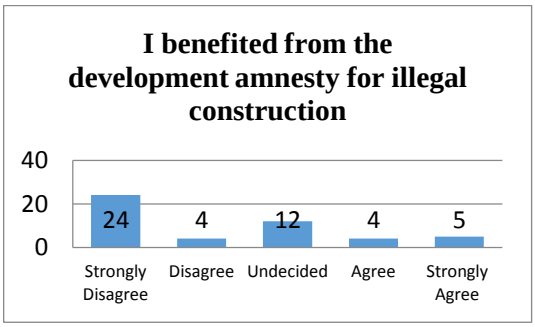


Graph 4.8. Sound insulation.

4.1.5 Property condition

Kızılay neighbourhood with low raised houses from one to four floors has experienced illegal transformations in time, known as '*gecekondu*' in Turkish. Even vertical and horizontal extensions are clues that clearly show the necessity for more space, and also, the information taken from Bornova Municipality Archive proves that **261 buildings** from **594 in total** are **illegal constructions;** only 18% of people strongly agree that there are property/license problems in their buildings. 60% strongly disagree. 10% of them strongly accept that have benefited from the development amnesty for illegal construction and 48% strongly disagree.





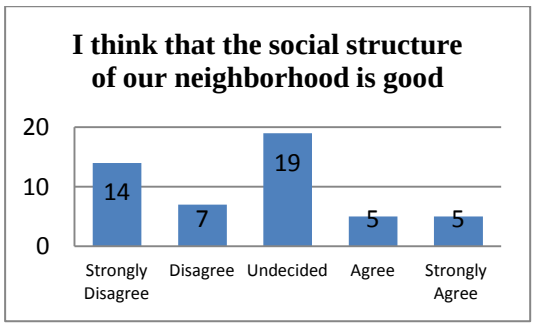
Graph 4.9. Property problems **Graph 4.10.** Amnesty for illegal construction.

4.2 Resident's satisfaction through Neighbourhood quality assessment

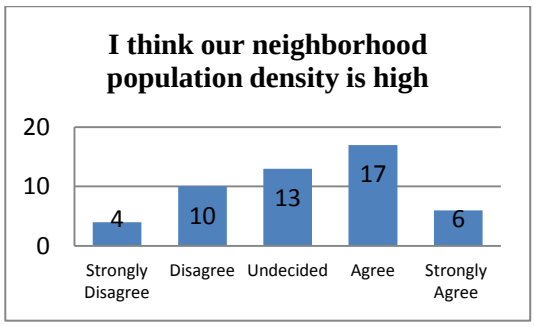
4.2.1 Social structure

Residents' satisfaction, despite building quality, it is highly dependent on physical, social and economic environment of the neighbourhood. 28% of people who took part in questionnaires strongly accept that buildings in their neighbourhood are not earthquake resistant and only 10% strongly accept; 38% are still undecided. Not only building structural safety does not satisfy them but 28% of them strongly disagree that their social structure is good, they mention hygiene problems, safety problems, and stray animal problems decrease the level of happiness in their neighbourhood. 34% of them accept that the population density is high and only 8% strongly disagree, while 26% are undecided. Because of migration and low rate of rantings the

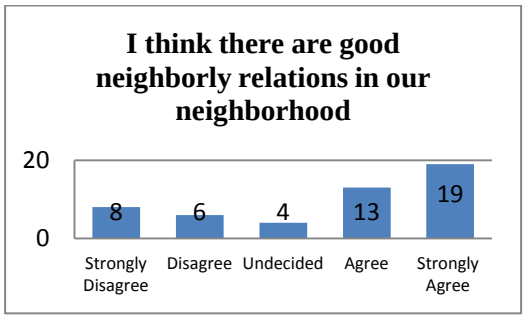
ones who are born and raised in the neighbourhood are not satisfied with the 'new comers'; they say that they miss the old neighbours. Even though, 38% strongly agree that there are good neighbourly relations in Kızılay and they can take common decisions with the other owners in their buildings.



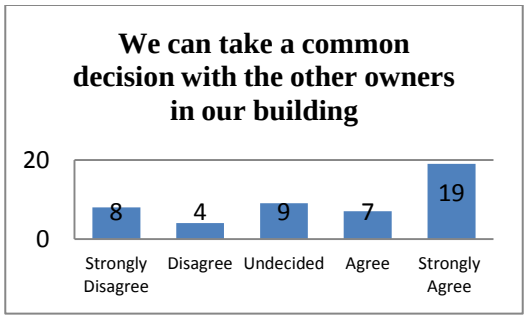
Graph 4.11. Social structure.



Graph 4.12. Neighbourhood population.



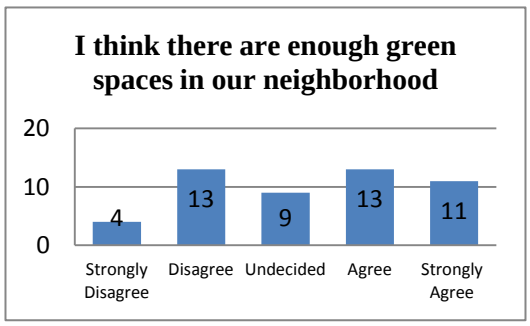
Graph 4.13. Neighborly relations.



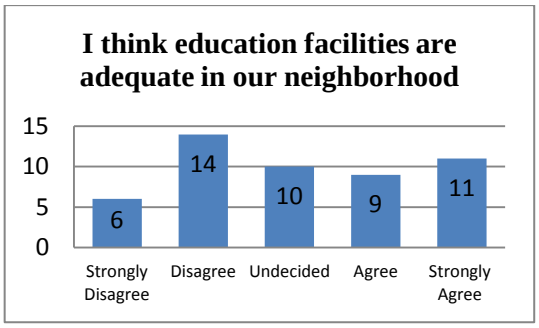
Graph 4.14. Common decisions taking.

4.2.2 Amenities

Amenities play an important role in the overall satisfaction of the residents. According to the survey results, 22% strongly agree that there are enough greenspaces in Kızılay, 26% agree but the same percentage (26%) disagree; only 8% strongly disagree. 46% of them say that they need areas to come together, common spaces, playgrounds for children and sport areas for adults.

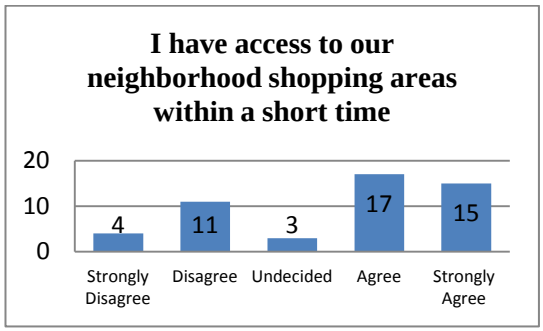


Graph 4.15. Green spaces.

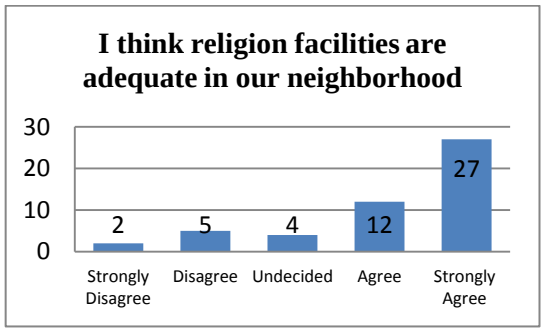


Graph 4.16. Education facilities.

As seen in graph 22% of people strongly agree and 18% agree that there are adequate education facilities in their neighbourhood but 28% of them disagree and 12% strongly disagree. They are satisfied with the number of education buildings but they are not satisfied with the quality of education. Shopping areas are accessed within a short time because of near location of neighbourhood near to Bornova old Bazaar and Bornova Organic market. 30% of people strongly agree to access shopping areas in few minutes compared with 8% of strongly dissatisfied people. Although the location offers opportunities for nearby shopping the residents of Kızılay mention that because of topography and to generate the economy they need to have markets inside neighbourhood. 54% of the people who answered the questionnaire strongly agree that they are satisfied with religion facilities in the neighbourhood; only 4% strongly disagree.



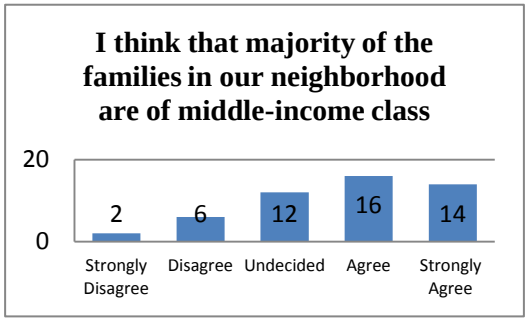
Graph 4.17. Shopping areas.

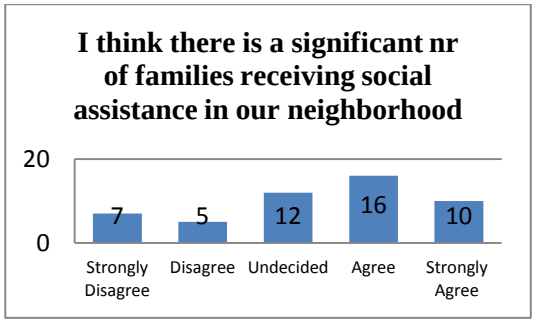


Graph 4.18. Religion facilities.

4.2.3 Neighborhood Economic structure

Kızılay Neighborhood results to have unsatisfied residents because of their economy where 28% of them strongly agree that the majority of the families are of middle income class and 32% agree. 32% of them agree that there is a significant number of families receiving social assistance and 20% agree.

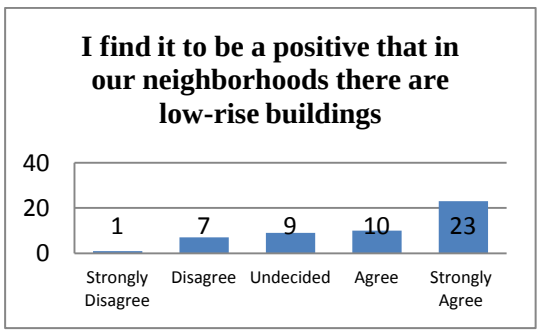


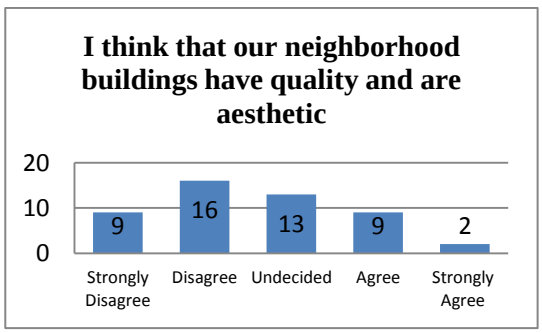


Graph 4.19. Religion facilities. **Graph 4.20.** Families receiving social assistance.

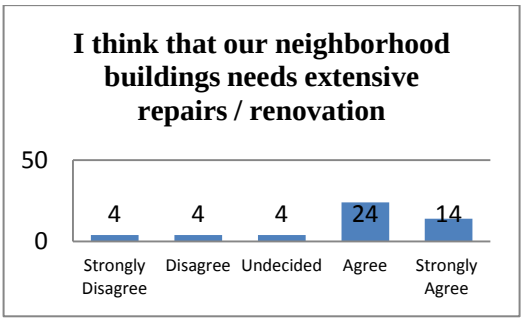
4.2.4 Architectural features of buildings in Kızılay Neighborhood

In Kızılay Neighborhood results that 46% of people are low-rise buildings and only 2% wish they had high rise buildings. Their satisfaction with the number of floors is not in the same level with their satisfaction about neighbourhood buildings quality. Only 4 % of them strongly say that the buildings have quality and look aesthetic, while 18% strongly disagree, 32% disagree and 26% chose to be undecided. When they are asked if the buildings in neighbourhood need simple repairs/ renovation 34% of them agree and 30% strongly agree, only 2% strongly disagree. 48% agree that extensive repairs/renovations are needed in Kizilay and 28% strongly agree, while 8% strongly disagree.





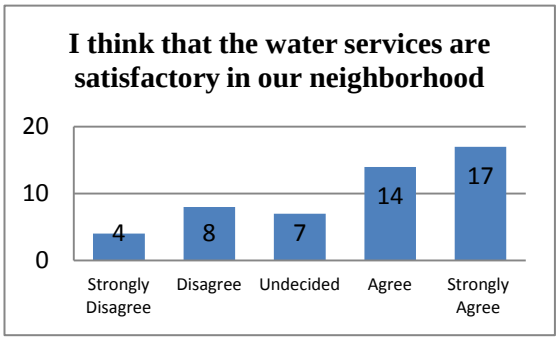
Graph 4.21. Low-rise buildings **Graph 4.22.** Quality and aesthetic



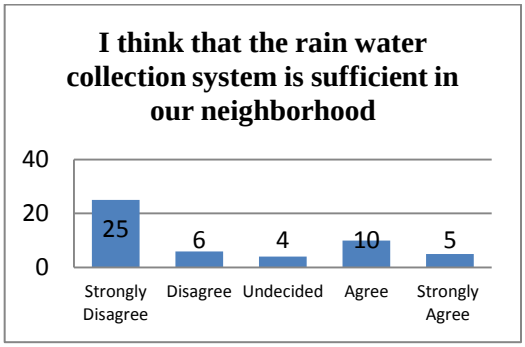
Graph 4.23. Extensive repair/renovation.

4.2.5 Infrastructure status in Kızılay Neighborhood

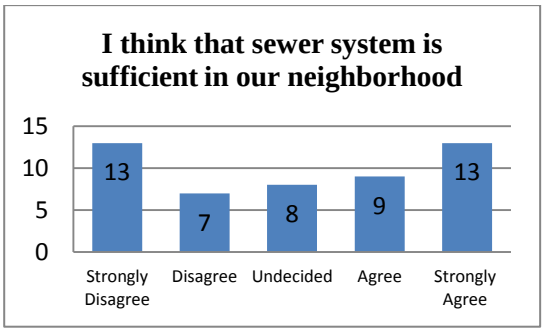
From the residents point of view it looks like there are no so much problems about drinking water services. 8% strongly disagree to be satisfied with water services, 16% disagree, 14% are undecided, but 28% agree that water services are satisfactory and 34% strongly agree. Differently from water services satisfaction, residents strongly disagree to say that rain water collection system is sufficient in their neighbourhood at 50% and only 10% strongly agree. It seems that even positioned in topography does not help to a better rain water carriage. The sanitary sewer system looks to satisfy the residents and dissatisfy them in same percentage, 26% strongly agree and 26% strongly disagree that sewer system is sufficient for them. 14 % disagree, 16% are undecided and 18% agree.



Graph 4.24. Water services.



Graph 4.25. Rain water collection system



Graph 4.26. Sewer system

4.2.6 Public transportation and road quality in Kızılay Neighborhood

Accessibility to work place, school/university, hospital, recreation areas and shopping are the factors that significantly increase the satisfaction of residents. The selected site looks to have a good connection with Bornova district centre, Aşık Veysel Recreation Area, İce Sport Centre, Peterson Mansion, Big Park, Military area, Cultural center, other neighbourhoods, but also based on standard walking distances to the bus stops it shows a general access within 500 walking distance but there are some areas that need to walk more than 700 m. Figure 4.1 illustrates the walking distance from different points to bus station.

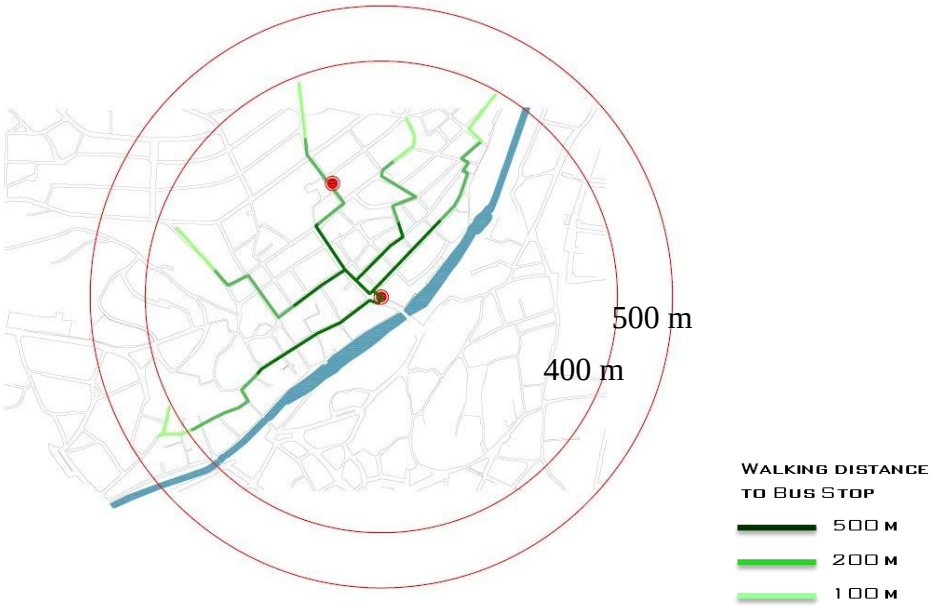
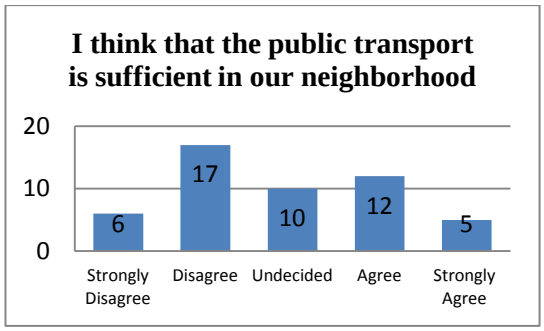
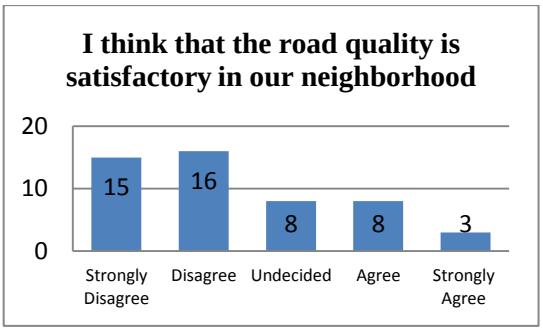


Figure 4.1 Walking distance to bus stop in meters.

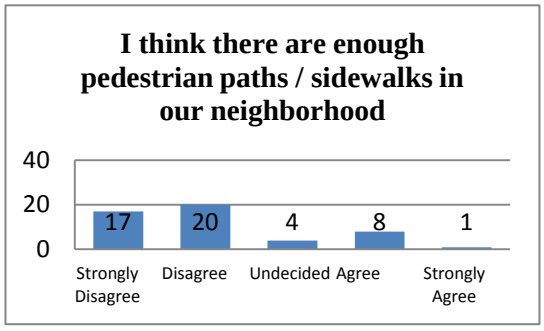


Graph 4.27. Public transport

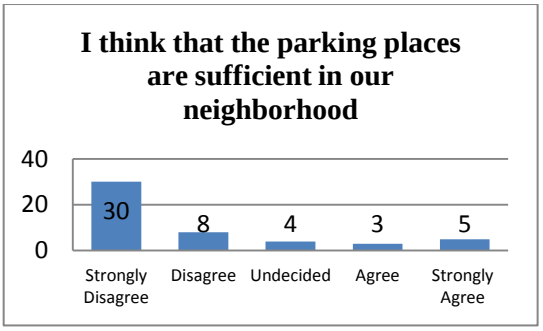


Graph 4.28. Road quality

According to questionnaire results, 12% of people strongly disagree that public transportation is adequate in Kizilay and 34% disagree. 20% are undecided, 24 agree that it is adequate and 10% strongly agree. While there are satisfied and not satisfied residents about public transportation, when it comes to road quality 30% strongly disagree and 32% disagree to be satisfied. 16% are undecided, another 16% agree and only 6% strongly agree that they are satisfied about quality of roads.

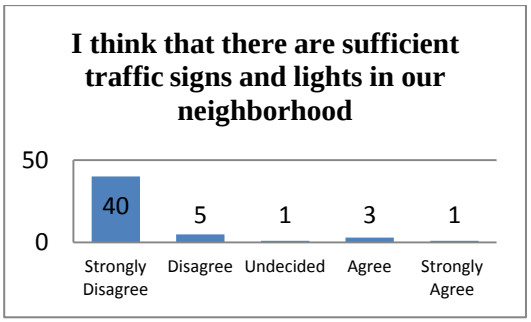


Graph 4.29. Pedestrian paths/sidewalks



Graph 4.30. Parking Places

Graph 4.29 illustrates that 34% and 40% of residents strongly disagree and disagree respectively to be satisfied with pedestrian paths/sidewalks in their neighbourhood and only 2% of them strongly agree. There are no walking paths in Kızılay and pavements are not wide. This low percentage comes because of narrow streets and the lack of proper parking places. Everyone parks his/her car in front of the house or where there is an empty space. 60% of the residents strongly disagree to say that there are enough parking places in Kizilay and only 10% of them strongly agree.

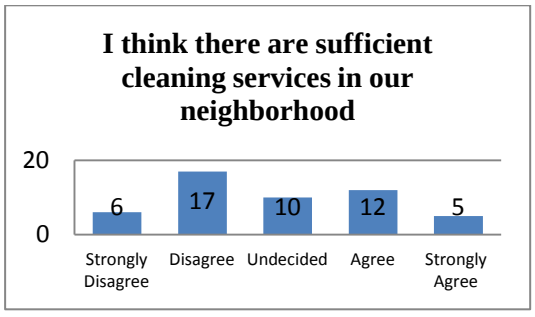


Graph 4.31. Traffic signs

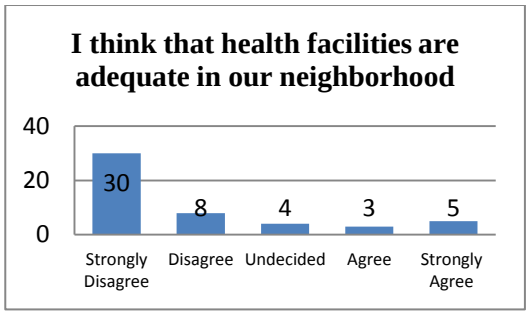
Not only the roads are so narrow and their quality is bad but also people are not satisfied with traffic signs and road lighting. 80% of them strongly disagree to say that traffic signs and lights are sufficient in Kizilay.

4.2.7 Health and Safety

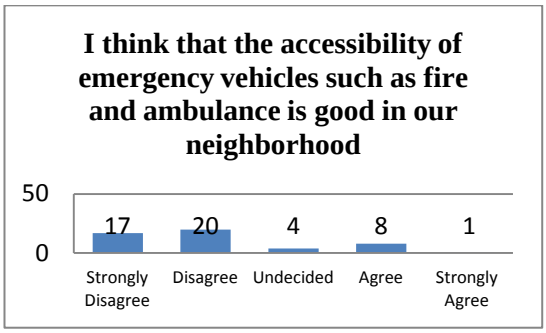
To have a healthy life for themselves and their children Kizilay residents complain about hygiene problems and stray animals' presence in their neighbourhood. 34% of them disagree to say that there are sufficient cleaning services and 12% strongly disagree, while, 24% agree and only 10 strongly agree. 20% are undecided to agree or disagree with the statement. Health facilities such as hospitals and emergency centres should provide their service to the residents and should be easily accessed by them. Residents in Kizilay strongly disagree to say that health facilities are adequate for their neighbourhood at 60%, 16% disagree, 8% undecided, 6% agree and 10% strongly agree.

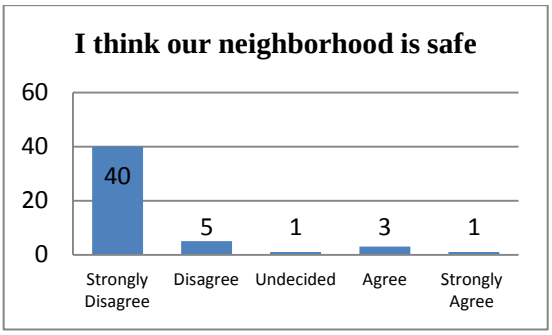


Graph 4.32. Cleaning services



Graph 4.33. Health facilities



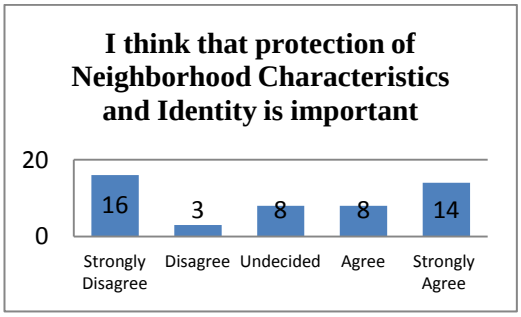


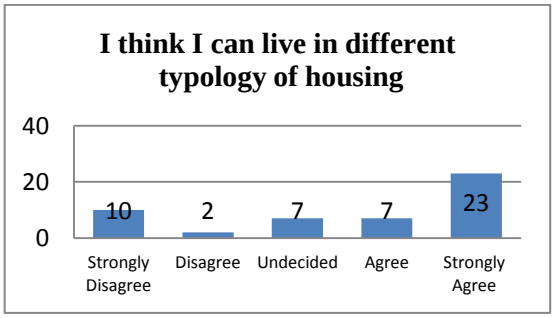
Graph 4.34. Accessibility of emergency vehicles **Graph 4.35.** Safety

34% of people strongly disagree that accessibility of emergency vehicles, such as fire, ambulance or police is good and 40% disagree. Only 2% strongly agree and 16% agree. 8% are undecided. The easy access of police in the neighbourhood makes people believe that their life in that site is secure and so their level of satisfaction increases, but in Kizilay 80% of people strongly disagree to think their neighbourhood is safe, and 10% disagree.

4.3 Residents and Urban Regeneration Project in Kizilay

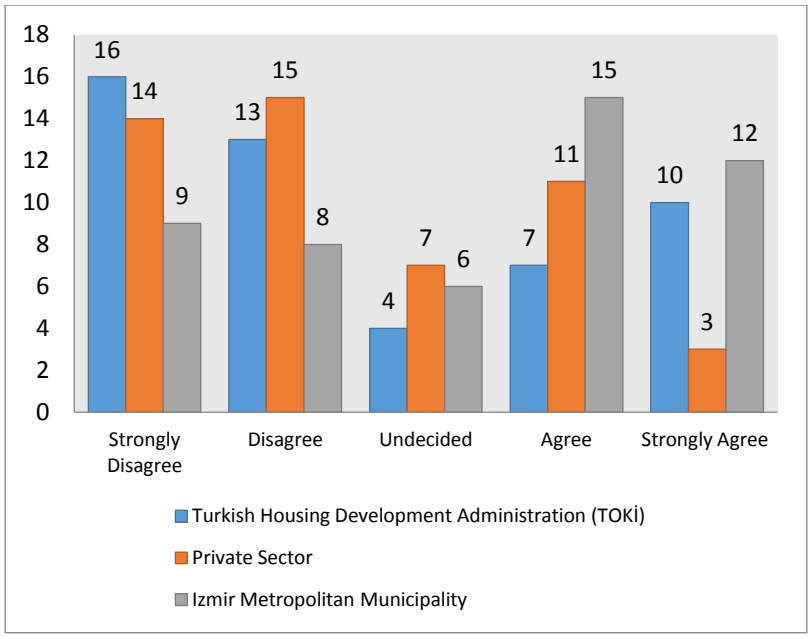
People living happily should love the identity and characteristics of their neighbourhood. In Kizilay 32% of people strongly disagree to protect characteristics and identity of Kizilay, 6% disagree, 16% are undecided, 16% agree and 28% strongly agree. It is a low level of satisfied residents and mostly it is because the houses construction quality. 46% of them strongly agree that they can live in a different typology of housing, and only 20% strongly disagree. Public participation is very important in all phases of urban regeneration projects. Meetings should be done between all stakeholders of the project, including municipality representatives, organizations, private firms and public members.





Graph 4.36. Characteristics & Identity **Graph 4.37.** Housing typology

In Kızılay 30% of people strongly disagree to say that enough meetings are done about Urban Regeneration Project, 26% disagree, 22% are undecided, 8% agree and 12% strongly agree. According to their economic conditions there are the answers of them about the need for housing rents, provided by the actors who will direct the UR. 74% of them strongly agree that the housing rents should be provided for the time period that the project will be under implementation. 12% agree, 4% are undecided, 6% disagree and 4% strongly disagree.



Graph 4.38. Safe Directing URP

Residents based on their experiences or what they have heard, expressed their opinions about who should direct urban regeneration project in Kızılay. URP should be done by Turkish Housing Development Administration (TOKI), by increasing the Development Rights for Private Sector or under the leadership of Izmir Metropolitan Municipality were the three options that they could select. In the figure 8 above it is shown that 32% of residents strongly disagree that TOKI directs the URP and so they are against private sector with 30%. 30% of them agree that Izmir Metropolitan Municipality directs URP and 24% agree.

CHAPTER 5

FUZZY DELPHI METHOD IN MATLAB

5.1 Fuzzy Delphi Method

The Fuzzy Delphi method was proposed by Murray (Murray et al., 1985) with the idea of combining the traditional Delphi method and Fuzzy Set theory. The standard Delphi method developed by Dalkey and Helmer (1963) was the most relied upon methodology used to find answers within a set of questionnaires (Hwang & Lin, 1987; Reza & Vassilis, 1988). This method was based on the use of linguistic terms. However, because of the potential for misunderstandings between the meanings of the answers taken from the questionnaires and the interpretation of these answers by experts, in many situations, this approach resulted in uncertainty and was not properly able to reflect quantitative terms.

Experts attempted to address this 'fuzziness' in terms of understanding the outputs of the Delphi method using the Fuzzy Set theory. The Fuzzy Set theory is an approach that can resemble human reasoning in its use of approximate information and uncertainty to generate decisions. It was specifically designed to mathematically represent uncertainty and vagueness and provide formalized tools for dealing with the imprecision intrinsic to many problems (Kahraman et al., 2004; Williams, 2003; Zadeh, 1965). In this analysis, the efficiency of interpreting questionnaire results could be much improved through objective evaluation of the factors that the Fuzzy Set theory proposes.

To improve the weaknesses associated with both theories, Murray, Pipino, and Gigch (1985) proposed to integrate them. However, it was Ishikawa et al. (1993) who combined specialists' opinions with fuzzy numbers based on the concepts of cumulative frequency distribution and the fuzzy integral. This process is called the fuzzy Delphi method (FDM). The main steps of FDM include the following: 1) Fuzzification; 2) Inferency based on fuzzy rules; 3) Aggregation of the outputs; and 4) Defuzzification. To date, FDM has been extensively used in diverse fields of studies, including urban planning, regional road safety, urban road safety, service industries, and health, among others.

5.2 Our Approach to FDM

After the questionnaires were administered, the third phase of the study was the application of the FDM. Based on the questions asked in the questionnaires, the main criteria and their ranking of importance were selected by 33 professionals in different fields of studies, such as architecture, civil engineers, urban planning, and city planning.

Indicator	**Coefficient**
Structural Safety	2.287
Architectural Features	0.778
Physical Conditions	1.231
Energy Efficiency	1.307
Property Conditions	1.307

Table 5.1 Building Assessment Indicator Coefficient

Indicator	**Coefficient**
Structural Conditions	3.795
Social Conditions	0.373
Economic Conditions	1.671
Architectural Features	0.63
Infrastructure	0.678
Transportation	0.493

Table 5.2 Neighbourhood Assessment Indicator Coefficient

Based on the character of the questions, the proposed general Fuzzy System Model was designed.

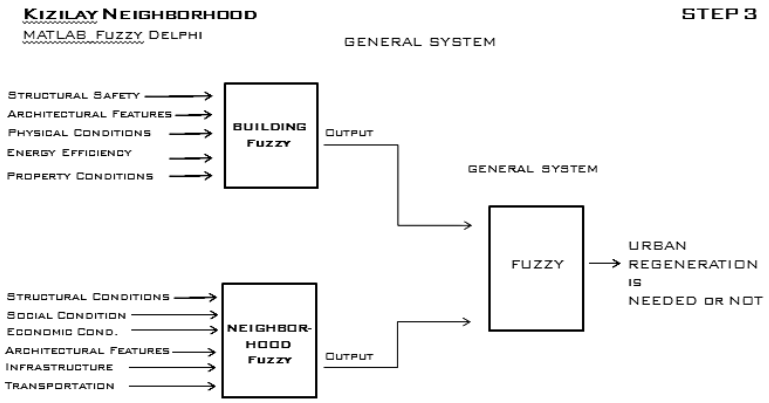


Figure 5.1. Fuzzy General System

The first fuzzy system was designed to understand building quality in the Kızılay neighbourhood, the second one was to understand the neighbourhood quality, and the third one was to understand if there was a real need for urban regeneration.

5.2.1 Fuzzification

Fuzzification: The aim of the fuzzification step is to determine the mapping degree of crisp inputs to fuzzy sets using membership functions. In the Building Fuzzy system, five inputs were used, namely: 1) structural safety; 2) architectural features; 3) physical conditions; 4) energy efficiency; and 5) property conditions. These input yielded one output: building_assessment. The levels of the structural safety input were not secure, mid-security, and secure. The levels of the physical condition, energy efficiency, property conditions, and architectural feature inputs were bad, normal, and good. Finally, the levels of the building assessment outputs were destroy, repair, or stay. The levels were determined as shown in Figs. 5.2 and 5.3.

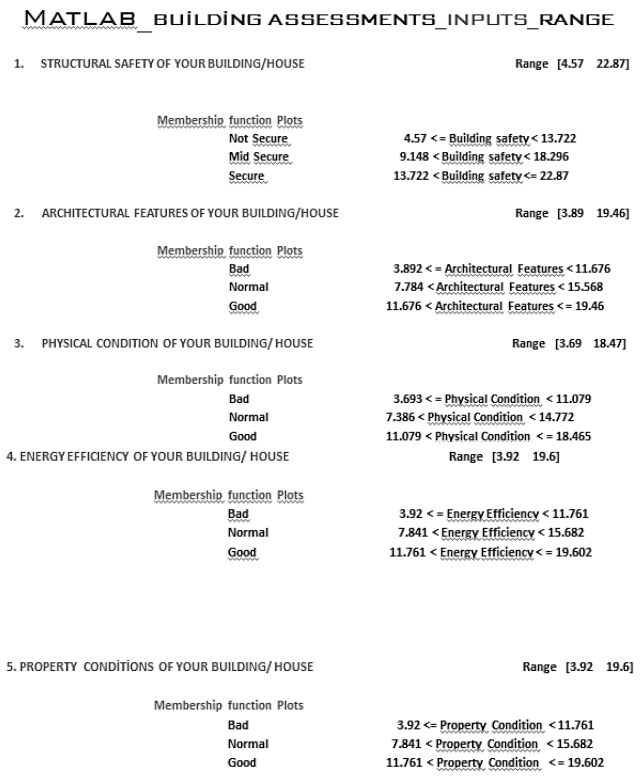


Figure 5.2 Building Assessment inputs and ranges

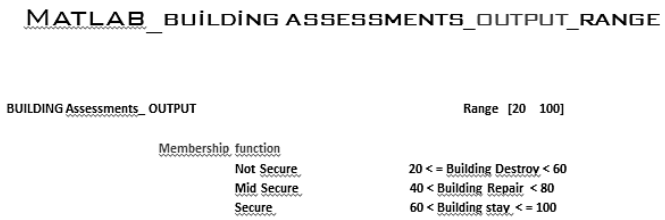


Figure 5.3 Building Assessment output and ranges

Five membership functions were created to identify the inputs and one for the output in the proposed building assessment system, as shown in Fig. 5.4.

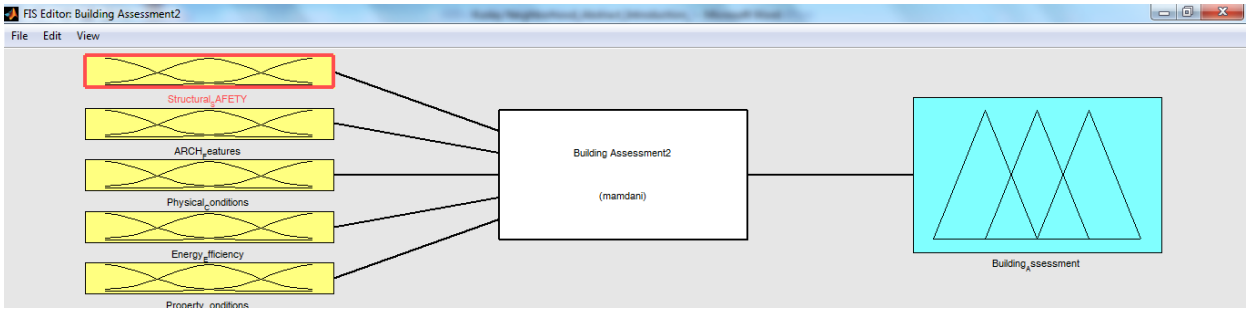


Figure 5.4 Building Assessment system

In the Neighbourhood Fuzzy system, six inputs were used, namely, structural condition, social condition, economic condition, architectural features, infrastructure, and transportation. There was one output: neighbourhood_assessment. The levels of the structural condition input were not secure, mid-security, and secure. The levels for the social structure, economic conditions, architectural features, infrastructure, and transportation inputs were bad, normal, and good. Bad, normal, and good were also the levels of the neighbourhood_assessment output. The levels were determined as illustrated in Figs. 5.5 and 5.6.

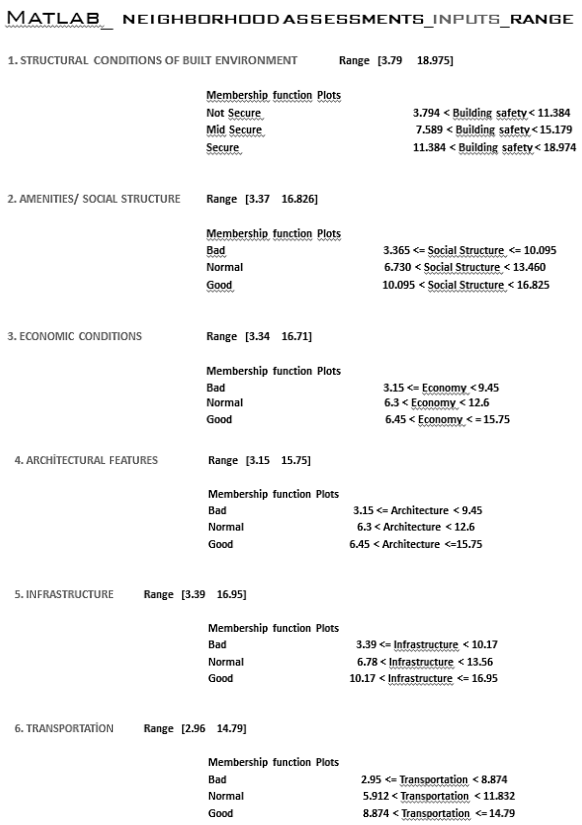


Figure 5.5 Neighbourhood Assessment inputs and ranges

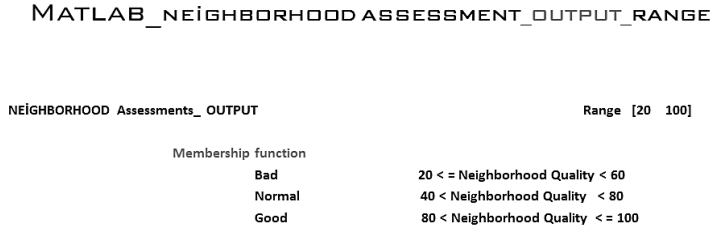


Figure 5.6 Neighbourhood Assessment output and ranges

Six membership functions were created to identify the inputs and one was created for the output in the proposed neighbourhood assessment system, as illustrated in Fig. 5.7.

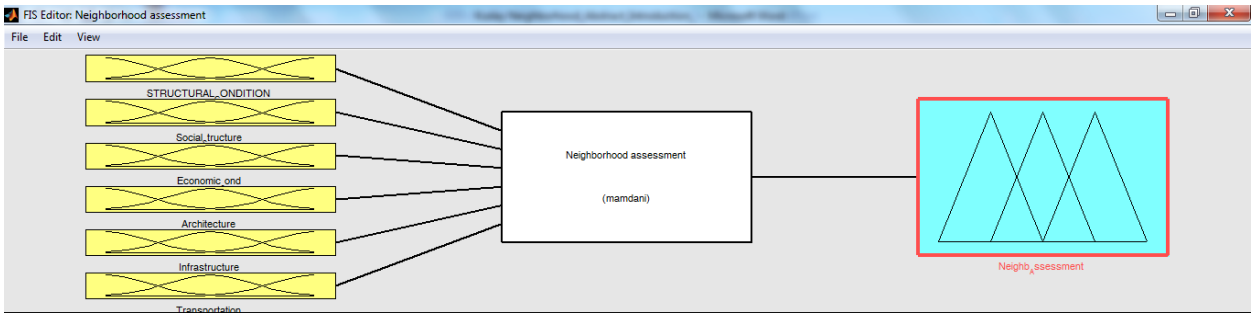


Figure 5.7 Neighbourhood Assessment System

In the General Fuzzy system, the outputs of the first two fuzzy systems were used as inputs, so there were two inputs, namely, building_assessment and neighbourhood_assessment. There was one output: urban regeneration. The levels of the building assessment input were destroy, repair, and stay. The levels of neighbourhood assessment input were bad, normal, and good. Finally, the levels of the urban regeneration output were urban regeneration needed, interventions needed and urban regeneration not need. The levels were determined as shown in Figs. 5.8 and 5.9.

MATLAB_ URBAN REGENERATİON_INPUTS_RANGE

1. BUİLDİNG ASSESSMENTS	Range [20 100]	
	Membership function Plots	
	Not Secure	20 < = Building Assessments < 60
	Mid Secure	40 < Building Assessments < 80
	Secure	60 < Building Assessments < = 100
2. NEIGHBORHOOD ASSESSMENTS	Range [20 100]	
	Membership function Plots	
	Bad	20 < = Neighborhood Quality < 60
	Normal	40 < Neighborhood Quality < 80
	Good	80 < Neighborhood Quality < = 100

Figure 5.8 Urban Regeneration inputs and ranges

MATLAB_URBAN REGENERATION_OUTPUT_RANGE

NEİGHBORHOOD Assessments_ OUTPUT		Range [40 200]
Membership function		
	Needed	40 < = Neighborhood Quality < 120
	Interventions	80 < Neighborhood Quality < 160
	Not Needed	140 < Neighborhood Quality < = 200

Figure 5.9 Urban Regeneration output and ranges

In the proposed urban regeneration system, two membership functions were created to identify the inputs, and one function was created for the output, as shown in Fig. 5.10.

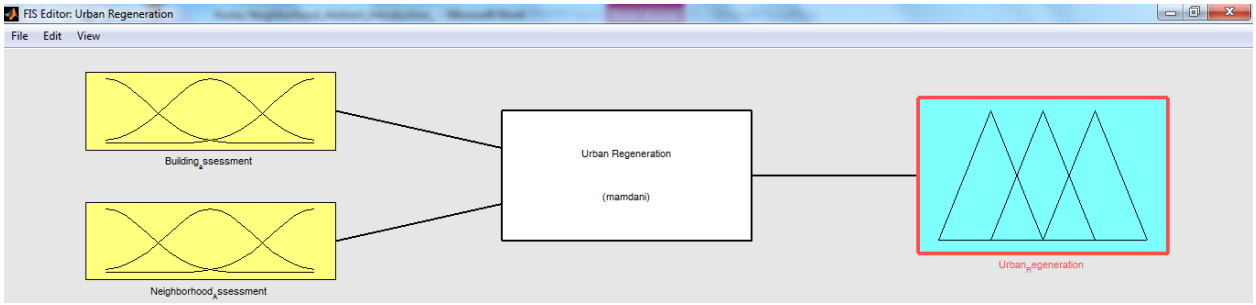


Figure 5.10 Urban Regeneration System

5.2.2Applying Fuzzy Rules:

Fuzzy rules provided by experts were applied to the fuzzified inputs to calculate values for the degrees of probability output parameter. There were 258 rules in total were used in the building assessment system, and these are shown in Fig.5.11.

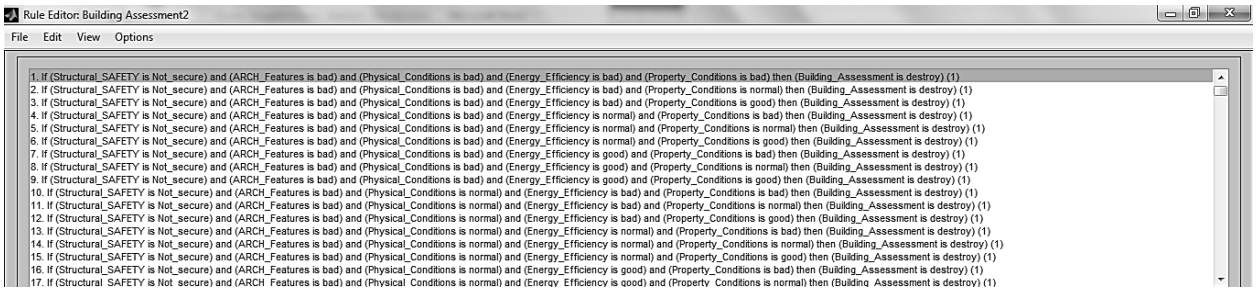


Figure 5.11 Building Assessment Rules

There were 732 rules used in total in the neighbourhood_assessment system, as shown in Fig. 5.12.

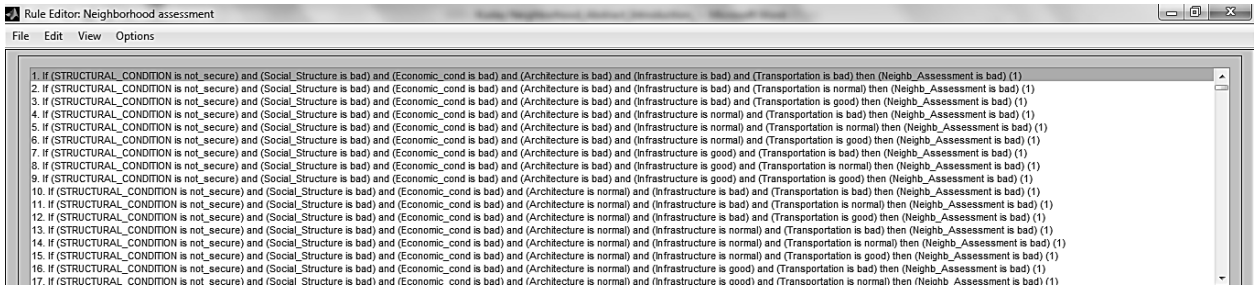


Figure 5.12 Neighbourhood Assessment Rules

There were 15 rules used in total in the urban regeneration system, as shown in Fig. 5.13.

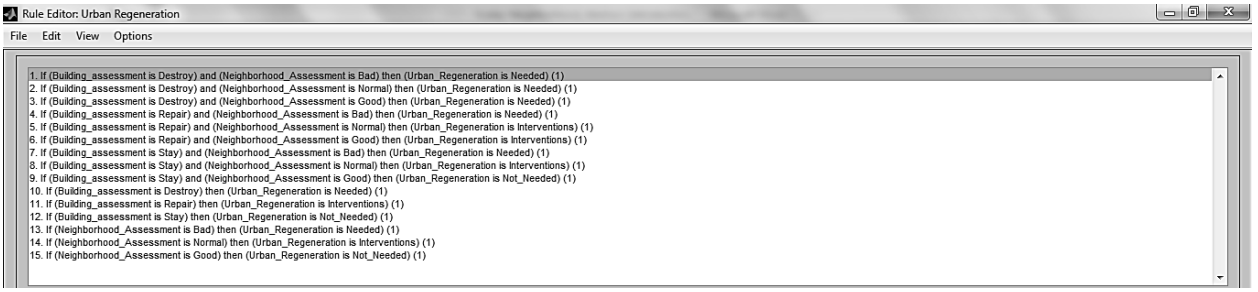


Figure 5.13 Urban Regeneration System Rules

CHAPTER 6

DISCUSSIONS

For the simulation of each system, the answers of 50 persons are used as data. Values for the input parameters of the Building Fuzzy system included the following:

- Structural safety: 13.035
- Architectural features: 12.999
- Physical conditions: 12.703
- Energy efficiency: 11.369
- Property conditions: 10.323

These values were then matched with a building repair value in the building_assessment output. Based on the fuzzy rule *"If (Structural safety is Not Secure) and (Architectural features is Normal) and (Physical Conditions is Normal) and (Energy efficiency is Normal) and (Property conditions is Normal) then (Building assessment is Destroy)*", the proposed fuzzy system suggests that these input values correspond to a value of 65.9 for the building_assessment crisp output. The Rule Screen Interface and Surface Screen Interface of the building assessment Fuzzy Logic Model is shown in Figs. 6.1 and 6.2.

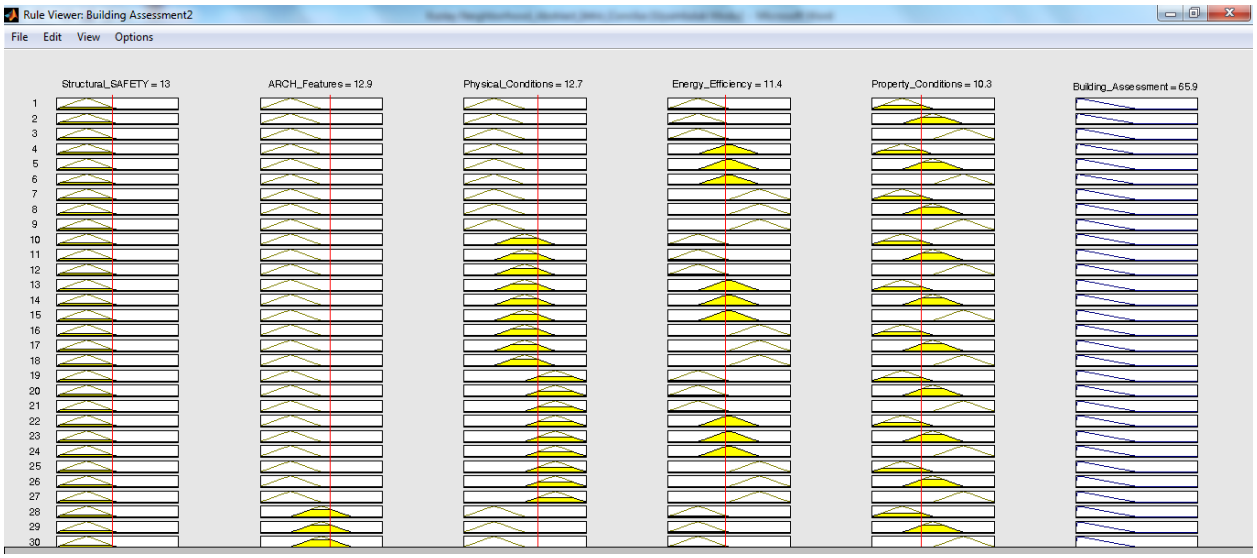


Figure 6.1 Building Assessment Rule Screen Interface

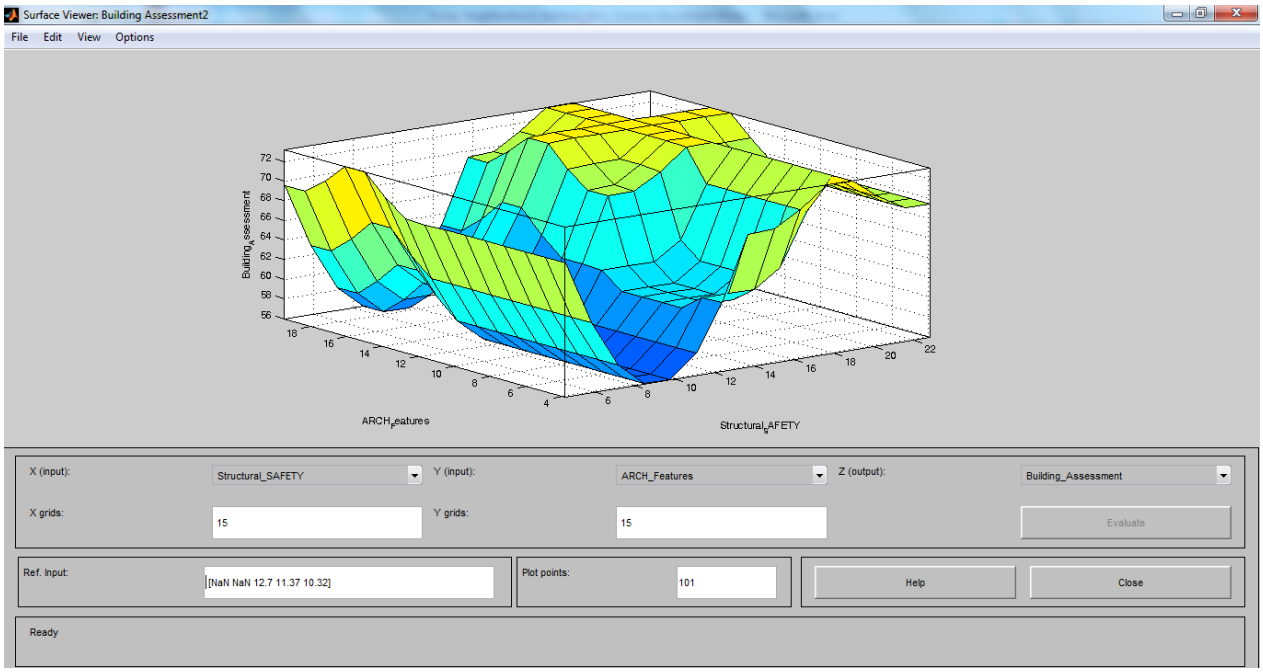


Figure 6.2 Building Assessment Surface Screen Interface

The input parameters of the Neighbourhood Fuzzy system included the following:

- Structural condition: 9.866
- Social condition: 11.231
- Economic conditions: 11.730
- Architectural Features: 10.596

- Infrastructure: 11.024
- Transportation: 7.030

These values coincide with a bad to normal value in the neighbourhood_assessment. Based on the fuzzy rule *"If (Structural condition is Not Secure) and (Social condition is Normal) and (Economic conditions is Normal) and (Architectural features is Normal) and (Infrastructure is Normal) and (Transportation is Normal) then (Neighbourhood assessment is bad)*", the proposed fuzzy system suggests that these input values correspond to a value of 51.6 for the neighbourhood_assessment crisp output. The Rule Screen Interface and Surface Screen Interface of the building assessment Fuzzy Logic Model is shown in Figs. 6.3 and 6.4.

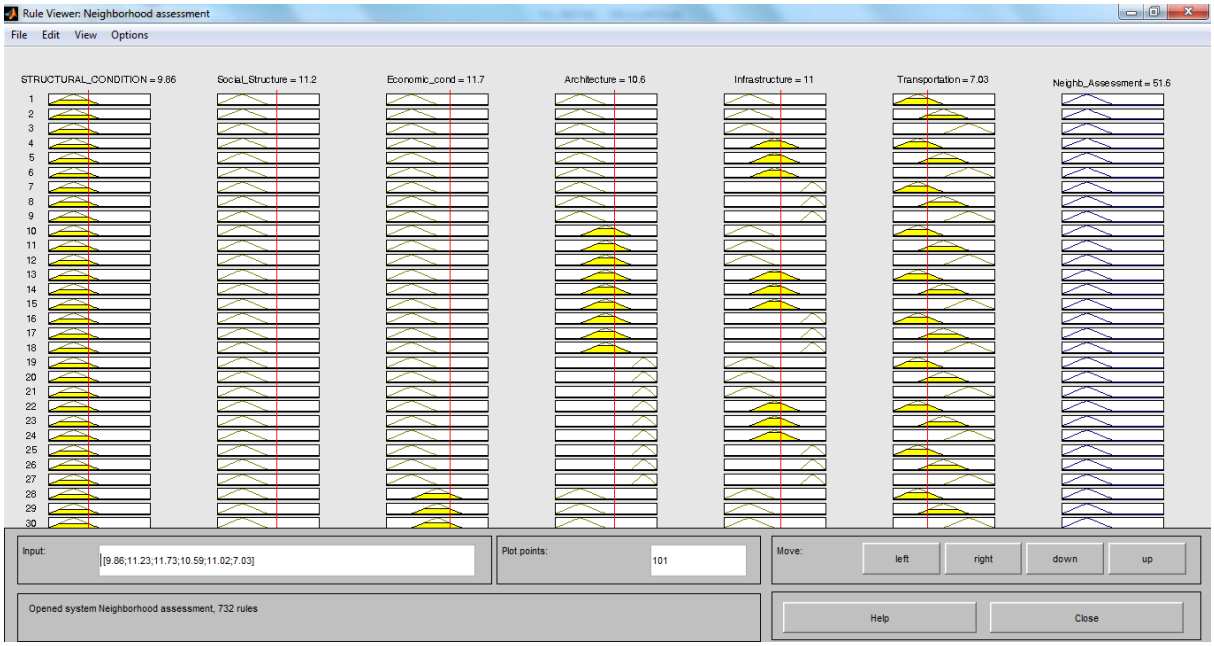


Figure 6.3 Neighbourhood Assessment Rule Screen Interface

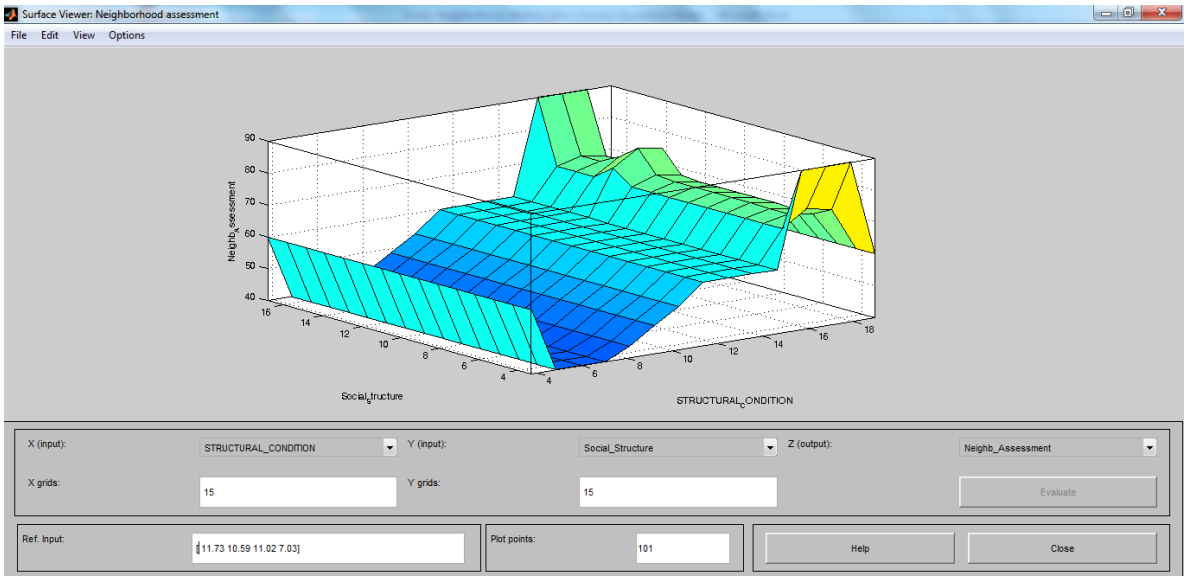


Figure 6.4 Neighbourhood Assessment Surface Screen Interface

The input parameters of the Urban Regeneration Fuzzy system were the following:

- Building Assessment: 65.9
- Neighbourhood assessment: 51.6

These values coincide with interventions in the urban regeneration fuzzy system. Based on the fuzzy rule *"If (Building assessment is Repair) and (Neighbourhood assessment is Normal) then (Urban Regeneration is Interventions)*", the proposed fuzzy system suggests that these input values correspond to a value of 117 for the urban regeneration crisp output. The Interface and Surface Screen Interface of the urban regeneration Fuzzy Logic Model is shown in Figs. 6.5 and 6.6.

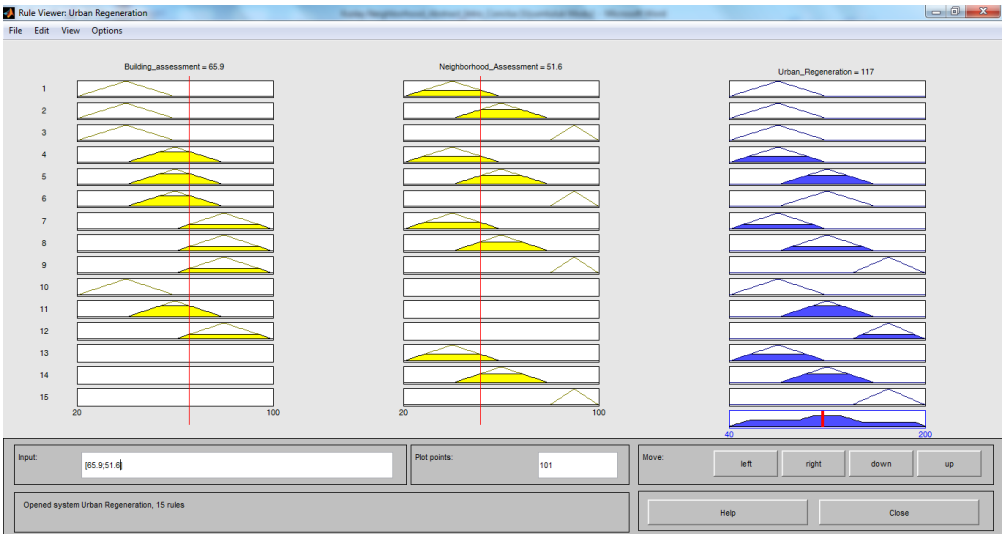


Figure 6.5 Urban Regeneration Rule Screen Interface

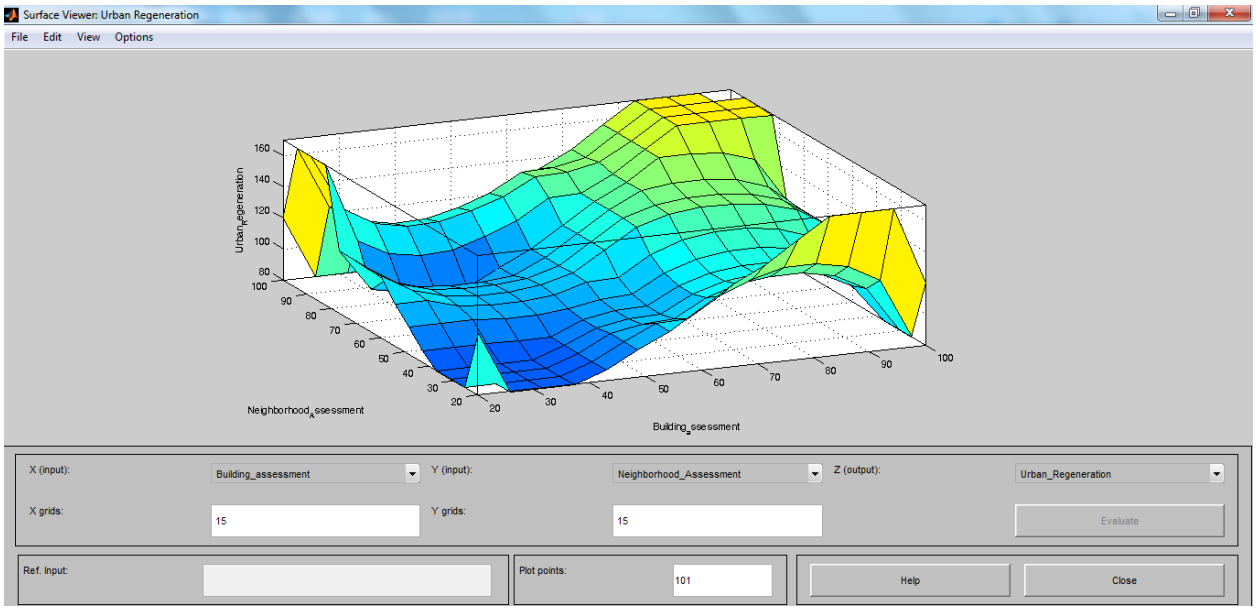


Figure 6.1 Urban Regeneration Surface Screen Interface

CHAPTER 7

CONCLUSION

The main purpose of this study was to show how, by evaluating building and neighborhood development criteria concerning the occupant's prospects, an effective process can be utilized for Urban Regeneration Projects. Different studies have emphasized that it is crucial for the success of the UR projects to see and analyze each site from the point of view of its occupants. How the resident use and feel the neighborhood structures and environment give necessary insights into how a successful urban regeneration project can proceed. What the residents of the Kizilay want to have in their neighborhood, what they want to protect, what they do not want, and what they are in need of, were used as key indicators for the assessment.

This study attempts to understand in a scientific way whether occupants living in a specific area are in need of urban regeneration. Based on expert and occupant opinions, this thesis provides a solution using the Fuzzy Logic Method. Generally, professionals and/or urban regeneration actors make their decisions according to experiences and analysis conducted through site trips and questionnaires. The questionnaire based method, because the use of linguistic terms, raises the potential for misunderstandings. It can be inadequate to understand some forms of information between the meanings of the answers taken from the questionnaires, and the interpretation of these answers by experts. In many situations, in different field of studies, it resulted in uncertainty and was not properly able to reflect quantitative terms.

Its own fuzziness, affects the final results of implemented UR projects. The fuzziness inherent in attempting to understand questionnaire results has been solved through the use of fuzzy theory. Fuzzy Delphi is used as a method that helps to address this 'fuzziness' in UR projects. An approach specifically designed to mathematically represent uncertainty and vagueness and provide formalized tools for dealing with

the imprecision intrinsic to many problems. (Kahraman et al., 2004; Williams, 2003; Zadeh, 1965).

In this case, the inhabitants' responses were controlled by a designed fuzzy logic system. It is crucial to mention that the coefficients taken for the indicators used in FDM are derived from thirty-three professionals, all of whom know and have observed the selected site. They have evaluated the ranking and relationships between all identified indicators from the questionnaires administered at the site. Their professional profile and knowledge about the selected site for URP is of great importance in such a method, since it requires specific knowledge in the fields of engineering, architecture, urban design, city planning for a specific area. In this study there were 8 architects, 8 city planners, 8 civil engineers, 5 building technicians and 4 mapping engineers among the professionals who ranked the indicators. The members of this professional team were 13 from Izmir Katip Celebi university, faculty of Civil Engineering and Architecture, and 20 of them official workers of Bornova Municipality, Department of City Planing and Department of Urban Design.

This research concluded that, according to 50 inhabitants and 33 professionals, interventions are indeed needed over the building and neighbourhood scale. In Izmir-Kızılay Neighbourhood the overall satisfaction level is low mostly because of the low quality of construction and a lot of property problems. The facades of the buildings show signs of structural instability and the mix used materials, illegal interventions by the owners show a poor level of architectonical values and poor levels of physical conditions and energy efficiency. All this problems directly indicate the happiness of the residents. In neighbourhood scale the level of satisfaction is higher because of good proximity to amenities that are provided, like schools, religion assets and green areas and the overall quietness that characterize the Kızılay. Despite this, in some aspects such as problems in infrastructure, transportation, health and safety, and low economy conditions are main factors to decrease the overall happiness in this area.

Sharing these data with the stakeholders responsible for urban regeneration can help them determine the best possible scenario for implementation of urban regeneration projects leaded by the voice and satisfaction of residents.

Through this study, the efficiency of interpreting questionnaire results is much improved through Fuzzy Delphi Method.

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APPENDIX A

KIZILAY MAHALLESİ DURUM DEĞERLENDİRMESİ

Anketi Yapan: ..... **Tarih:** ..... / ..... / 2015

GENEL BİLGİLER

Binanız kaç yaşında?
A) 0-5 B) 6-10 C) 11-15 D) 16-25 E) 26-40 F) 41 ve üzeri

Binanızda kaç konut bulunmaktadır?
A) 1 B) 2 C) 3 D) 4 E) 5 ve üzeri

Dairenizde kaç oda var?
A) 1 B) 2 C) 3 D) 4 E) 5 ve üzeri

Neyle ısınıyorsunuz?
A) Soba B) Klima C) Doğalgaz D) Isıtıcı E) Kalorifer

Dairenizde kaç klima bulunmaktadır?
A) 0 B) 1 C) 2 D) 3 E) 4 ve üzeri

Sıcak suyu ne şekilde temin etmektesiniz?
A) Güneş Enerjisi B) Elektrikli Isıtıcı/Şofben C) Kombi D) Soba E) Diğer

1	2	3	4	5
Kesinlikle Katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle Katılıyorum

YAPIYLA İLGİLİ DEĞERLENDİRMELER

1 BİNANIZIN YAPISAL GÜVENLİĞİ
Oturduğum binanın depreme dayanıklı olduğunu düşünüyorum: _____
Oturduğum binanın yangın açısından güvenli olduğunu düşünüyorum: _____

2 BİNANIZIN MİMARİ ÖZELLİKLERİ
Binamın mimarisini estetik buluyorum: _____
Binam fonksiyonel olarak ihtiyaçlarımı karşılamaktadır: _____
Binamın basit onarım/tadilata ihtiyacı olduğunu düşünüyorum: _____
Binamın kapsamlı onarım/tadilata ihtiyacı olduğunu düşünüyorum: _____
İhtiyaçlarımı karşılamak için binamda sonradan bazı düzenlemeler yaptım: _____

3 BİNANIZIN/KONUTUNUZUN FİZİKSEL DURUMU ve ENERJİ YETERLİLİĞİ
Konutumda rutubet problemi yaşamıyorum: _____
Konutumda ısınma problemi yaşamıyorum: _____
Konutumda soğutma problemi yaşamıyorum: _____
Konutumda ses yalıtımının yeterli olduğunu düşünüyorum: _____
Konutumda ısı yalıtımının yeterli olduğunu düşünüyorum: _____

Konutumda gün ışığından yeterince yararlanabiliyorum: _____

4 MÜLKİYET DURUMU

Binamda ruhsat problemi yaşıyorum: _____
Yapım için imar affından yararlandım: _____
Binamdaki diğer konut sahipleriyle ortak karar alabiliyoruz: _____

MAHALLEYLE İLGİLİ DEĞERLENDİRMELER

1 BİNALARIN YAPISAL DURUMU

Mahallemizdeki binaların genel olarak depreme dayanıklı olduğunu düşünüyorum: _____

2 Kızılay Mahallesinin SOSYAL VE EKONOMİK YAPISINI değerlendirebilir misiniz?

Mahallemizdeki sosyal yapının iyi olduğunu düşünüyorum: _____
Mahallemizdeki komşuluk ilişkileri iyi olduğunu düşünüyorum: _____
Mahallemizde nüfus yoğunluğu fazladır: _____
Mahallemizde yeterli yeşil alan bulunmaktadır: _____
Mahallemizdeki dinin tesisler yeterlidir: _____
Mahallemizdeki eğitim tesisleri yeterlidir: _____
Mahallemizde alışveriş alanlarına kısa sürede erişebiliyorum: _____
Mahallemizdeki ailelerin çoğunluğunun en azından orta gelir seviyesine sahip olduğunu düşünüyorum: _____
Mahallemizde sosyal yardım alan önemli sayıda aile bulunmaktadır: _____

3 Kızılay Mahallesindeki binaların MİMARİ ÖZELLİKLERİNİ değerlendirebilir misiniz?

Mahallemizdeki binaların az katlı olmasını olumlu buluyorum: _____
Mahallemizdeki binaların mimarisini estetik buluyorum: _____
Mahallemizdeki binaların basit onarım/tadilata ihtiyacı olduğunu düşünüyorum: _____
Mahallemizdeki binaların kapsamlı onarım/tadilata ihtiyacı olduğunu düşünüyorum: _____
Mahallemizdeki binaların estetik ve kaliteye sahip olduğunu düşünüyorum: _____

4 Kızılay Mahallesinde ALTYAPI DURUMUNU değerlendirebilir misiniz?

Mahallemizdeki su hizmetlerinin yeterli olduğunu düşünüyorum: _____
Mahallemizdeki yağmur suyu toplama sisteminin yeterli olduğunu düşünüyorum: _____
Mahallemizdeki kanalizasyon sisteminin yeterli olduğunu düşünüyorum: _____
Mahallemizdeki internet hizmetlerinin yeterli olduğunu düşünüyorum: _____

5 Kızılay Mahallesinin ULAŞIM DURUMUNU değerlendirebilir misiniz?

Mahallemizdeki toplu taşıma imkanlarının yeterli olduğunu düşünüyorum: _____
Mahallemizdeki otopark imkanlarının yeterli olduğunu düşünüyorum: _____
Mahallemizdeki trafik işaret ve ışıklarının yeterli olduğunu düşünüyorum: _____
Mahallemizdeki yaya yollarının/kaldırımların yeterli

olduğunu düşünüyorum: _____
Mahallemizdeki yol kalitesinin yeterli olduğunu düşünüyorum: _____

6 Kızılay Mahallesinin SAĞLIK ve GÜVENLİK durumunu değerlendirebilir misiniz?

Mahallemizdeki temizlik hizmetlerinin yeterli olduğunu düşünüyorum: _____
Mahallemizdeki sağlık tesislerinin yeterli olduğunu düşünüyorum: _____
Mahallemizin güvenli olduğunu düşünüyorum: _____
İtfaiye ve ambulans gibi acil durum araçlarının mahallemiz içindeki ulaşabilirliklerinin iyi olduğunu düşünüyorum: _____

KENTSEL DÖNÜŞÜMLE İLGİLİ DEĞERLENDİRMELER

1 Kızılay Mahallesi Kentsel Dönüşüm Projesinde HALK KATILIMINI değerlendirebilir misiniz?
Katılım Süreçlerinin yeterli olduğunu düşünüyorum _____
Kentsel Dönüşüm Projesi ile ilgili yeterli toplantı yapıldığını düşünüyorum_____

2 Kızılay Mahallesi Kentsel Dönüşüm Projesi FİNANSAL /MALİYET Sürecini değerlendirebilir misiniz?
Arsa/Bina sahiplerinin ekonomik olarak proje maliyetini kendi başlarına gerçekleştiremeyeceğini düşünüyorum _____
Kira Yardımı Yapılması gerekiğini düşünüyorum _____

3 MAHALLENİN ÖZELLİKLERİ ve KİMLİĞİNİN korunmasını değerlendirebilir misiniz?
Mahallenin Dokusu ve Kimliğinin Korunması gerektiğini düşünüyorum_____
Farklı konut tiplerinde yaşayabileceğimi düşünüyorum _____

4 Kızılay Mahallesi Kentsel Dönüşüm Projesi PLANLAMA VE GERÇEKLEŞTİRME SÜREÇLERİNİ değerlendirebilir misiniz?
Kentsel Dönüşüm Alanı İlan Edilerek Devlet(TOKİ)yardımı ile yapılması gerektiğini düşünüyorum____
İmar Hakları Artırılarak Özel Sektörün yapması gerektiğini düşünüyorum _____

İzmir Büyükşehir Belediyesi Öncülüğünde Gerçekleştirilmesi gerektiğini düşünüyorum_____

CURRICULUM VITAE

Personal information

First name(s) / Surname(s)	**Romjana Çupi**
Address(es)	Orion, Kompleksi Magnet, Rr.Artan Lenja,Tirana, Albania
Mobile phone(s)	+355 69 632 4285
E-mail	romianacupi@gmail.com
Nationality	Albanian
Date of birth	23 October, 1990
Gender	Female

Work experience

	Assistant Architect at Kontakt shpk
Dates	August 10, 2013 _ February 10, 2014
Main activities and responsibilities	Architectural design, Interior Design, Llandscape design.
Name of employer	Dipl-Ing. Fatmir Bektashi
Address of employer	Frosina Plaku Str 40 Al-1023 Tirana, Albania
Type of business or sector	Design and Construction Company

Work experience

	Internship in Molinaro Architettura Studio
Dates	1 July-2 August 2012
Main activities and responsibilities	Working in interior design, Urban Planning and Housing (Iraq City Project Proposal), reconstruction, 3D Modelling.
Name and address of employer	Arch.Daniele Molinaro
Address of employer	Str. Palazzina 33, di Cornedo Vicentino, Vicenza, Italy
Type of business or sector	Design Studio

Education and training

Dates

2015: Master of Science Degree in Urban Regeneration, Katip Çelebi University (Continuing)
2014: Studio Design Course as a special Student at Yaşar University in İzmir for Fall Term

2014: Accepted in Middle East Technical University (METU), special Student, Spring Term

2013: KNAUF training program.
2013: ITALCOL training program, construction materials.
2013: Bachelor of Architecture Program, Epoka University
2012: L'Aquila Workshop, MUSSA, Italy
2012: Internship at Molinaro Architettura Studio. S.r.l, Vicenza, Italy
2012: ICAUD, First International Conference on Architecture and Urban Design (Organizer)
2011: Internship in Construction Field, "Turgut Ozal" complex construction
2009: Accepted in ``Epoka University`` for Bachelor of Architecture Degree
2004-2009: High school ``Mehmet Akif `` college in Tirana
2003-2004: `` Nëna Mbretereshe Geraldine``, secondary school.
1996-2003: I started school 6 years old. My elementary school name was ``31 Korriku``.

Level in national or international classification

2016: Accepted paper for publication in Elsevier's Procedia with coauthor Ass.Prof.Dr.Yakup Egercioglu, :`` Resident's Satisfaction to Evaluate Residential Environment before Urban Regeneration Case Study: Kizilay Neighborhood, Izmir.
2015: Certificate of Appreciation for the contribution in designing the future of Bornova Municipality, Izmir
2013: Participant in Albelettrica Lightning Design Competition
2012: Second prize in Devolly Hydro Power Plan - Model Competition (Group work_2nd Prize)
2012: Participant in the "First Balkan Congress of Students and Work"
2009: The 36-th place in ``Epoka University`` entrance Exam (national competition)

Other accomplishments

2014: Member of Brain Storm Organization
2013: Certificate of Achivement, Rank-1st in Bachelor Program in Architecture
2011: Architecture Department Representative at Epoka University Student Council
2003: 3-rd place in Dibra circle math competition.
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Mother tongue(s) Albanian

Other language(s) English IELTS certificate, Turkish, Italian, a bit Spanish and German.

Self-assessment	Understanding				Speaking				Writing	
European level (*)	Listening		Reading		Spoken interaction		Spoken production			
Language- English	C2		C2		C2		C2		C2	.
Language- Turkish	C2		C2		B2		B2		B2	
Language- Italian	C1		C1		B2		B2		B2	
Language- Spanish	A2		B1		A2		A2		A2	

(*) Common European Framework of Reference for Languages

Social skills and competences	-Team Spirit, active and optimistic participation gained through my High School and University education -Leadership, a characteristic skill of mine and developed through my life experiences in group works and in University Student Council -Collaborative, communicative, easily adapted with people of different cultures gained through my national and international education, workshops and internships. -I like helping people and do my best in protecting nature. Giving my contribution in society is one of my intentions. I have done voluntary works in city greenery. -Curious, hardworking, focused till I reach my goals.
Computer skills and competences	**2015:** MATLAB **2012:** QGIS Mapping Program, Cinema 4D, Rhinoceros 3D Modeling, Illustrator **2011:** 3D Max, Certificate in AutoCAD 2D+3D **2010:** Google Sketch Up, Photoshop **2007:** Certificate in Microsoft Office Access and Front Page. **2006:** 1 term curse for Pascal programme. **2004:** Certificate in Microsoft Office Word and Excel, Power Point.
Artistic skills and competences	I like to explore the nature and the way cities develop. I am good at drawing and taking photos.
Hobbies	Garden Landscaping, 3D Model making, rafting, driving, skiing, travelling, writing, painting, listening music, swimming and making jokes. I am keen on math, on reading and writing.
Driving licence	I hold a driving licence, for B category of vehicle.
References	Available on request

List of Publications:

Egercioglu, Y., & **Çupi R.** (2015). *Resident's Satisfaction to Evaluate Residential Environment before Urban Regeneration Case Study: Kizilay Neighborhood, Izmir.* Paper presented at ABRA International Conference on Quality of Life, 09 - 14 December 2015, Izmir, Turkey.de, Serbia.