

**İZMİR KATIP CELEBI UNIVERSITY
GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COMBINING AHP AND GIS METHODS IN SITE SELECTION
FOR SUSTAINABLE URBAN REGENERATION PLANNING
MODEL; CASE STUDY OF KARŞIYAKA, İZMİR, TURKEY**



M.Sc. THESIS

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Department of Urban Regeneration

Thesis Advisor: Ayşe KALAYCI ÖNAÇ

NOVEMBER 2019

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SÜRDÜRÜLEBİLİR KENTSEL DÖNÜŞÜM PLAN MODELİ İÇİN
ALAN SEÇİMİNDE AHS VE GIS YÖNTEMLERİNİN
KOMBİNASYONU; İZMİR KARŞIYAKA ÖRNEĞİ

YÜKSEK LİSANS TEZİ

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To my family,



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TABLE OF CONTENTS

	<u>Page</u>
FOREWORD	vi
TABLE OF CONTENTS	vii
LIST OF TABLES	ix
ABBREVIATIONS	xii
ÖZET	xiv
1. INTRODUCTION	1
1.1 Research Problem	3
1.2 Scope And Objective of The Study	4
1.3 Structure of the Thesis	5
2. THEORETICAL FRAMEWORK	7
2.1 Urban Regeneration and Historical Evolution.....	7
2.1.1 The concept of urban regeneration	7
2.1.1.1 Physical and environmental regeneration.....	11
2.1.1.2 Social regeneration	12
2.1.1.3 Economic Regeneration.....	14
2.1.2 Historical evolution of urban regeneration in the world.....	16
2.1.3 Historical evolution of urban regeneration in Turkey	20
2.2 Sustainability, Sustainable Urbanization and Sustainable Urban Regeneration	22
2.2.1 Sustainability and sustainable development	22
2.2.2 Sustainable urbanization.....	24
2.2.3 Sustainable urban regeneration.....	30
2.2.4 Legal basis of urban regeneration in Turkey.....	31
2.2.4.1 Law no. 6306 [49]	31
2.2.4.2 Law no. 3194 [50]	34
2.2.4.3 Spatial planning regulation [51]	35
2.2.4.4 Planned areas zoning regulation [52]	36
2.2.4.5 Law no. 5393 [53]	37
2.2.4.6 Law no. 2985 [55]	37
2.2.4.7 Law no. 5366 [56]	38
3. LITERATURE REVIEW	40
3.1 Researches on Urban Regeneration	40
3.2 Researches on Sustainable Urban Regeneration.....	44
3.3 Researches on GIS and AHP	47
4. MATERIALS AND METHOD	49
4.1 Materials	49
4.1.1 Description of study area	49

4.1.1.1 Population and demography of study area	56
4.1.1.2 Urban social facility areas in Karşıyaka	65
4.1.1.3 Planning process for study area	66
4.1.2 Materials used for sustainable urban regeneration area planning model study	82
4.1.3 Other Materials	84
4.2 Methods	86
4.2.1 Analytic hierarchy process (AHP).....	88
4.2.1.1 Determination of criteria and criteria subclasses.....	90
4.2.1.2 Determination of suitability values of criteria sub-classes and preparation of data layers for these suitability values with GIS	90
4.2.1.3 Determination of criteria weights using analytical hierarchy process	91
4.2.2 Transfer of criteria weights to maps and the generation of conformity maps with ARCGIS-weighted overlay tool.....	93
4.2.3 Determination of causes that require urban regeneration on the basis of neighborhoods and determination of intervention forms	95
4.2.4 Examination of the priority urban regeneration area and its problems and the development of sustainable urban regeneration plan model for this area	95
5. FINDINGS	96
5.1 Determination of Criteria and Criteria Sub-classes	96
5.2 Determining The Suitability Values Of Criteria Sub-Classes And Preparation Of Data Layers For These Suitability Values With GIS	96
5.2.1 Geological status	97
5.2.2 Distance to primary schools and green areas	99
5.2.3 Proximity to natural gas lines	103
5.2.4 Crime rate	105
5.2.5 Number of suicide attempts.....	107
5.2.6 Number of suicides.....	109
5.2.7 Building ages	111
5.2.8 Building density.....	113
5.3 Findings On Criterion Weights.....	115
5.4 Findings on Priority Analysis of Urban Regeneration Areas	117
5.5 Determination of Causes that Require Urban regeneration by Neighborhood and Determination of Intervention Forms.....	119
5.6 Examination of the priority urban regeneration area and its problems and development of sustainable urban regeneration plan model for this area	122
6. ASSESSMENT AND CONCLUSION	127
6.1 Summing Up.....	127
6.2 Achievements and Shortcomings	144
6.3 Recommendations for the Next Studies	144
REFERENCES.....	147
APPENDIX 1	153
CURRICULUM VITAE.....	172

LIST OF TABLES

	<u>Page</u>
Table 2.1. Keystones of the Evolution of Urban Regeneration [31].....	19
Table 2.2. Characteristics of Sustainable Communities [44].....	29
Table 2.3. Key Aspects of Sustainable Urban Regeneration [31].....	31
Table 4.1. Climatic Data for Karşıyaka [95].....	50
Table 4.2. Population distribution in Izmir by districts [79].....	50
Table 5.1. Criteria and Criteria Sub-classes for Determining Urban regeneration Areas.....	96
Table 5.2. Suitability Values of Criteria Sub-classes Related to Geological Status Criteria.....	97
Table 5.3. Suitability Values of Criteria Sub-classes Related to Access Distance to 99	
Table 5.4. Suitability Values of Criteria Sub-classes Related to Access Distance to Green Areas.....	101
Table 5.5. Suitable Values of Criteria Sub-classes Related to Proximity to Natural Gas Line.....	103
Table 5.6. Suitability Values of Criterion Sub-classes Related to Crime Rate Criterion.....	105
Table 5.7. Suitability Values of Criterion Sub-classes Related to Suicide Attempts Criterion.....	107
Table 5.8. Suitability Values of Criterion Sub-classes Related to Number of Suicides Criterion.....	109
Table 5.9. Suitability Values of Criterion Sub-classes Related to Building Age Criterion.....	111
Table 5.10. Suitability Values of Criterion Sub-classes Related to Building Density Criterion.....	113
Table 5.11. Determination of Criterion Weights Stage 1 and 2.....	116
Table 5.12. Determination of Criterion Weights Stage 3.....	117
Table 5.13. Reasons Requiring Neighborhood-Based Transformation and Forms of Intervention.....	119
Table 6.1. Sustainable Urban Regeneration Action Plan.....	132
Table 6.2. Objective Quality of Life Evaluation Standards in Community Level” in TUBA [99].....	145

LIST OF FIGURES

	<u>Page</u>
Figure 2.1. The Concept of Sustainability [68].....	23
Figure 3.1. Process and key players of an urban regeneration project [62].....	43
Figure 4.1. Karşıyaka district and Neighboring Districts [80].....	52
Figure 4.2. District neighborhoods and boundaries of Karşıyaka Province [64].....	57
Figure 4.3. Karşıyaka in 1:100.000 scale Environmental Plan for İzmir-Manisa Planning Zone [90].....	67
Figure 4.4. Karşıyaka in 1:25000 scale Environmental Plan for İzmir Metropolitan Area [10].	68
Figure 4.5. Current Master Plans for Karsiyaka District [85].....	69
Figure 4.6. Karşıyaka 1st Phase Master Development Plan [10].....	71
Figure 4.7. Boundaries of Karşıyaka 2nd Phase Master Development Plan [91].....	72
Figure 4.8. Karşıyaka 2nd Phase Master Development Plan [91].	73
Figure 4.9. Land Use Analysis in the 2nd Phase Master Development Plan for Karşıyaka [62].....	74
Figure 4.10. Geological Survey Analysis [91].....	79
Figure 4.11. Natural Gas Lines Analysis [91].....	80
Figure 4.12. Suitability for Settlement Analysis of Örnekköy Urban regeneration and Development Area in Geological Survey [10].....	81
Figure 4.13. The Area for which Data is obtained in the Study Conducted to Determine the Suitable and Priority Areas to implement Urban regeneration Project.	82
Figure 4.14. Satellite Images of Karsiyaka District and its Surroundings Obtained on Various Dates [94].	85
Figure 4.15. Determination of Criterion and Criteria Subclasses.	87
Figure 4.16. A simple AHS decision hierarchy composed of objectives, criteria and options [98].	89
Figure 4.17. Pairwise Comparison Example [106].	92
Figure 4.18. Calculation of column totals [97].	92
Figure 4.19. Rows divided by the sum of the columns [97].	93
Figure 4.20. Determination of criteria Weights [97].....	93
Figure 4.21. Conversion of map sheets prepared for criteria and criteria sub-classes with Model Builder to rasters.....	94
Figure 4.22. Entering the criteria weights determined using AHP in the Weighted Overlay Tool Table and Forming the Suitability Analysis Map.....	94
Figure 5.1. Urban Regeneration Requirement Analysis According To Geological And Geotechnical Survey in Karşıyaka District.	98

Figure 5.2. Urban Regeneration Requirements Analysis According to the Proximity to Primary Schools in Karşıyaka District.....	100
Figure 5.3. Urban Regeneration Requisition Analysis According to Proximity to Parks in Karşıyaka District.....	102
Figure 5.4. Urban Regeneration Requirement Analysis According to Natural Gas Infrastructure in Karşıyaka District.....	104
Figure 5.5. Urban Regeneration Requirement Analysis According to Natural Crime Rates in Karşıyaka District.....	106
Figure 5.6. Urban Regeneration Requirements Analysis According to the Number of Suicide Attempts in Karşıyaka District.....	108
Figure 5.7. Urban Regeneration Requirements Analysis According to the Number of Suicides in Karşıyaka District.....	110
Figure 5.8. Urban Regeneration Requirements Analysis According to Building Age in Karşıyaka District.	112
Figure 5.9. Urban Regeneration Requirement Analysis According to Building Density in Karşıyaka District.....	114
Figure 5.10. Urban Regeneration Requirement Analysis in Karşıyaka Province...	118
Figure 5.11. Areas With The Highest Priority For Urban regeneration.....	123

ABBREVIATIONS

AHP	: Analytic Hierarchy Process
GIS	: Geographic Information Systems
TÜİK	: Turkey Statistics Institute
İMM	: İzmir Metropolitan Municipality
TUBA	: Turkey Science Academy
UN	: United Nations
TEA	: Turkish Employment Agency (İŞKUR)
SMEDO	: Small and Medium Enterprises Development Organization (KOSGEB)

COMBINING AHP AND GIS METHODS IN SITE SELECTION FOR SUSTAINABLE URBAN REGENERATION PLANNING MODEL; CASE STUDY OF KARŞIYAKA, İZMİR, TURKEY

ABSTRACT

Urban regeneration practices, which started in the 1990s in our country, continue at an increasing speed. But; In urban regeneration activities carried out outside the disaster areas, no site selection studies are performed. While the city parts have different problems; spatial identification of which problems exist in which part of the city, prioritizing these issues, identifying areas requiring priority and to put forward the order emerges as a method that will increase the efficiency of urban regeneration practices and provide a rational basis for site selection.

In this study; Using the Analytical Hierarchy Process (AHP) and Geographical Information Systems (GIS) together, nine location selection criteria have been determined by examining the problems that require urban regeneration in line with the data that can be obtained for Karsiyaka district of Izmir. The priorities of these criteria with respect to each other have been put forward by the paired comparison tables of AHS method, then the criteria weights of the AHS method have been determined with the matrices. Spatial distribution maps were prepared with the help of GIS tool. After converting these maps into raster format, the criteria weights were entered and overlapped with GIS tool. In the results of working; areas requiring urban regeneration emerged as priorities, problems of these areas tabulated according to spatial distribution analysis and determined which types of social, physical or economic intervention are needed according to the nature of the problems. Finally, an action plan for social, physical and economic goals has been prepared in order to create a sustainable urban regeneration model for these areas requiring urban regeneration.

Keywords: Sustainable Urban Regeneration, Geographical Information System (GIS), Analytic Hierarchy Process (AHP).

SÜRDÜRÜLEBİLİR KENTSEL DÖNÜŞÜM PLAN MODELİ İÇİN ALAN SEÇİMİNDE AHS VE GIS YÖNTEMLERİNİN KOMBİNASYONU; İZMİR KARŞIYAKA ÖRNEĞİ

ÖZET

Ülkemizde 1990'lı yıllarda başlamış olan kentsel dönüşüm uygulamaları günümüzde artan bir hızla devam etmektedir. Ancak; afet alanları dışında yürütülen kentsel dönüşüm çalışmalarında herhangi bir yer seçim çalışması yapılmamaktadır. Kent parçaları farklı sorunlara sahipken; kentin hangi parçasında hangi sorun ya da sorunların bulunduğu mekânsal olarak ortaya konulması, bu sorunların önceliklendirilmesi, öncelikli kentsel dönüşüm gerektiren alanların belirlenmesi ve bu alanların hangi sıra ile ve hangi müdahale yöntemi ile ele alınması gerektiğinin ortaya konulması, kentsel dönüşüm uygulamalarının verimliliğini artıracak ve yer seçimine rasyonel dayanak sağlayacak bir yöntem olarak ortaya çıkmaktadır.

Bu çalışmada; Analitik Hiyerarşi Süreci (AHS) ve Coğrafi Bilgi Sistemleri (CBS) birlikte kullanılarak, İzmir ili Karşıyaka ilçesi için elde edilebilen veriler doğrultusunda, kentsel dönüşümü gerektiren sorunlar irdelenerek dokuz adet yer seçim kriteri belirlenmiştir. Bu kriterlerin birbirlerine göre öncelikleri AHS yönteminin ikili karşılaştırma tabloları ile ortaya konulmuş, sonrasında AHS yöntemi matrisleri ile kriter ağırlıkları belirlenmiştir. CBS aracı yardımı ile her bir kriterle ilişkin mekânsal dağılım haritaları hazırlanmıştır. Bu haritalar raster formatına dönüştürüldükten sonra kriter ağırlıkları girilerek yine CBS aracı ile karşılaştırılmıştır. Çalışma sonucunda; kentsel dönüşüm gerektiren alanlar önceliklendirilmiş olarak ortaya çıkmış, bu alanların sorunları mekânsal dağılım analizlerine göre tablolatılmış, sorunların niteliğine göre sosyal, fiziksel ya da ekonomik müdahale biçimlerinden hangisi ya da hangilerine ihtiyaç duyduğu belirlenmiştir. Son olarak kentsel dönüşüm gerektiren bu alanlar için sürdürülebilir kentsel dönüşüm modeli oluşturmak adına sosyal, fiziksel ve ekonomik hedeflere yönelik eylem planı hazırlanmıştır.

Anahtar Kelimeler: Sürdürülebilir Kentsel Dönüşüm, Coğrafi Bilgi Sistemleri (CBS), Analitik Hiyerarşi Süreci (AHS).

1. INTRODUCTION

Rural-to-urban migration has accelerated throughout the world after industrial revolution, and has caused uncontrolled growth of cities, creating unplanned urbanization in cities without sufficient infrastructure preparation. While all the European cities ruined in World War 2 were being rebuilt, our country couldn't have prepared zoning plans for organized settlement due to economic incapacity save for a few cities, and the migration reality, which has accelerated in the 1950s, has resulted in illegal housing zones ever-growing on the outskirts of the city after the 1970s. These areas were legalized through reclamation zoning plans. Due to deficiencies in legislation, narrow streets have emerged in the areas that have simultaneously grown, or rather apartmentized, with zoning plans, high-rises have appeared in areas without geological survey, settlements have appeared in fertile agricultural lands, stream beds, and basins, while reinforcement areas didn't realize at a sufficient level to meet people's needs, again due to deficiencies in legislation. Therefore our cities have become piles of buildings which do not meet the needs of city-dwellers [1].

At this point came the concept of "Urban regeneration". Areas subject to urban regeneration can be old or neglected areas that somehow has been left out of current plans such as former central business districts that have fallen from grace, urban protected areas, unhealthy and illegal buildings within the city, and illegal housing zones, or urban regeneration applications can be implemented to remove the debris after disasters such as fires or earthquakes or prevent potential hazards of such disasters [2].

In the broadest description, urban regeneration means to revitalize urban areas that have worn off, abandoned, lost its value, or ruined over time for various reasons to match socio-economic and physical conditions of the time, and regaining them for the city [3].

Problems occurring in the city such as environmental damage, resource depletion, urban sprawl, pollution of natural resources, deterioration of social and economic structures, and decline in quality of life has introduced new concepts such as sustainable urban development and sustainable planning, along with urban regeneration.

Sustainable urban development aims to achieve the balance between today's and future cities in terms of providing urban residents with better quality of life [4].

Urban sustainability basically deals with;

- Climate Change and Pollution
- Land Use and Urban Sprawl
- Transportation and Motor Vehicle Dependence
- Energy and Resource Use
- Economic Inequality and Poverty

Common goals of urban regeneration and sustainable urbanization has gave birth to the concept of "Sustainable Urban regeneration", where two concepts are blended together. Even though sustainable urban development dates back to 1970s, it was not applied until 1990s and not handed as a government policy for urban regeneration [5].

Unlike urban regeneration projects which are basically focused on economic and physical issues, sustainable urban regeneration projects deal with the three fundamental aspects of sustainable development by considering social, economic and environmental issues in current built-up areas [6].

Along with concepts of urban regeneration and sustainable urban regeneration, aspects such as which parts of the city these practices will be applied, to solve which problems, and through which kind of urban regeneration, as well as prioritization of said areas lie at the basis of this study.

Site selection studies are utilized to provide solutions in different disciplines in estate development studies, such as choosing the best investment areas, choosing best hospital areas, etc.

Yet in urban regeneration implementations best site cannot be chosen; instead it is applied in an area chosen by investor from among the sites that need to get their building stock renewed, in areas determined to be problematic by local administration, or in disaster areas.

Today, in consideration that cities are saturated and even have more settlement and population than manageable, it becomes clear that our cities need to be handled through preparation of urban regeneration plans instead of new zoning plans. As urban regeneration is interpreted as physical renovation, and demolition and rebuilding in our country, local administrations do not focus on holistic strategic urban regeneration plans, but when social, economic, environmental, and structural problems are taken into consideration, almost every last area in our cities need intervention [7].

This study has applied a trial method to display location selection for urban regeneration areas and types of intervention. In this method featuring Analytical Hierarchy Process along with Geographical Information Systems (GIS), the criteria to determine a part of a city as an area for urban regeneration, or in other words to become a sustainable city, through AHP, a multi-criteria decision-making technique, have been weighted, these problems and sub-problems related to these have been mapped through GIS on district basis, and finally which urban problem or problems are encountered in which area, priority order for said areas in terms of need for urban regeneration, and what kind of an intervention is required has been determined by superposing these criteria maps over the weights acquired through AHP.

1.1 Research Problem

All over our country, urban regeneration projects are implemented as standardized projects in all problematic areas, and these projects usually result in failure due to the fact that area based urban problems are ignored [8].

Starting from the hypothesis of this study, which is “in order for sustainable urban regeneration projects to succeed, they must be special projects taking environmental and social issues into consideration and answering needs and problems of each area”,

the following questions have been tried to be answered for the sample area determined for the purposes of this study:

- What are the problems requiring urban regeneration in cities?
- How we spatially express which section of the working area has which social, physical, and economical problems?
- Which are the priority areas for urban regeneration based on urban problems?
- Which urban regeneration interventions are required in determined urban regeneration areas based on the problems of the area?
- What are the issues to be addressed in planning scale in order for projects to be implemented in determined urban regeneration areas to become sustainable urban regeneration practices?

1.2 Scope And Objective of The Study

While urban regeneration applications have become popular in Turkey after 1980, the first urban regeneration application in Izmir was started in 2010. When population progress is examined, it can be observed that the city population has been inclined to grow steadily, but growth rate has exponentially increased after 1950s. Urban population within total population of Izmir has surpassed rural population for the first time in 1960s; after this point, rural population percentage has been constantly decreasing, and urban population has soared up and has exceeded 90% line today [9].

Problems encountered regarding the increase in shanty areas and population of shanty areas and threatening the healthy and liveable environment in Izmir, as well as the difficulties in creating new settlement areas due to compact yet unplanned urbanization model in the city has created an urgency to renew and reintroduce the shanty areas in the city through planned works. Early urban regeneration projects in Izmir have been planned accordingly for Bayrakli and Kadifekale districts, two of the oldest and largest shanty areas in Izmir. Kadifekale Recreation Project to cleanse Kadifekale shanty area entirely and convert it into "Aegean Civilizations Historical Park" recreation area was the very first implemented urban regeneration project [9].

In the focal point of this study, Karsiyaka County, first urban regeneration works are to be conducted in the area located in Ornekkoy Quarter, on the zone that has been declared Urban regeneration Zone by Izmir Metropolitan City Council with regards to Article 73 of Municipality Law No 5393. Zoning plans of this area have been approved in 2017, but urban regeneration applications hasn't been started yet [10].

While earliest settlements go back as far as Archaic Ages, Karsiyaka has only actually started growing in 1950s and grew dense housing in 1970s and 1980s; urban ageing is one of the outstanding problems in the county. However, plot based transformation continues in northern neighbourhoods with dense shanty areas, and some districts still feature these off grade building stock. Along with these problems, there are districts with social and economic problems as well [10].

In this study, areas with a need for urban regeneration in Karsiyaka, Izmir have been determined with regards to urban problems encountered in these areas and listed in order of priority, and decisions for plans have been produced to ensure sustainable urban regeneration while offering solutions to problems specific to the area

1.3 Structure of the Thesis

This thesis consists of five chapters. Chapter 1 gives an overview of the study, defines the research problem, and presents the scope and method of the study.

Chapter 2 is where the Theoretical Framework is defined; it addresses urban regeneration, sustainability, sustainable development, and sustainable urban regeneration concepts as well as historical development these concepts, and provides literature summary while analysing legal status of urban regeneration in Turkey.

Used materials are defined and methods are explained in detail in Chapter 3. This chapter explains social, physical, and economic data acquired from area of study with tables and maps. AHP method is also addressed, method flow is created, and process to be followed through the flow is explained with visuals and formulas. In sections where problems are to be solved with GIS software ArcGIS, which tools were used for what purpose is explained.

Chapter 4 explains the data acquired through each phase of the processes described in Materials and Method Chapter. This Chapter also defines areas prioritized for

urban regeneration, spatial distribution of problems of the city, and means of intervention, and provides information regarding how these areas should be handled through sustainable urban regeneration zoning plan.

Chapter 5 evaluates findings of the study, develops suggestions for plan decisions about sustainable urban regeneration applications, and offers suggestions for similar future studies.



2. THEORETICAL FRAMEWORK

In this section, the definitions of urban regeneration will be emphasized and the social, physical, and economic aspects of urban regeneration will be discussed. The concepts of sustainability, sustainable urbanization, and sustainable urban regeneration will be discussed and finally, the legislation on urban regeneration in Turkey will be examined.

2.1 Urban Regeneration and Historical Evolution

2.1.1 The concept of urban regeneration

In order to restructure physically, socially, or economically problematic regions of cities, urban regeneration activities are carried out with different methods such as renovation, improvement, and gentrification. In Turkey, the concept of “Urban Regeneration” is often used for the applications put into practice. [11].

Keles (2004) defined this concept, which indicates the whole of actions against urban degradation, as the change of whole or certain parts of a city, the use of another land, or the acquisition of structuring form [12]. In a more comprehensive definition, Akkar (2006) summarized urban regeneration as a set of strategies and actions aimed at improving the economic, social, physical, and environmental conditions of urban spaces that collapsed and deteriorated, through comprehensive and integrated approaches[13].

According to Ozden (2008), the basic principles related to urban regeneration can be listed as follows:

- Urban regeneration is an important tool in achieving sustainable development in cities. In this context, strategies that are important in achieving sustainable development should be among the objectives of urban regeneration. These strategies should be determined on the basis of;

- Enrichment of cultural, urban, and architectural heritage, renovation of open spaces
- Preserving the dimensions of the settlements by separating the intertwined urban functions
- Conservation and restoration of social balance in residential areas
- Improving the quality of public transportation and reducing vehicle use
- Reviving the city centres by organizing activities, the formation of population, attracting the urban population to the centre [14].
- In cities that exhibit a complex structure in socio-economic, physical, and functional terms, the renewal of the urban fabric should be carried out with a certain policy, technique, and method to achieve a dynamic and action-oriented plan.
- In order to successfully finalize the physical developments, regeneration policies should be limited, several criteria should be included in the evaluation of the formation process of policies, and a control mechanism should be established.
- Relations should be established between law, legal struggle, and urban regeneration, these relations should be emphasized in line with the law and legal processes, and necessary policies and programs should be supported with legal processes. Thus, the framework of managerial sustainability should be established.
- Urban regeneration policies should be addressed within a broad range of urban policies. Therefore, urban regeneration projects should be formed with an approach that is compatible with a holistic urban plan and should be associated with other parts of the city.
- Urban regeneration projects should not create social inequality in the city or cause injustice among different income groups and they should not encourage illegal use.

- Urban regeneration should allow communities to repair disruptions within themselves.
- Since the regeneration process improves the quality of life, public participation should be ensured to increase public interest in the city. Therefore, cultural identity, contentment with the region, and the awareness about the function of the region in the urban system should be increased with social participation, the most important phase in the success of regeneration processes.
- A variety of usage should be allowed in the historical centre, new settlements, and nearby environments instead of a standardized use.
- Regeneration without conservation harms urban identity as it is sustained within the framework of social and economic programs within urban regeneration and as most of the collapse zones are part of the urban cultural heritage. Therefore, the basic principle should be "conservation-supported urban regeneration".
- Urban regeneration should lead to the emergence of the original identity of the city instead of destroying it. Therefore, the new functions to be brought to these areas should not be in contradiction with the original identity.
- Since urban regeneration is an important tool in improving the quality of the degraded urban environment, it should also ensure the protection of environmental health [14].

Roberts (2000) defines the concept of Urban Regeneration as “urban regeneration is an integrated and comprehensive 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 (2000) stated five major purposes of urban regeneration;

1. To establish link between urban physical condition and social deprivation
2. To correspond urban needs and demands

3. To obtain economic development and quality of life in urban area
4. To sustain best use of urban land and avoid urban sprawl
5. To show the importance of urban policy implementation and political forces of the day [15].

When the definition of urban regeneration is reconsidered for the purposes stated by Roberts (2000), it is clear that this concept will vary according to;

- the space under consideration,
- the social-cultural-economic-environmental values of the region
- country policies,
- the needs of the city [15].

However, urban regeneration is defined as a comprehensive vision and action that seeks to provide a permanent solution to the economic, physical, social, and environmental conditions of a changing region in order to provide solutions to urban problems [16].

While it is sometimes performed to improve the outdated environment, it can also be used to create a social reinforcement area that the city needs or to carry out economic and social activities in order to solve social problems with social projects and to reduce crime rate in areas where crime rate increases. Therefore, many different definitions have been made since the appearance of the concept of urban regeneration. Nevertheless, it is possible to group this multidimensional process with regard to different approaches as follows: [17]

- Physical and Environmental Regeneration
- Social Regeneration
- Economic Regeneration

2.1.1.1 Physical and environmental regeneration

Inadequate infrastructure, obsolete structures, slum areas, unqualified structures that put pressure on natural resources can be defined as areas requiring physical and environmental urban regeneration [7].

In addition, not only building and infrastructure compose the physical side of regeneration or decline in urban areas, but also land and sites, urban spaces, open spaces and water, transport infrastructure, mass transport systems and environmental quality are the issues of physical regeneration, waiting to find solution. In terms of these issues, the quality, accessibility, suitability and sustainability may be relevant considerations, depending upon the spatial scale of the area being addressed for regeneration and the possible future economic structure envisioned in the programme [18].

Physical regeneration may play at least five different roles in the full regeneration of an area:

- removing constraints;
- leading the change;
- building on opportunities;
- supply side investments;
- integrated socio-economic and physical renewal [18].

Beside the physical conditions, since in many senses urban areas can be seen to generate environmental costs such as excessive consumption of energy, the inefficient use of raw materials, the neglect of open space, and the pollution of soil, water and the atmosphere which can not be matched by benefits, environmental quality and environmental regeneration should also be recognized as a key and necessary component in urban regeneration [15]. Environmental quality is important both in terms of economic development and perspective of giving residents a good quality of life and expressing confidence in their area. The integral features of the new and old buildings of the urban and natural spaces compose the environmental quality of an area [18].

2.1.1.2 Social regeneration

Cities are places where people from different places live together to be closer to information, social life, urban services, and working areas. This state of “having come from other places” has brought along different lifestyles to the cities. However, the differentiation created by the difficulties of living in the city on human psychology, the physical spaces that are put under pressure by rapid migration and that do not respond to the needs of the citizens cause several social problems [19].

It is estimated that more than half of the world's population lives in cities and one out of every three inhabitants lives in poor areas of cities. The number of people living in the poor areas of cities is over one billion in the world (UN HABITAT, 2009: 3). According to the “State of the World's Cities 2010-2011” report of the United Nations Centre for Human Settlements, the proportion of people living in poor areas of cities between 1990 and 2010 was 32.7% in developing regions, 61% in sub-Saharan African countries, and 28.2% in East Asian countries (UN HABITAT, 2010).

There are social collapse areas in cities due to many different reasons such as high crime rate, lack of education, lack of access to health areas, social and cultural facilities, lack of green spaces, poor quality building stock, and economic insufficiency.

Although there are some basic problems of communities, it is impossible to identify the most common felt problems of people and generalize them to each community. Such a view to social issues can be very restrictive. Therefore, community issues should be expanded and examined in depth for each community [20].

Geddes (1995) argues that in meeting local needs for communities, the challenge is to improve their access, extend social and economic opportunities and develop local services to become more effective.

A comprehensive community regeneration programme in the United Kingdom, deals with complex and interrelated problems to identify the major problems of communities especially in poor and declining urban areas, reveals up eight main problems of communities. These are;

- Welfare to work: Improves new measures to tackle unemployment, educational attainment and social deprivation.
- Education Action Zones: Supplies further information to partnership.
- Capital Receipts: Improves measures to tackle housing need or promote housing-related regeneration.
- Crime: Intends to give local authorities and the police a joint responsibility to develop local partnership to tackle and prevent crime in consultation with the local community and establishes a sense of community and builds capacity in the voluntary sector.
- Drugs: Co-ordinates action at every level; nationally, regionally and locally and provides an opportunity for local services and local people to work together through Drug Action Teams.
- Ethnic minorities: Includes specific offences to tackle racial violence and harassment, develops a sense of community and builds capacity in the voluntary sector and targets economic development and training initiatives on such communities.
- Public Health: Contributes to improvements in public health through developing a new health strategy related to social conditions such as poverty, poor housing, unemployment and a polluted environment as well as by developing partnership with local health bodies to promote healthier lifestyles and improve access to community-based health facilities.
- Vulnerable Groups: Deals with vulnerable groups in the community such as homeless people, frail elderly people and those with mental illness and develops targeted housing projects to promote communitybased care and greater quality of life for these groups [21].

As it is seen from the combination of these eight main problems, social and community issues are related with various aspects of life. Especially in residential areas it is a very complex and interrelated task to achieve social cohesion and satisfaction in terms of all of these components [22].

In addition, since such spaces reduce the likelihood for the equally important social response of enhancing quality of life for residents in urban area and lead to inequality in utilizing leisure and social activities which will be available for anyone with adequate financial resources and inaccessible for poor, it is also necessary to offer urban area with leisure activities and public spaces where everyone can spend time equally [20].

2.1.1.3 Economic Regeneration

In Turkey, urban regeneration is perceived as the demolition of physically obsolete areas and it cannot be expected that the transformation is sustainable unless an economically self-sufficient new city is created. There should be employment opportunities created with the production of local products in the city and commercial activities highlighting the values of the city in line with the economic identity determined for the city. Thus, the city achieves competitiveness and the citizens have economic freedom [23].

Since the economic fortunes of cities and regions depend increasingly on the success of local activities, economic regeneration has become a vital part of the process of urban regeneration which can readjust various economic structures to the sites related to the residents' potential and interest, provide commercial liveliness and various new economical perspective to cities [24].

The city may be attracted by industrial production, tourism, finance, or service sector. To promote the city aim, new sources of expenditure should be attracted. Such promotion can be over developing a new conference saloons or tourism markets which are pursued as part of strategies to sustain new types of economic activity in the city [24].

On the other hand, supply side of economic regeneration can be evaluated by the ability of the city to attract investment and for indigenous development to be promoted through new firm formation and through the growth of existing businesses. Therefore, the supply side of economic regeneration should contain investments on basically three areas:

- Improvement of infrastructure¹ such as building of new roads or improving

existing ones and other communication links;

- Redevelopment of land and make it available to both existing industries in urban area, keen to expand or relocate, and also for the development of new industries;
- Investment in people with increased and appropriate training and support to provide educated, trained, skilled, and well-qualified workforce. This qualification will increase their ability of readjustment to the changing in labor market and for creating economic advantage in locality. Moreover, there are important links between education and research institutions which have a role to play in the development and operation of science, technology and business parks [24].

Economic aspect of urban regeneration should aim to attract and stimulate investment, improve the environment of cities, create employment opportunities, provide education and training programmes and design all of these initiatives comprehensively [17].

Increasingly, urban societies are becoming knowledge-based and urban economies require innovative solutions to meet market demands. Furthermore, there is a strong relationship between knowledge and skills and education and achievement of an individual. It is unhesitant that the attractiveness of a city and region depend mostly on its human resources. “In the national labor market there is a persistent trend away from unskilled and craft jobs towards professional, managerial and technician posts” [22] and people’s ability to up-skill and re-skill before and during their working lives is important if they are to keep pace with rapidly changing work environments and to adapt to economic conditions and the changes in labor market. Therefore, the vocational skills of the potential workforce and their motivation should be very critical issues for urban regeneration projects. In this sense, education and training are key components of regeneration [22].

The unemployment problems in housing-led regeneration generally depend on few skilled people and poor education in local area. Therefore, although the nature of urban areas makes it more difficult and complex to create job and employ the unemployed people, public authorities should put higher value on job creation through some precautions such as long and short-term training courses, workshops, vocational job educations for both employed and unemployed people in urban areas

to develop their occupational skills. Such training programmes, continuing investment in education, skills (based with the needs of the modern economy) development and other initiatives would provide people find new opportunities in the growing and changing characteristics of urban labor market. The less educational and skill qualifications local people have and the longer people remain unemployed, the lower chance they have to integrate in labor market and get job [22].

In addition, since especially young people who reach the age of sixteen doomed to choose and determine their line in their work life; full-time or part-time study, education or training, academic qualification, or in-school, college, private training provider or from an employer which is an important milestone in an individual's life, it is also very crucial to provide local careers services and adult guidance services. Consequently, no matter how much or how long does it take, many unemployed people and especially the more young ones can be persuaded to stay in education or training programmes. While it may not be possible for people in the short term to compete for full-time jobs during the studying, in the long term they are inevitably helping to raise the nation's skill base which will improve competitiveness and help gain jobs in the future [22].

2.1.2 Historical evolution of urban regeneration in the world

Urban regeneration is a process that aims to improve economical, physical, social and environmental conditions of inner-city areas. After the Second World War, many regeneration initiatives were introduced either for postwar reconstruction or to address problems of deprived areas in cities. Since then, most urban regeneration attempts involve rehabilitation, redevelopment or renewal of certain quarters within urban areas and settlements [25].

The intervention methods and politics of urban regeneration have changed and are still changing since the 19th century. From the mid-1800s to the mid-1940s, urban renewal has been the most essential method within urban regeneration strategies to improve the physical and social deprivation areas in cities [26].

The early examples of urban regeneration activities took place until the 1940s and included mostly clearance, renewal and redevelopment strategies. These strategies were based on replacement of an existing urban area entirely and included changes in

property ownership. First contemporary examples took the form of “slum clearance” policies in Europe in the 1930s [26].

The industrialization process has caused some problems in cities such as increasing population, environmental pollution, lack of urban infrastructure and services, lowstandard housing, deprivation of social structure, etc. To address these problems, public spaces, especially the green spaces were used to improve urban life standards. In the mid-19thcentury, “The Park Movement” aimed to integrate the city with green and public spaces. The Central Park in New York, the Berkenhead Park in Liverpool and Victory Park in London were designed to improve public spaces [26]. After that, large roads and avenues were designed in the city centers as part of urban renewal projects. Among the most important examples of such projects was the projects developed and applied by Baron Haussmann in Paris between 1850 and 1860. The newly built avenues and roads provided the integration between the city center and big urban parks. In that time, renewal projects not only improved the physical structure and transportation network in cities but also decreased the crowd of people and buildings within the city center and were aimed to obtain social equity [13].

At the beginning of the 20th century, “The Modernist Movement” was developed as another renewal strategy, which was formed the principles in the Athenian Contract. According to the Modernist Movement, cities must have clean, healthy and beautiful environments, the collapsed areas in cities must be demolished and that areas must be redesigned with green public spaces. In addition, the pedestrian and vehicle transportation must be separated from each other [13]. After the World War II, the Modernist Movement started to become effective in cities’ redevelopment processes. Urban reconstruction became a current issue to construct the destroyed areas in cities in 1940-1950. This strategy aimed to decrease the physical problems and gain the functions back that cities had before war. In that term, guidelines were prepared in order to put forward principles and standards of urban reconstruction, which were used in preparing plans and projects.

After 1940s, urban renewal projects came into prominence, especially in Europe, in order to remove the negative results of the war. In 1950s, cities have started to move to the edge of the city, which was called the suburb. Lower income populations used

houses, which were abandoned by people, who preferred suburbs. This process has led to deterioration of city centers in terms of physical, social and economic dimensions. In 1960s, revitalization studies of city centers and development of suburbs continued at the same time. In 1970s, industrial and commercial facilities moved to the suburbs. This process sped up the corruption of city centers [27].

At the beginning of the 1960s and 1970s, it was admitted that social and physical deprivation was related to each other. The projects of the time focused on social problems and collapsed areas. Urban improvement and urban renewal were prioritized in that term. These strategies were important in terms of handling urban transportation both social and physical dimensions [28]. In general urban renewal is an intervention method to renew the areas, which are deteriorated, abandoned or lost function overtime. Although, areas which needed urban renewal, was usually deteriorated areas, urban renewal projects not only implemented for physical problems, but also focused on social and economic problems. 1980s was a turning point in terms of development of city centers. In this term, city center came into prominence as an administration center [27].

In 1980s, important changes took place in urban regeneration policy and practices. The purpose of urban regeneration was revised as to improve economic structure in collapsed areas in cities. In that sense, the main regeneration strategy was urban redevelopment [29].

Transformation Principles of Urban Regeneration in 1980s can be defined as follows;

- Participation,
- Physical, social, economic and environmental development,
- Legal, social and institutional organization,
- Sustainable development,
- Preservation of natural and historical heritage,
- Providing public benefits [2].

Urban regeneration has been the most common strategy since 1980s. It is important in terms of being provided through public-private partnership and also voluntary

foundation. Therefore, new legal regulations and urban regeneration programs were introduced [13]. While, transformation in city center continued during 1990s, new intervention methods appeared. In 1990s, abandoned industrial areas were reused for other facilities except industry in order to contribute to social, economic and physical development [27]. By the early 1990s, urban regeneration approaches have changed based on the failures of the previous examples [30]. The practices that dominated the 1980s mainly emphasized the physical and economic problems of urban spaces and attempted to overcome these problems by means of urban regeneration projects. However, in 1990s, urban regeneration policy was handled with environmental and social concerns along with physical and economic problems. At the same time, it was argued that public benefit should be promoted and provided as long as the integration of legal regulations, social organization and feedback processes [13].

Table 2.1 below presents a summary of the historical evolution of urban regeneration concept since the 20th century.

Table 2.1. Keystones of the Evolution of Urban Regeneration [31].

Timeframe	Issues Addressed	Major Strategy
1945-1965	Urban problems, deficiency of housing, low quality structures urban sprawl	New urban areas, green axes and redevelopment of housing
1965-1979	9 Pockets of poverty and racial tensions	New towns, greenbelts and housing redevelopments
1979-1990	Fragmentation of policy Lack of coordinated policy Problems of governance	Regeneration Policies: <ul style="list-style-type: none"> •Industry development into housing areas •Community involvement •Urban entrepreneurialism •Creation of business elites •Growth coalitions of public and private sectors”
1991-1997	Lacking of strategy from the previous administration	<ul style="list-style-type: none"> •Multi sectoral partnerships •Creating catalyst •City challenge •Central role to local government and local communities •Single regeneration budget •Diversity of labour market, infrastructure, social and health.
1997- present	Adverse effects of industrialization, decentralization and sub urbanization	Urban Regeneration and Sustainability

2.1.3 Historical evolution of urban regeneration in Turkey

Urbanization movements that started in the republic period in Turkey accelerated in the 1950s due to migration from rural to urban areas, and since the cities were not ready for this situation, seeds of unhealthy urbanization were sown. While the industrial sector started to rise in the 1950s, there was a decline in the agricultural sector. The decrease in labour demand due to mechanization in agriculture triggered the migration of the labour force working in this sector to cities [13].

The urbanization process accelerated by industrialization has brought about the uncontrolled growth of cities including Ankara, Istanbul, and İzmir, which receive intensive migration. In big cities that were not ready for such a large population increase, housing problems have arisen due to migration which has led to the formation of slums as a result of migrants solving housing problems by themselves [32].

As in many countries, in Turkey, especially after 1980, housing projects prioritizing the profit motive of large-scale national and international capital have led to the unnecessary expansion of cities, the degradation of cultural, historical, and of natural resources, inefficient use and loss of resources economic contrary to social and environmental sustainability, and the appearance of nonlocal urban spaces increasing social inequality, exclusion, and polarization [33].

Regarding the 1980s, Ataöv and Osmay (2007) emphasized the socio-economic change caused by the marketability of slums and stated that slums entered the apartmentization process. This process has led to the legalization of distorted urbanization and the unqualified parts of the city to be present until today [7].

Urban regeneration approaches to planning systems in the urbanization process in Turkey can be evaluated in five periods (Rumble, 2003):

- Republican modern image-oriented urban regeneration (1923-1950): Republican leadership and central government-dominated economic development model in the one-party regime has led to major urban development activities such as expropriation, land use changes, and demolition and reconstruction in urban areas.

- Industrial modern image-oriented urban regeneration (1950-1965): Political conflicts experienced in the multi-party regime in the post-war transition period and the economic development model focused on liberalization have brought forward urban renewal movements dominated by the ideology of the government and without taking historical heritage into account with the aim of industrial development and military restructuring. Along with the migration due to industrialization, apartmentization and illegal housing started within the urban fabric.
- Capitalist industry-oriented urban revitalization (1965-1980): The country's industry-oriented, supervisory, and authoritarian policy aimed at economic development. The preservation of the historical urban areas and social-weighted urban practices gained importance while the slum areas developing around the city centre continued to grow.
- Post-industrial market-oriented urban renaissance (1980-1990): The country's integration-oriented, decentralized, and liberal policy and its export-focused economy highlighted post-modern movement-based practices. With the transfer of planning authority to local administrations, zoning activities started in big cities; protection, reuse, and rehabilitation of urban historical areas gained importance, and the state, which could not provide social housing to those in need, sought to legalize illegal structures with populist policies.
- Post-industrial rent-oriented urban renaissance (1990 - present): Political coalitions in the form of divided partnerships, the model of privatized economic development, and the need to integrate into the global process have enabled the urbanization of capital. During this period, housing-oriented practices, including the transformation of slum areas into qualified housing areas, gained importance with socio-economic rehabilitation and revitalization activities for tourism purposes.
- Since 2000, the transformation of the physical structures, especially in metropolitan cities, has been realized in large parts and in the form of transformation with the effect of national economic policies. By the 2000s,

the urban macro form was restructured under the influence of the national and international real estate sector; The main topics of the planning, such as transport connections, land uses, and infrastructure services, have entered a regeneration / renewal process directly related to the real estate sector.

The 2000s are very important in terms of the introduction of the concept of urban regeneration in legislation in Turkey. The process that started with the draft of “Urban Regeneration and Development Law” which was prepared on 27 January 2004, has developed with the legal process that will be given in detail in the next section and reached its present state. During this period, local governments had important powers and responsibilities such as preparing zoning plans, declaring urban regeneration areas, and issuing licenses [34].

2.2 Sustainability, Sustainable Urbanization and Sustainable Urban Regeneration

2.2.1 Sustainability and sustainable development

The notion of sustainability, for the first time, was included in the World Charter for Nature adopted in 1982 by the International Union for Conservation of Nature. Accordingly, it is envisaged that Ecosystems and organisms, as well as the land, marine and atmospheric resources that are utilized by man, shall be managed to achieve and maintain optimum sustainable productivity, but not in such a way as to endanger the integrity of those other ecosystems or species with which they coexist. [35]. The best known definition of sustainability comes in the context of ‘sustainable development’ from the UN Brundtland Commission of 1987: “sustainable development is the development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

Keleş (1998) refers to sustainable development as continuous and balanced development and defines it as an environmentalist world view that aims to achieve economic development without sacrificing the principle of using environmental values and natural resources in a manner that does not lead to extravagance, taking into account the rights and benefits of present and future generations [36].

Figure 2.2 underlines the three fundamental dimensions of sustainability as social (long-term functionality at a defined level of social wellbeing), environmental (long-term maintenance of harvesting renewable resources, pollution and depleting non-renewable resources) and economic (long-term economic production at a defined level) [37].

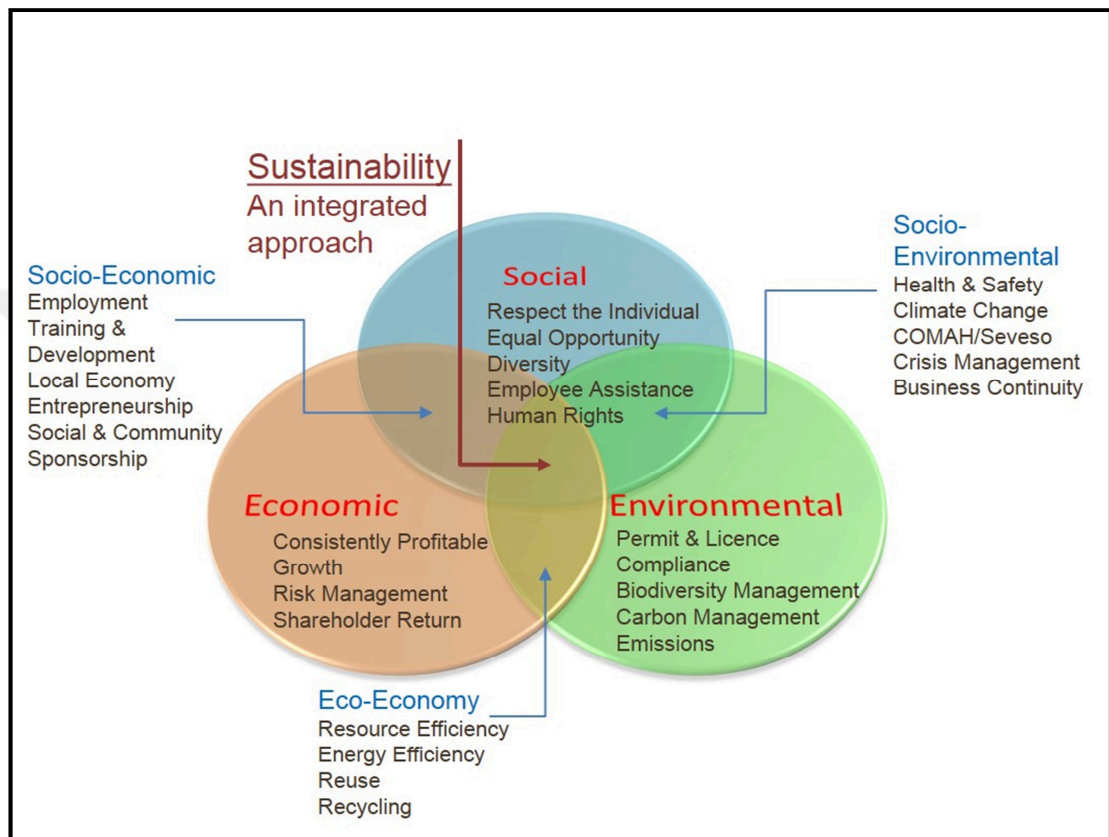


Figure 2.1. The Concept of Sustainability [68].

Another important stage for sustainable development was the UN Conference on Environment and Development in Rio de Janeiro in 1992. With the conference, sustainable development has become a fundamental policy that is recognized by the whole world.

Sustainable development aims to improve the social, economic, and environmental quality of life. Considering that the aim of urban planning is to improve the physical environment of a city by preserving natural resources and to provide job opportunities and social reinforcement to the citizens, it is clear that sustainable urbanization is actually the main phenomenon of urban planning. In other words, in

order to achieve sustainable development, it is necessary to implement policies and practices that will ensure sustainable urbanization [37].

2.2.2 Sustainable urbanization

Although the emergence of the concept of sustainability has arisen from the need to protect natural resources and transfer environmental values to future generations, it has been accepted by all circles that cultural values and economic activities should be sustainable as well. Sustainable urbanization is a concept that emerged from the necessity of reflecting sustainable development goals to space. When cities are defined as areas where people live together, socialize in interaction with the physical environment and engage in economic activities, it becomes clear that sustainable urbanization is the most important target of urban planning as a discipline [38].

Sustainable urban development is a process, which prevents the reduction of urban resources in long term and aims to reduce destructive effects of world's cities on natural environment. Sustainable urban development aims to achieve the balance between today's and future cities in terms of providing urban residents with better quality of life [4].

As seen in figure 2.3, sustainable urban development can be defined as the capacity of any significant human settlements to maintain environmental quality and carrying capacity, to support socio-economic development and management, and to provide sufficient services and livelihoods to all current and future inhabitants [39].

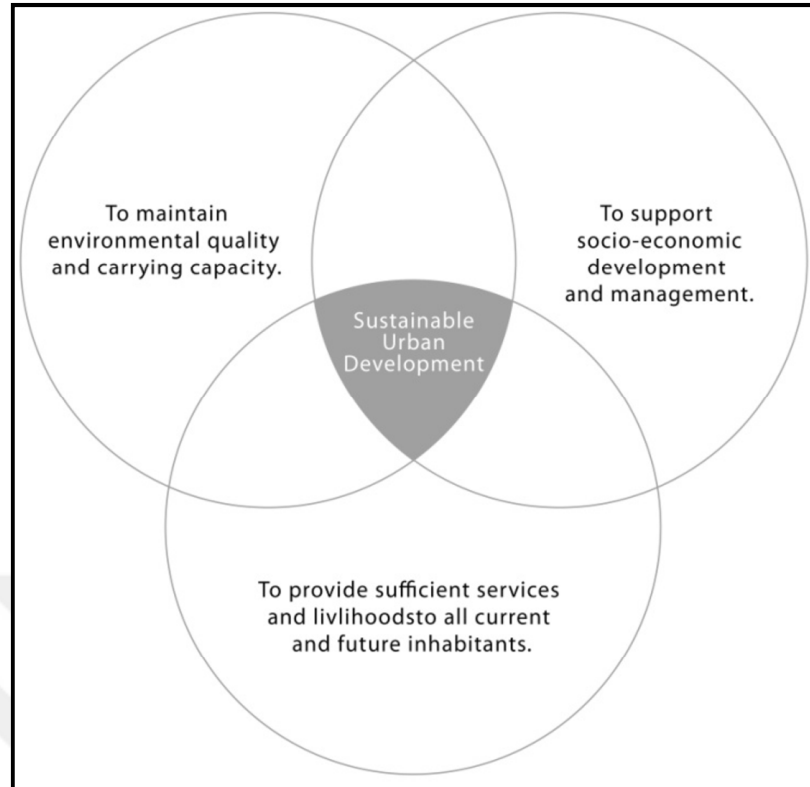


Figure 2.2. Sustainable Urban Development [30].

Article 15 of Istanbul Declaration, the final declaration of Habitat II Summit in 1996, is as follows; "As we enter the 1st century, we encourage a positive vision for sustainable human settlements, a sense of hope for our common future, and a fully beneficial and attractive challenge so that everyone can live in a safe house that promises a decent life with reputation, health, safety, happiness, and hope. ” Thus, the importance of the settlements and living spaces that make a sustainable life possible is emphasized in the Habitat Summit [35].

“Cities that respond better to human needs than that of today and enable the development of urban systems in a way that does not hinder future generations from fulfilling their needs [40]” or “cities where socio-economic interests are aligned with environmental and energy concerns in order to ensure change with productivity [41]” are widely accepted definitions of sustainable urbanization in the literature.

Articles 15 and 16 of the Stockholm Declaration concern the provision of sustainable urbanization. Accordingly, Article 15 of the declaration states that “planning must be applied to human settlements and urbanization with a view to avoiding adverse effects on the environment and obtaining maximum social, economic and

environmental benefits for all” and the Article 16 is as follows; “Demographic policies which are without prejudice to basic human rights and which are deemed appropriate by Governments concerned should be applied in those regions where the rate of population growth or excessive population concentrations are likely to have adverse effects on the environment of the human environment and impede development.” In this way, the basic principles of sustainable urbanization were put forward by emphasizing healthy, planned, liveable cities in the Stockholm Conference [42].

Brutland Commission's report called “Our Common Future” (1987) also refers to sustainable urbanization through the concept of sustainable development [42].

Another milestone in terms of sustainable urbanization was the 1992 UN Conference on Environment and Development in Rio de Janeiro. The “Agenda 21” document adopted as a result of the Rio Summit had great importance for sustainable urbanization. In the seventh chapter of Agenda 21, “Promoting the Development of Sustainable Human Settlements”, the aim was to improve the social, economic, and environmental quality of human settlements and some programs were determined for this basic purpose. These programs have established the objectives of sustainable urbanization such as adequate housing for all, improving the management of human settlements, sustainable land use planning and management, providing integrated environmental infrastructure services, sustainable energy and transportation systems, settlement planning in areas exposed to disasters, capacity building for human settlements development [1].

Another important organization that shaped the sustainable urbanization approach was the Habitat II Conference on Human Settlements (City Summit) organized by the UN in 1996 in Istanbul. In Habitat II;

- Re-evaluation of the concept of sustainable development on the city scale has come to the agenda.
- It was aimed to establish urban democracy and to determine the position of citizens in the city
- The importance of public and private sector cooperation was emphasized.

- Discussions have been initiated on the management of cities and the role of citizens.

Another important document on sustainable urbanization was the European Urban Charter and the European Declaration of Urban Rights, which the Council of Europe has issued in relation to urban life and urban policies. The European Urban Charter was adopted at the regular meeting of the Council of Europe European Local Governments Conference held in Strasbourg on 17-19 March 1992. The difference of the European Urban Charter from other international documents is that it was signed by local administrations rather than governments. The European Declaration of Urban Rights consists of 20 articles, the realization of which depends on the solidarity of individuals and their acceptance of equal obligations. These articles are specified as safe cities, an unpolluted and healthy environment, adequate employment opportunities for individual economic development, adequate housing, public transportation and pedestrian priority transportation system, adequate health, entertainment, recreation, sports facilities for individuals, quality physical environment, connection and harmony among urban functions, ensuring participation, sustainable development, preservation, and development of natural and cultural wealth, and ensuring equality [42].

The European Urban Charter consists of 13 chapters and a total of 68 principles linked to them. These chapters include;

- Transportation
- Environment and Nature in Cities,
- Physical Structures in Cities,
- Historical Urban Building Heritage,
- Housing,
- The Handicapped and People with Socio-economic Disadvantageous in Cities,
- Culture and Cultural Integration,
- Health in Cities,

- Public Participation,
- City Management and Urban Planning,
- Economic Development in Cities.
- The European Environment Agency defines the objectives to be achieved in order to ensure urban sustainability as follows [43].
- Minimizing the consumption of space and natural resources
- Managing urban flows effectively
- Protecting the health of the urban population
- Ensuring equal access to resources and services
- Maintaining cultural and social diversity

The sustainable urbanization approach includes all the environmental (built environment / natural environment), social, and economic elements that are affected by urban development and affects urban development in relation to each other, promotes the integration of economic and social development with the aim of environmental protection and improvement, and requires the decision of the form of development with participatory processes. Table 2.2. presents the main characteristics of sustainable communities on which the EU member states agreed. These characteristics are derived from the dimensions of environmental, social, and economic development mentioned above [44].

Table 2.2. Characteristics of Sustainable Communities [44].

Activity, Inclusiveness, Security	Equality, tolerance, and commitment resulting from a strong local culture and other community activities.
Good Governance	Effective and inclusive participation, representation, and leadership.
Good Transportation	Good transport services that connect people to their jobs, schools, health care, and other services.
Good Service	Public, private, community and voluntary services that meet people's needs and are accessible to all.
Environmental Sensitivity	Places arranged for people to live, in a respective way to the environment.
Good Development	Growing, diverse and innovative local economy.
Good Design and Construction	Quality built and natural environment.
Equality for All	An understanding inclusive of all communities of today and the future

The objectives of sustainable urban development are as follows [43];

- Improving the quality of life
- Providing options in development
- Resistance to poverty
- Solving employment and nutrition problems
- Meeting basic health requirements
- Conservation and development of biological diversity
- Restructuring of technology
- Controlling population growth
- Use of renewable energy sources and finding clean, reliable water

- Elimination of risks.

The sustainable urbanization approach envisages that the decisions regarding the future of the city are taken and implemented with the participation of all relevant local groups. Creating and strengthening institutional capacities at the local level is an important objective. In other words, the actors of the ideal of sustainable urban development are the local public sector, private sector, non-governmental organizations, academics, and professional chambers. The involvement of local stakeholders in the process ensures that decisions are adopted by local stakeholders, makes the process transparent, and facilitates the implementation of decisions [45].

2.2.3 Sustainable urban regeneration

The concept of urban regeneration, which became popular in the world and in Turkey in the 21st century, has come forward with problems such as inadequate cities with increasing population and aging of the physical environment. Increasing global warming in this period and the fact that societies started to take a close interest in the concept of sustainability led to the concept of sustainable urban regeneration. The most significant difference between the concepts of classical urban regeneration and sustainable urban regeneration is that, in sustainable urban regeneration, social and environmental problems are addressed besides economic and physical problems [46].

The concept of “Sustainable Urban Regeneration”, which emerged as a result of addressing the concept of urban regeneration with sustainability principles, aims to improve the quality of urban life [47].

[6], mention that the following are the principles of sustainability in urban regeneration projects:

- Providing a balance between social, economic and environmental process
- Preserving environment and resources and decreasing the effects of development on natural environment in urban areas
- Supporting participation in planning process

- Participating of all demand into process and all decisions must be acceptable for all users in planning area
- Improving quality of life with education, health and the other requirements
- Designing a sustainable public transportation system by using renewable resources
- Preventing locals from moving.

Table 2.3. Key Aspects of Sustainable Urban Regeneration [31].

Objectives	Target Groups
Support sustainability at local and city scales	Decision makers in different scales
Support sustainable urban growth in social, physical and economic terms	Local and regional actors who take in part in the planning process
Provide social and regional balance	Economic actors
Support local identities and human potentials	Non-governmental organization

As is be seen in Table 2.3, many different actors such as local administrators, urban planners, architects, local people, non-governmental organizations, land owners, and investors are responsible for the success of sustainable urban regeneration projects. Even if such projects are established locally, sustainable development and planning and urban regeneration targets must be available throughout the country to be successful [48].

2.2.4 Legal basis of urban regeneration in Turkey

This section is covered by Laws 6306, 3194, 5393, 2985, 5366 and related regulations.

2.2.4.1 Law no. 6306 [49]

In Turkey, urban regeneration legislation has been directly specified in the legislation with the " Law on the Transformation of Areas under Disaster Risk sated 31.05.2012 and numbered 28309, published in the Official Gazette No. 6306. This law has been amended many times and has taken its current form with the regulation published in the Official Gazette dated 21.06.2019 and numbered 30808.

In Article 1 the Law No. 6306 the purview of law is defined as “to determine the principles and procedures on rehabilitation, clearance, and renovation activities to establish a healthy and safe living environment in accordance with the norms and standards of science and art in the areas under disaster risk and in other areas where risky structures are present”. As mentioned in this article, the law allows for urban regeneration in separate risk areas as well as urban regeneration in disaster risk areas. With this Law, “Risky Area”, “Reserve Construction Area” and “Risky Structure” concepts are defined as follows:

- Reserve construction area: Areas to be used as a new settlement area in accordance with the Law, upon the request of the Housing Development Administration or the Administration or by the Ministry ex officio, (Article 3e).
- Risky area: The area determined by the President, with the loss of life and property due to the ground structure or construction on it (Article 3f).
- Risky structure: The structure or structures identified within or out of the risky area which are determined by scientific and technical data to have reached the end of their economic life or which are at risk of collapse or severe damage, (Art. 3g)

The law states that the determination of reserve areas are under the authority of TOKI, the relevant Administration, or the Ministry, but it is also stated that natural and legal persons may apply for a reserved area provided that the owners of all immovable subject to the request have consent (Article 4). In addition, TOKI and the related Administration, as well as natural and legal persons, are also entitled to determine the risky areas and risky structures. (Article 5). This shows that the concept of “participation” in urban regeneration is addressed by law, albeit limited [34].

However, in Article 5, putting forward the reasons for urban regeneration, it was stated that

“a) Areas where public order or security is impaired to stop or interrupt ordinary life;

If one or more of the following reasons are present:

- 1) Inadequate planning or infrastructure services,*
- 2) Existing settlement contrary to the zoning legislation,*
- 3) Damaged infrastructure or superstructure,*

b) Areas where at least 65% of the total number of buildings is contrary to the zoning legislation or those consisting of buildings that received building and settlement licenses although being constructed without obtaining a building license” can be declared risky areas. However, all of these reasons point to physical urban regeneration. The law does not include the reasons for social and economic urban regeneration (Article 5 of the Law no. 6306).

In Article 18, which addresses the planning process in urban regeneration, it is stated that, *“In the plans to be made for the application area, it is essential to reduce disaster risks according to the nature of the area, to improve, protect, and develop the physical environment, to ensure social and economic development, to increase energy efficiency and climate sensitivity and the quality of life”*. This article refers to sustainable planning, but does not elaborate and establish sustainability criteria.

In Article 13 of the Implementing Regulation of the Law no. 6306, it is stated that *(2) the value of the immovable determined in accordance with Article 12 shall be deducted from the construction cost of the house or workplace to be given to the owner. As a result of the calculation to be made in this way, if the owner;*

a) Has receivable from the relevant institution, the amount subject to this claim may be paid in cash or by transferring the right of zoning to another area in accordance with the agreement to be made between the parties or from the immovable of the relevant institution not allocated to public service.

b) Is indebted to the related institution, the amount subject to this debt may be paid in instalments by the immovable owner. The principles of payment in instalments are determined by the relevant institution on the project basis.

c) (Amended: RG-25/7 / 2014-29071) Has the right to purchase more than one house or workplace, a contract may be made to provide more than one house or workplace. In such a case, in case the real estate owner is indebted to the related

institution, the payment may be made in instalments according to the schedule determined by the related institution after the notary draw for the determination of the house or workplace to be provided. The principles of payment in instalments are determined by the relevant institution on the project basis.

(4) To those of immovable owners who will be given a workplace may be provided with a workplace share instead of a separate workplace". These articles indicate that if the institution is indebted, payments can be made in instalments, by transferring the real estate which has not been allocated to public service, or by transferring the right of zoning to another area, the owner of the property can be a shareholder in a work place after the regeneration, and if the land owner is indebted, it can be paid in instalments to be determined by the administration. This brings gentrification instead of on-site transformation. This leads to a situation contrary to the principles of sustainable urban regeneration.

When the urban regeneration law and implementation regulations are examined, it is seen that the social participation processes are very weak in determining the reserve construction area and risky areas other than the risky structure within the scope of preliminary preparations of planning.

2.2.4.2 Law no. 3194 [50]

The purpose and scope of the Development Law no. 3194 published in the Official Gazette dated 09.05.1985 and numbered 18749, is defined in Article 1 and 2 as “...issued in order to ensure the proper formation of settlements and the buildings in these places in accordance with the plan, science, health, and environmental conditions. Plans to be made within and outside the boundaries of municipalities and adjacent areas and all official and private structures to be constructed are subject to the provisions of this Law”.

According to Yenice (2014), the Construction Law No. 3194 is one of the legal regulations directly guiding urban regeneration. He stated that local governments will play an active role in the spatial development and transformation of the city as a result of the authority given to local governments and the strengthening of local governments in terms of resources [38].

However, when the law is examined, it is seen that the content related to urban regeneration is very limited; there are only three temporary articles related to the issue and these items have been introduced after 2016. Provisional Article 15, the first of these articles, is for providing electricity, water, natural gas connection and subscription temporarily up to 5 years on condition that the users consent to urban regeneration and renewal applications in buildings located in areas designated as risky area, urban regeneration, and development area, renewal area and without building license or building permission. It is an article added to temporarily solve a problem that is not associated with planning.

Provisional Article 16 is about reconstruction peace. This article, in which the details of the reconstruction peace are given, applications to which have been filed for the last two years and which has not been finalized, is actually important in terms of the legalization of areas where urban regeneration is needed.

Temporary Article 18 refers to a single location. It is about how to solve the problems that arise in the areas declared as urban regeneration and development project area in Calkaya Region in Aksu District of Antalya Province.

As can be understood from these articles, the Development Law no. 3194 does not contain any data on the urban regeneration and the quality of the planning activities in the areas of urban regeneration, but solely solves the problems that arise recently.

2.2.4.3 Spatial planning regulation [51]

As stated in Article 1 of the Regulation on the Spatial Planning Regulation (MPYY) which entered into force after being published in the Official Gazette dated 14.06.2014 and numbered 29030; it was issued to determine the principles and procedures for the implementation of spatial plans that bring forward construction decision to develop and maintain the physical, natural, historical, and cultural values, to ensure the balance of protection and use, to support sustainable development at the country, region, and city level, to make land use and construction decisions which are prepared to create healthy and safe spaces with high quality of life. The scope of MPYY is defined in Article 2 as spatial plans of all types and scales, revisions, additions, amendments, and examination of spatial plans, procedures, and principles for spatial plans and special purpose plans and projects. Although there are

demonstrations of uses such as reserve construction, reserve area, risky area, renewal area, urban regeneration and development project area in the additional articles of MPYY, the concept of urban regeneration is only discussed in a superficial manner in Article 8, which defines the principles of making spatial plans: “... (10) For urban settlements or built urban environments where disaster and other urban risks are high, urban risk analysis or conservation planning studies are carried out, if deemed necessary. Risk mitigation measures for disasters and other urban risks are taken as a basis in the plans.” The Regulation, which includes information on how to prepare zoning plans and even urban design projects at all scales starting from the Environmental Layout Plan, does not provide details on the preparation of zoning plans in urban regeneration areas.

2.2.4.4 Planned areas zoning regulation [52]

The purpose and scope of the Planned Areas Zoning Regulation published in the Official Gazette No. 30113 dated 03.07.2017, is defined in Article 1 and 2 as; “*The purpose of this Regulation is to determine the principles and procedures for the construction, project design, and supervision in accordance with the plan, science, health, and sustainable environment conditions. This Regulation covers the areas with an implementation zoning plan.*” In this regulation, the first of the items for the concept of urban regeneration is in the regulation section on the issue of building permits for the parcels. Article 5:17 states that “*technical infrastructure services such as road, water, sewerage, and electricity must be provided in order to issue building permits in the settlements except for development areas and urban regeneration and development areas*”. In Article 56, it is stated that, “*To issue the building license, building use permit, establishment and working license, zoning status certificate, canal and road elevation minutes, and to carry out implement administrative sanctions related to these activities within the scope of the legislation regarding the transformation of the areas under disaster risk, and when necessary, the procedures of condominium establishment, registration, zoning right transfer, building license and permission to use building are carried out by the provincial directorates of the Ministry on behalf of the Ministry.*”

2.2.4.5 Law no. 5393 [53]

The most important Law after the Law No. 6306 and the implementing regulation addressing the concept of urban regeneration is the Municipal Law No. 5393. Article 73 of this Law, which entered into force in 2010, defines the powers and obligations granted to urban regeneration [54].

According to this article, the municipality, by municipal council decision, can implement urban regeneration and development projects to create residential areas, industrial areas, commercial areas, technology parks, public service areas, recreation areas and all kinds of social reinforcement areas, to rebuild and restore the old city parts, to protect the historical and cultural texture of the city, or take measures against earthquake risks.

Again within the scope of this article; determination of whether the urban regeneration and development project area with or without buildings will have or not zoning, the height and density of the structure, the size of the area between 5 and 500 hectares at least, whether it can be built in stages was left to the discretion of the municipal council. Provided that the total area is not less than 5 hectares, more than one site can be identified as a single regeneration area.

In accordance with Article 73; metropolitan municipalities are authorized to declare urban regeneration and development project areas within the metropolitan municipal boundaries. If deemed appropriate by the metropolitan municipality council, district municipalities can prepare and implement urban regeneration and development projects within their borders.

Pursuant to Articles 69 and 73 of Law no. 5393, the authority to implement the activities to be realized in an area announced by the municipal council is transferred to the Housing Development Administration.

2.2.4.6 Law no. 2985 [55]

With the regulations after 2004, TOKI has assumed the authority and responsibility in the implementation of urban regeneration and development in almost every area, especially in the housing sector. The statement in the Article 16 of the Housing Development Law No. 2985, *“in the event that the immovable properties that are*

requested to be transferred to the Presidency within the framework of the authority granted by the Laws and Presidential Decree are at the areas declared to be urban regeneration and development area, the transfer request of the Presidency takes priority. Regarding the immovable owned by the Presidency and the immovable requested to be transferred, the Presidency shall exercise all its powers arising from the laws and Presidential Decrees exclusively”, shows that TOKI is one of the most important players in urban regeneration.

With the Law No. 5162, which was published in the Official Gazette No. 25460 dated 12.05.2004 and amendment the Law No. 2985, the Housing Development Administration of Turkey has been authorized for making, requesting, modifying, and approving, and to expropriate the land belonging to real and legal persons (Law No. 5162, Article 2).

2.2.4.7 Law no. 5366 [56]

The Law on the Conservation, Renovation and Use of Worn-out Historical and Cultural Immovable Assets is the first legal regulation that gives special attention to urban regeneration practices in worn historical and cultural immovable properties. The purpose and scope of Law No. 5366 is explained as follows: “... *to declare 'urban regeneration and development areas' and to allow applications in these areas to preserve the old textures and settlement areas of the city, the value of cultural heritage, to enlarge and improve the social reinforcement areas by ensuring the balance of protection and use, to solve the parking problem, to create commercial, cultural, tourism, and social reinforcement areas with the comfort and conditions of present, to restore and use the historical and cultural fabric to carry it to the future so that the central areas of the city can be settled in a healthy way rather than posing a threat to the security of the city as uncontrolled areas and can be used in accordance with today's needs...*”(5366 Law, Article 1).

With the Law No. 5366, it was aimed to rebuild or restore the regions declared and registered as protected areas by the cultural and natural assets of conservation boards of district municipalities, municipalities with a population of more than 50,000, and by the special provincial administrations outside the authority of these municipalities, as they are damaged or obsolescent, and the conservation areas in these regions in

accordance with the development of the region to create residential, commercial, cultural, tourism and social reinforcement areas, to take measures against natural disaster risks, to protect and use historical and cultural immovable property by renewing and preserving them [56].



3. LITERATURE REVIEW

There is currently no method used in determining which part of the city to implement an urban regeneration project. In Turkey, works are started after the announcement of risky areas in the regions subject to disaster, which are considered to be problematic by the related administrations. However, the social structure of the city, infrastructure, physical status, environmental and economic problems should be dealt with and the priority of urban regeneration intervention should be determined according to the importance of the problems. In this study, which emerged from the idea that revealing these regions with a scoring should be the first step for the transformation scenario of the city, many different sources were examined. Many studies on how urban regeneration works in the world and in Turkey, what is taken into consideration in the preparation of development plans for urban regeneration areas, whether sustainable planning criteria are taken into consideration in these studies, whether any analysis is made in determining urban regeneration areas, and what methods are used in determining urban regeneration areas were examined. It was found that there were studies on urban regeneration, sustainable urban regeneration, place selection where GIS and AHP methods are used together, but there are no studies to determine the priorities of urban regeneration areas.

3.1 Researches on Urban Regeneration

Alpopi and Manole (2013), in their studies on urban regeneration projects carried out in Romania, stated that European Union Funds covered 50% of the cost of projects in the urban regeneration projects carried out by the government in Europe. In Romania, problems that require regeneration in cities were put forward and it was emphasized that “integrated planning” method should be used in urban development plans of urban regeneration projects prepared to solve these problems. Based on the idea that the problems of the city should be handled holistically with a

multidisciplinary approach, the improvement studies in Bucharest, the current problems of Bucharest, and how the issue was handled in Italy, Spain and other European countries were discussed. As a result, it was emphasized that urban regeneration projects in Romania should be handled rapidly and integrated planning approach should be used with the help of different professional groups working together and in-detail examination of studies conducted in different countries by using European Union funds [58].

Akalin (2016), in his study on urban regeneration examples in Turkey in the context of social problems such as gentrification, displacement, and spatial exclusion, firstly focuses on the concept of urban regeneration and then elaborated the development of urban regeneration in Turkey and in the world. Then, he explains the concepts of gentrification, displacement, and spatial exclusion with examples from Turkey. As a result, it is observed that small scale transformations carried out at the neighbourhood or even building level with the discourses of urban regeneration lead to many socio-economic problems while creating stylish spaces, often resulting in the destruction of neighbourhood culture and of social memory, and solutions are presented for the problems created by these project that ignore the social dimension of spaces focusing only on physical transformation of buildings [11].

Celikbilek and Ozturk (2017), in their study where they discussed the fundamental principles of urban regeneration projects performed in areas with disaster risk in Turkey according to the Law No. 6306, examined the relationship between law and planning activities related to the application in Izmir. Regions declared as risky areas in İzmir province and the planning activities carried out in these regions, applications and results for risky buildings, number of risky structures demolished, who has the authority in these areas, and housing benefit to persons are explained in detail. As a result, it has been shown that although the urban regeneration process in İzmir has started before many cities, it has been progressing rather slowly compared to Istanbul and that most of the works performed with a holistic planning approach are carried out by local governments [59].

Acikgoz (2014), in his study for master's thesis where he examined the economic, spatial, social effects of urban regeneration and the role of the public, he discussed

the concepts of urban regeneration and gentrification in the scope of “Gultepe (Çinçin) Urban Regeneration Project” in Altındag District, one of the first squatter settlement of Ankara, carried out with the cooperation of TOKI and the municipality and emphasized the physical, social and economic effects of the regeneration. As a result of the urban regeneration project realized in the region which is a social collapse area, only physical transformation has been achieved, but the social dimension of the transformation has not been addressed and the dissatisfaction of the users has been revealed as a result of the study. The lack of a participatory planning approach is one of the most important criticisms. The study is important for future studies, measuring the success of urban regeneration projects or comparing with other projects in terms of showing the regressions or developments observed in the transformation projects over time, but it is incomplete in terms of lack of observation and evaluation of how the process took place after the completion of the project. [103].

Catalbas (2011), in his thesis study, which aimed to reveal the spatial and socio-economic effects of urban regeneration, has evaluated the current status and spatial and socio-economic effects of the urban regeneration project in the Surici District of Diyarbakır Province. Although the region, which has become a social and physical collapse area, is located in the city centre, it has not made any economic contribution to the city, and it has been emphasized that the number of users is increased by adding commercial functions to the area with physical renewal. Even though the required studies regarding the registered buildings have not been made within the scope of the Law No. 5366 on the Conservation and Use of the Renovated Historical and Cultural Immovable Assets, in addition to the Law No. 6306 in the sense of urban regeneration, the fact that the area is located within the protected area, and that there are many structures in need of registration proposal, the decision to bring them to destruction is one of the criticisms put forward in the study. Although the study is an important source in terms of providing justified criticism by considering the urban regeneration works in Surici District of Diyarbakir Province with all its details, it is weak in terms of producing an alternative solution to these criticisms [60].

Sisman and Kibaroglu (2009) emphasized the emergence of urban regeneration concept and application methods in their studies in which they examined the

applications of urban regeneration in the world and in Turkey, especially the positive and negative aspects of the applications in our Turkey, and then they examined different urban regeneration projects implemented in countries including Japan, England, Germany, France, Brazil, China, Lebanon. As a result of the study, it was revealed that each region has its own problems and the resources that can be effective in solving these problems, local constraints and resources should be identified, and local transformation strategies and policies should be developed accordingly [61].

Yu and Kwon (2011), in their study which aimed to identify and prioritize critical success factors in urban regeneration projects, determined the Critical Success Factors with the opinions of 29 specialists by using the Delphi Method (29), and made a survey study with 122 specialists in order to determine the accuracy and priority of these factors (Figure 3.1). Underlining that the priority for a successful project is successful project management, it is concluded that understanding the priorities of the Critical Success Factors at each stage will be very beneficial for project investors and executors in the management of limited resources. The study is very important in terms of identifying the critical success factors to be followed for the success of urban regeneration projects and providing a mathematical way to the professionals who will work on this subject [62].

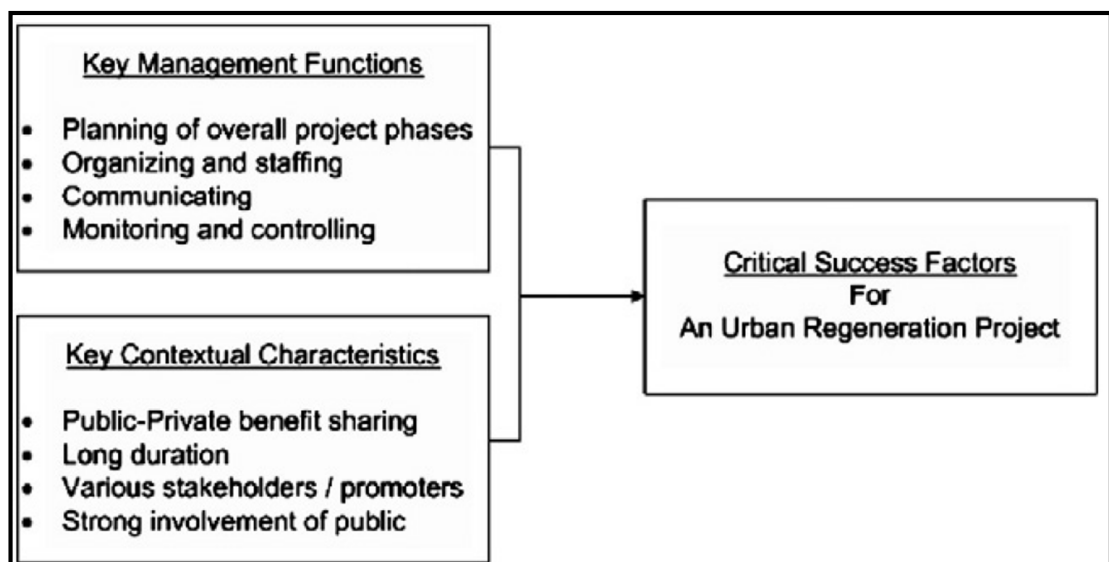


Figure 3.1. Process and key players of an urban regeneration project [62].

Tasan-Kok (2010), in the study addressing the challenges of the multi-level administration in the framework of new urbanization policies and the main problems of the multi-actor system in large-scale urban regeneration projects focused on real estate development, he examined Antwerp in Belgium and Rotterdam in Holland where the same problems were experienced. The results of these two projects, which have similar initial scenarios, were realized at very different levels of success, and the impact of national policies on this difference was examined. However, for both projects, governance problems, problems arising due to the large-scale study, and errors in implementation were handled individually. As a result, it was revealed that errors or deficiencies in urban planning and implementation caused failure in large-scale urban regeneration projects, while the correct functioning of local governments and the private sector and the correct functioning of the control mechanisms had a great role in success. The study is very important in terms of explaining the problems experienced in the implementation of two large-scale urban regeneration projects in detail, as it is a guide for the subsequent projects [63].

3.2 Researches on Sustainable Urban Regeneration

Mcdonald et al (2009) discussed the commonalities of the “Sustainable Communities Plan”, which came into force in 2003 in the United Kingdom and specified how cities will evolve in the next 20 years, while discussing the results of semi-structured interviews on what needs to be done to implement a sustainable urban regeneration project in Castlefields. As a result, it is stated that urban regeneration is an important tool for creating sustainable settlements in social, economic, and physical collapse areas if necessary economic resources are provided. The study is important in terms of revealing that urban regeneration is an important tool for creating healthier cities [64].

Ho et al (2012) focused on the problems of existing structures in their studies on the necessity and rehabilitation of the buildings that are about to be demolished due to the lack of maintenance of in Hong Kong city with high-density of high-rise buildings. The problems such as health and hygiene, fire safety, improper use, energy efficiency obtained by the surveys were grouped into three categories, these problems have been prioritized by using AHP method, whether the buildings can

continue their existence or should be demolished and rebuilt has been put forward with the scoring system. The software has been developed for this evaluation system within the scope of this study. In this study, it is stated that regional urban regeneration decisions can be taken as a result of processing these analyses on a map basis with GIS and the method put forward can be adopted as country policy. Unlike many studies in the literature that describe the social sustainability of urban regeneration or the necessity of economic revitalization, it is very important in terms of demonstrating the contribution of sustainability to the selection of buildings or areas to be applied with a scientific method during the physical renewal [65].

In a study conducted by Ng et al (2001), local-specific, human-oriented sustainable urban regeneration principles were created for Hong-Kong with the participation of local actors, implementation strategies were determined, and the planning history of the city was firstly emphasized and then detailed suggestions on issues such as environment, economy, equality, and participation, transportation in the physical environment, public spaces, buildings, light green areas, etc. that need to be considered during the restructuring process have been put forward one by one. It has been emphasized the informing the society for a participatory, people-oriented approach is a necessity and that planning is the most important tool for sustainable urban regeneration [66].

Lehmann (2006), in his study where how to design a sustainable city centre and how urban design will be influenced by new ecological approaches have been discussed in the scope of Newcastle city, focused especially on the basics of sustainability in urban design, and then put forward the results of the Solar City model, created by the joint work of Australian and German scientists. Suggestions have been made under many titles such as orientation in buildings and cities, use of solar energy, ecological buildings, solar-based ventilation systems, ways to increase biodiversity, vertical gardens, and interdisciplinary work. The study is important for providing a sustainable urban model [67].

Hamurcu and Buldurur (2017) defined specific performance indicators under the thematic headings by creating a framework that combines sustainability and urban regeneration in their work to identify indicators that will help to make the targets

traceable and evaluable in order to ensure the development of urban regeneration processes in line with sustainability principles. They then proposed some policy tools for the process. The study is very important in terms of creating a basis for the legal proposals that can also be prepared in Turkey on the performance indicators for sustainable urban regeneration with its developable structure [104].

Perez and Rey (2013), with the software “The SméO tool”, which manages the decision-making process, have weighted the sustainability criteria defined for the Lausanne, a neighbouring unit in Switzerland, with Hermione methodology. Three different sustainable urban regeneration scenarios during the study have been given the environmental impact, health and comfort, safety, energy, water, and waste etc. weight value per m² for each criterion with the Hermione methodology used by The SméO Tool, and the most suitable transformation project has been determined for the area. The study is very important and guiding in developing a decision-making method in which different criteria of urban regeneration areas can be included in all site-specific criteria by developing alternative scenarios [69].

Hemphill et al (2002) classified their expert opinions on sustainable urban regeneration with the Delphi Technique in their studies in order to develop an effective method for weighting sustainability criteria according to their relative importance in sustainable urban regeneration projects and then weighted these criteria with Multi-Criteria Analysis (MCA) method. The study is important to show that strong links can be established between sustainability and urban policies if more objective parameters and techniques are used. In addition, the emergence of the most important areas that need solutions through urban regeneration as transportation and economy reveal the inadequacy of traditional urban regeneration solutions that bring changes in building and land use [70].

Mayer et al. (2005) applied these techniques for real and fictional urban regeneration projects in their work on the determination of sustainable urban regeneration decisions with a decision support system and a simulation game. The benefits and challenges of this integrated system are then discussed through seven different applications. The software used as a decision support system, MEDIA (Modelling Environment for Design Impact Assessment), contains two hundred different

sustainability decisions obtained from case studies and expert opinions for urban regeneration projects. However, during the game session with the help of DUBES used as a simulation game, the opinions of the users were used to develop these decisions. This dual method was used for municipal employees, students in schools, and private firms serving in the urban regeneration sector and the results were reported. The work is very important and successful in terms of its innovative point of view, the concept of sustainability and the sustainable regeneration of the city, providing many actors with an enjoyable education and working space [71].

3.3 Researches on GIS and AHP

Gorsevski et al. (2011), In their study on landfill site selection in the Polog region in the northwest of the Republic of Macedonia, they evaluated the environmental and economic factors by using the Analytical Hierarchy Process (AHP) and Ordered Weighted Average (OWA) techniques, and created different scenarios and identified appropriate areas with values ranging from 0-1 [72].

Bunruamkaew and Murayama (2011), Site suitability evaluation for ecotourism at Thailand Surat Thani is studied. Firstly they defined the evaluation criteria and sub-criteria for ecotourism, then mapped the data with GIS software. With the matrices created by the AHP method, they have calculated the severity of these criteria and, after synthesizing all the data, conclude the study by making four classifications between not suitable to suitable for ecotourism at all [73].

Guiqin et al. (2009) This study is about solid waste landfill site selection in Beijing China, they defined 5 classifications which have lowest suitability to highest suitability with GIS and then designated areas are rated using AHP techniques according to the criteria which set for study area conditions. At the end they have identified landfill areas as “best”, “good” and “unsuitable”[74].

Akıncı et al.(2013), In this study on determining suitable lands for agricultural use in Türkiye, Artvin, Yusufeli district, the data like slope, soil class, elevation, erosion, etc. have evaluated with AHP method according to experts opinion, and organized according to the classification of United Nations Food and Agriculture Organization. After the restrained areas have been removed like forests, reservoirs and pastures,

GIS have been used to reclassification and only 8.5% of the study area is found suitable for Agricultural use [75].

Şener et al.(2010), studied about Turkey, Konya, Beyşehir Lake catchment area, uncontrolled waste spilled Turkey's largest drinking water in the reservoir area, they have developed methods to find suitable landfill site by evaluating social, physical and economic parameters together. Land use, elevation, slope, proximity to road, view, distance to settlements, surface water analysis made in GIS environment, than evaluated with AHP and result maps are produced. In result map, lands are defined as “unsuitable”, “very low”, “low”, “moderate” and “high” suitable, %73.70 percent of area is defined as unsuitable and only two possible areas were found [76].



4. MATERIALS AND METHOD

4.1 Materials

Main study material is Karşıyaka District which is selected as the sample field. Karşıyaka District is selected as the field of study because;

- It is one of the central districts with highest rent value due to its location,
- It is the fourth biggest district of Izmir in terms of population,
- The district has some urbanization problems,
- Planned urban regeneration projects are available for the district,
- The large part of the building stock is time-worn,
- Urban regeneration in the district is in rapid progress on the basis of parcel,
- There are some neighborhoods that have social problems,
- There are reinforcement deficiencies due to building density.

4.1.1 Description of study area

Karşıyaka district is located on the north shore of Izmir Bay between the piedmont of Yamanlar Mountain and the sea, integrated with the texture of the city. As it is seen in Figure 4 below, Bornova district is located in the south, Bayraklı in the east, Çiğli in the west, and Menemen in the north of Karşıyaka [77].

The climate in Karşıyaka district is hot and mild. Precipitation is higher in winter than in summer. Mean annual temperature is 17.4°C and mean annual precipitation is 732 mm in Karşıyaka. While July is the most arid month with mean precipitation of 2 mm, precipitation is the heaviest in December with 159 mm. July is also the hottest month with a mean temperature of 27°C and the coldest month is January with a mean temperature of 8.5°C (Table 4.1) [78].

Table 4.1. Climatic Data for Karşıyaka [95].

	January	February	March	April	May	June	July	August	September	October	November	December
Mean Temperature (°C)	8.5	9.4	11.4	15.3	20	24.1	27.4	26.9	23.3	18.5	13.9	10.2
Min. Temperature (°C)	4.2	5	6.3	9.6	13.5	17.2	20.3	19.7	16.2	12.2	8.8	6
Max. Temperature (°C)	12.8	13.9	16.6	21	26.5	31.1	34.6	34.1	30.5	24.8	19.1	14.5
Precipitation / Precipitation (mm)	151	108	75	42	30	11	2	2	15	51	86	159

With total population of 344.140, Karşıyaka is the 4th biggest district of Izmir as seen in Table 4.2.

Table 4.2. Population distribution in Izmir by districts [79].

NAME OF THE DISTRICT	TOTAL	MALE	FEMALE
	82003882	41139980	40863902
ALİAĞA	95392	52320	43072
BAYINDIR	40584	20141	20443
BERGAMA	103185	51920	51265
BORNOVA	445232	221092	224140
ÇEŞME	43489	22041	21448
DİKİLİ	44172	22089	22083
FOÇA	33131	19790	13341
KARABURUN	10603	5489	5114
KARŞIYAKA	344140	161345	182795
KEMALPAŞA	106298	53975	52323
KINIK	29803	15267	14536
KİRAZ	43989	22264	21725
MENEMEN	174564	89163	85401
ÖDEMİŞ	132511	65990	66521
SEFERİHİSAR	43546	22361	21185

Table 4.2. Population distribution in Izmir by districts [79] (Cont.)

NAME OF THE DISTRICT	TOTAL	MALE	FEMALE
SELÇUK	36360	18125	18235
TİRE	84457	41552	42905
TORBALI	178772	90173	88599
URLA	66360	33397	32963
BEYDAĞ	12507	6264	6243
BUCA	499325	249543	249782
KONAK	356563	174066	182497
MENDERES	93796	47316	46480
BALÇOVA	79357	38834	40523
ÇİĞLİ	194525	96838	97687
GAZİEMİR	137553	70309	67244
NARLIDERE	66203	33765	32438
GÜZELBAHÇE	32592	15764	16828
BAYRAKLI	311524	154715	156809
KARABAĞLAR	479986	236677	243309



Figure 4.1. Karşıyaka district and Neighboring Districts [80]

Former name of Karşıyaka was Cordelieu or Cordelio. The name Cordelio comes from Richard Coeur de Lion (Richard the Lionheart). The letter "n" at the end of the Coeur de Lion was disappeared in centuries and the name has become Cordelio. It is not a known fact that Richard the Lionheart who crusaded and fought against Selahaddin-i Eyyubi in 1190s had come to Izmir but some Christian knights who crusaded to Jerusalem by land have come to forested coastline across Izmir and encamped there. They named this location after the most glorious hero in Europe. Turks have named the coast across Izmir as Karşıyaka since the ancient times (Karşıyaka means "the coast across in Turkish). The Seljuk chevalier have used the description of "the coast across" in Izmir in 1082 during the period of Chaka Bey and in Izmir wars during the period of Aydınöđlu Umur Bey.

The railway that passed through the district in 1865 made Karşıyaka to grow rapidly. According to 1891 Yearbook of Aydın Province, the number of houses was 832 and the population was 1080 in the district. Hamidiye Shipping Company was established in 1884 and initialized navigation to the wooden pier in Karşıyaka and

this has further expedited the growth of the district. In those years, levantines and foreign merchants have bought large estates, settled on the coastline and built seaside residences and mansions here [81].

Commander of Izmir Division Giritli Ferik Hüseyin Hilmi Pasha opened the land around Soğukkuyu for settlement of Turks. Thus, Turks who have been living in Alurca-Sıralıköy vicinage of Yamanlar for hundreds of years started to settle in Soğukkuyu widely [81].

Karşıyaka was determined as a dwellings zone in all development plan implementations as of 1950s. As a result of the intensive movement of migration in 1950s, the population grew rapidly and a transformation process that affected the urban space was initiated in Karşıyaka as it happened in İzmir [10].

While the population in Karşıyaka was 15.453 in the early 1950s, it has reached to 77.877 in 1960s. The housing movement caused by the newcomers in Karşıyaka started in the center and spread to its surroundings. In order to bring the process under control in this rapid urbanization movement, Izmir Municipality held a national contest to obtain a new urbanization plan in 1951 and the project prepared by Prof. Doc. Kemal Ahmet Aru and his team was selected for implementation. Aru's plan was to open Bostanlı and its surroundings for settlement and construct 3 or 4-storey buildings on the main roads. It is seen in the map sections of the 1:2000 scale zoning plan approved in 1955 that the gauge in hinterland was 12.80 meters (floor ground + 3 storeys) and 21.80 meters on the waterside (floor ground + 8 storeys). Officially declared as a district in 1955, the settlement's connection with the center was strengthened with Altinyol link constructed in accordance with 1955 Master Plan. Consequently, it has become a self-sufficient "dormitory district" used for settlement and preferred by the high-income group living in the city instead of being just a holiday resort. The city maps of 1962 show that the urban texture of Karşıyaka composed of 2 or 3-storey detached buildings in a discrete order started to transform into a settlement composed of family apartments with a ground floor and 4 storeys in the discrete order beginning from the foreshore [10].

Following the enactment of the Property Ownership Law in 1965, construction of apartment buildings gained steam and meaning and shape of buildings were started

to change. This development led to a great transformation that eroded Karşıyaka's identity. The buildings that constituted the texture of the district were demolished and new high-rise buildings were constructed with a build-and-sell mentality [10].

By the 1980s, the walls of the city were completely surrounded by slums. In consequence Çay, Çiçek, M. Erener, Naldöken, Soğukkuyu, Emek, Örnekköy, Cumhuriyet, Yamaç, İmbat, Maltepe, Gümüşpala, Balatçık and Güzeltepe slums have emerged around Karşıyaka-Çiğli axis [82].

Migration to Izmir was increased due to the developing industry and terrorist actions took place in the east of our country in 1990s. In this period, a portion of the newcomers have settled in Karşıyaka and throughout the northern axis. The newcomers from different cultures brought along spatial and sociological problems to the city where both technical and social infrastructures were insufficient [83].

In an attempt to prevent the emerging slum problem, mass housing implementations determined as a means throughout the country are also seen in Karşıyaka. The land bought by Emlak Bank from the Treasury and Izmir Municipality in 1955 to construct mass housing on Old Gediz delta was a semi-swamp cracked by river branches. The construction activities in the area that started in 1969 have continued until today in nine stages - Bostanlı Residences, Atakent Residences, Mavişehir Residences [10].

The first mass housing units built by Emlak Bank in Karşıyaka are the dwellings constructed between the years of 1969-1983 and named as Atakent Villas. Initially, there were 300 duplex villas in the region and later on, 12-storey Yıldız Blocks composed of 1871 housing units were built. Between the years of 1988 and 1990, 1072 more housing units were built by Emlak Bank in Atakent under the name of Venetian Houses. These housing units were targeting middle income families at the beginning but when the demand was increased for these housing units, those in the high-income group were also settled here and these mass housing zone has become the housing units with highest economic rent value in the metropolis. Due to the increasing demand for these residential areas and the economic rent brought by this, Karşıyaka has quickly become one of the most important residential investment areas

within the metropolitan area. Sufficient amount of the wasteland within the boundaries of Karşıyaka district made mass housing implementations possible [84].

Mass Housing Zones and Numbers of Housing Units in Karşıyaka are given in Table 4.3.

Table 4.3. Mass Housing Zones and Numbers of Housing Units in Karşıyaka [84].

Mass Housing Zone	Year of Built	Number of Housing Units
Atakent Villas	1969-1983	300
Yıldız Blocks	1969-1983	1871
Atakent-Emlak Bank	1988-1989	1072
Mavişehir 1	1993-1995	2872
Mavişehir 2	1995-1998	3456
TOTAL		9571

As seen in Table 4.3, the increase in the demand for mass housing zones in Karşıyaka resulted in building luxury and expensive housing units in a short in a short span of time. These housing projects are also the largest mass housing projects within the boundaries of the metropolis. Mavişehir-1 housing project spread over an area covering 16.44 hectares between 1993-1995 and it consists of 2872 housing units. Mavişehir-2 housing project consists of 3456 housing units on an area of 20 hectares. At the present time, multi-storey housing cooperatives are being built in places by local capital sources around Mavişehir housing units. As shopping centers like Kipa, Carrefour-Sa and Egs-Park are located here, this area has become one of the most profitable zones for housing cooperatives and the area was converted into a settlement zone by smaller scale housing cooperatives.

Although the mass housing estates are being criticized as they are built on alluvial made-up ground in Karşıyaka and consequently have a high risk of earthquake and on agricultural land, it reflects the most modern appearance in terms of urban physiomy. Today, Mavişehir mass housing settlement zones are adjacent to Çiğli Organized Industrial Zone. Therefore, it seems there is no more alternative housing zone is available in Karsiyaka. Since there is no other wasteland to be used as a settlement area within the boundaries of Karşıyaka district, it is almost compulsory to

use the wastelands at the edges of the district and slum areas. The only areas that can be considered as suitable housing areas are the slum areas surrounding the present urban area and the ridges of the mountains extending beyond them and the forward ends of the valleys [84].

Nowadays, some slum areas are covered with apartment buildings in accordance with development plans. This structural change was not considered as an "Urban regeneration Project" but developed as housing projects in accordance with development plans on a parcel basis. However there was no public contribution to this apartment building construction process and the widths of the streets did not change, sufficient reinforcement areas were not allocated and consequently the housing in the area was not proper. Today, especially Nergis, Şemikler, Demirköprü, Goncalar, Fahrettin Altay, Dedebaşı-Örnekköy are faced with these problems [84].

4.1.1.1 Population and demography of study area

According to data of Turkish Statistical Institute for 2018, total population of Karşıyaka district is 344.140 [79].

Karşıyaka district was covering a larger area before but after formation of Bayraklı District in 2008, its boundaries have changed. It covers an area of approximately 42 hectares [84]. Figure 4.2 shows the neighborhood map of Karşıyaka District.

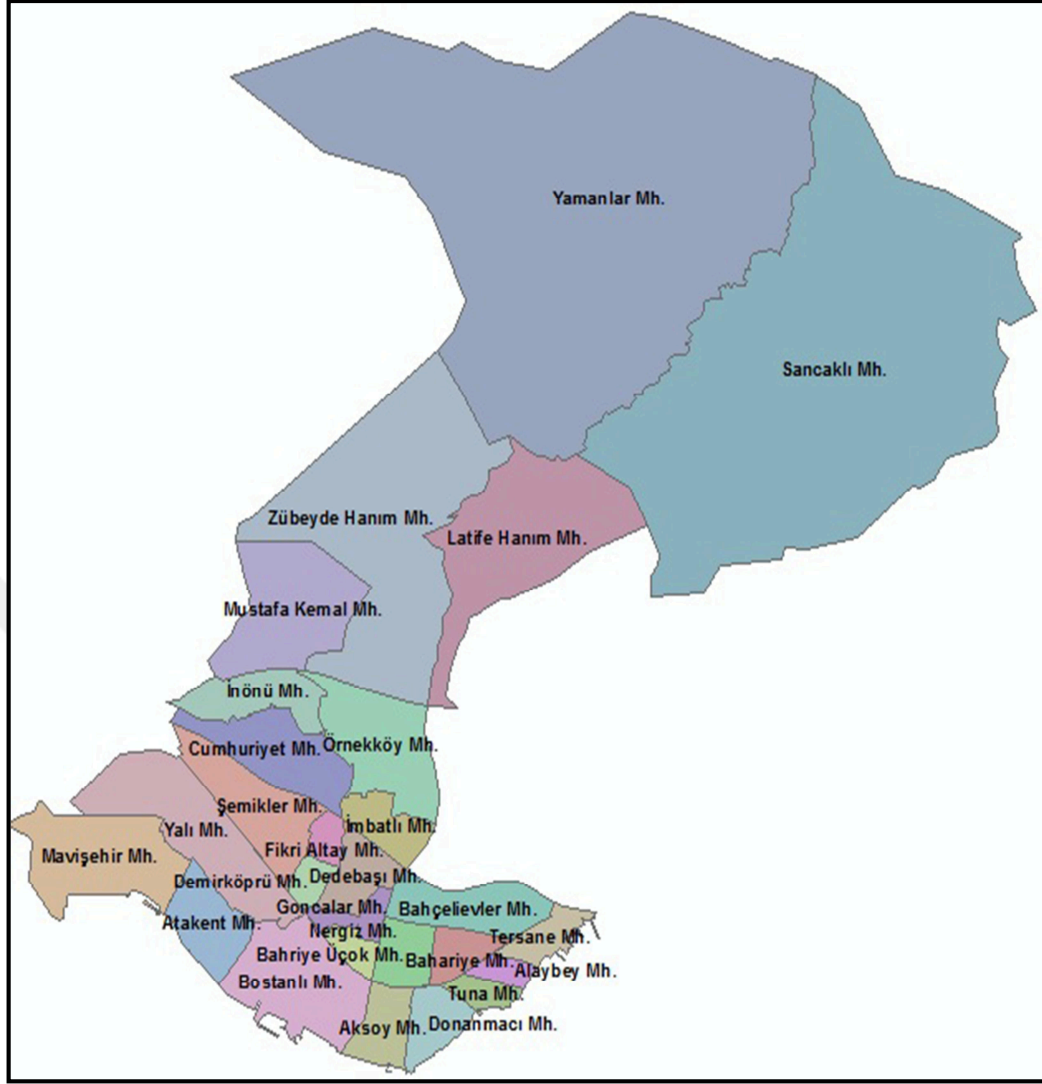


Figure 4.2. District neighborhoods and boundaries of Karşıyaka Province [64].

As seen in Figure 4.2, Karşıyaka district is composed of 27 neighborhoods. The distribution of Karşıyaka's population by districts is shown in Table 4.5.

Table 4.4. Population of Neighborhoods by Age Groups [79].

NAME OF NEIGHBORHOOD	AGE GROUP				TOTAL
	0-6	7-14	15-64	65+	
AKSOY	501	676	7867	2861	11905
ALAYBEY	342	492	5109	1404	7347
ATAKENT	398	708	4594	1507	7207
BAHARİYE	790	986	8658	2448	12882
BAHÇELİEVLER	1576	2204	18385	4476	26641
BAHRİYE ÜÇÖK	692	759	8673	3003	13127
BOSTANLI	1593	2119	20593	7403	31708
CUMHURİYET	1164	1196	9815	1683	13858
DEDEBAŞI	1643	1400	14144	2221	19408
DEMİRKÖPRÜ	470	375	4662	772	6279
DONANMACI	480	1102	7558	2289	11429
FİKRİ ALTAY	698	691	5677	780	7846
GONCALAR	562	622	6911	1332	9427
İMBATLI	553	407	4710	692	6362
MAVİŞEHİR	883	1589	9110	2417	13999
NERGİZ	473	568	5984	1396	8421
ÖRNEKKÖY	2308	2021	15551	1812	21692
ŞEMİKLER	2258	2031	19539	2642	26470
TERSANE	354	476	4992	1200	7022
TUNA	243	397	4052	1176	5868
YALI	2932	4044	26601	3991	37568
İNÖNÜ	832	860	5895	456	8043
ZÜBEYDE HANIM	1754	1764	12249	1360	17127
MUSTAFA KEMAL	808	1214	7413	678	10113
LATİFE HANIM	219	269	1444	133	2065
OTHER NEIGHBORHOODS	21	23	233	49	326
TOTAL					344140

When the data in Table 4.4 are examined, it is seen that Yalı, Bostanlı, Bahçelievler and Şemikler neighborhoods have highest populations respectively and Tuna, İmbatlı and Demirköprü neighborhoods have the least populations. In addition to this, while the neighborhood with highest elderly population is Bostanlı, the highest children population is in Yalı Neighborhood.

The distribution of population by age groups in the district is given in Table 4.5.

Table 4.5. Population distribution by age and sex [79].

NAME OF THE CITY	NAME OF THE DISTRICT	AGE GROUP	TOTAL		
			TOTAL	MALE	FEMALE
İZMİR	KARŞIYAKA	0-4	17238	8786	8452
		5-9	17851	9155	8696
		10-14	18451	9461	8990
		15-19	16370	8299	8071
		20-24	17959	8963	8996
		25-29	22635	10599	12036
		30-34	27306	12992	14314
		35-39	31346	14776	16570
		40-44	29353	13662	15691
		45-49	26508	12236	14272
		50-54	24082	11177	12905
		55-59	23214	10371	12843
		60-64	21646	9889	11757
		65-69	17737	7938	9799
		70-74	13304	5811	7493
		75-79	8819	3740	5079
		80-84	5532	2005	3527
85-89	3312	1083	2229		
90+	1477	402	1075		
TOTAL POPULATION			344140	161345	182795

When Table 4.5 is examined it is seen that 25.5% (87.869) of dwellers are under the age of 25, about 60% (206090) in the 25-65 age group and 14.5% (50181) are over the age of 65 and 53% of the total population are females and 47% are males.

When the distribution of dwellers in Karşıyaka is reviewed by registered provinces, İzmir is in the first rank with 131201 persons and Manisa comes after İzmir with 20699 persons. The share of persons registered in Afyon, Ankara, Aydın, Balıkesir, Çorum, Diyarbakır, Erzurum, Konya and Eskişehir is rather high.

The educational status of district's population is given in Table 4.6.

Table 4.6. Population distribution by education level [79].

	Number of Individuals	Percentage %
Illiterate	2018	0.71
Literate but not Graduated from Any School	4910	1.72
Primary School	39791	13.93
Primary education	16357	5.73
Secondary School or Equivalent Vocational Secondary School	29678	10.39
High School and its Equivalent	79005	27.66
College or Faculty	97737	34.22
Post Graduate (Including 5 or 6-Year Faculties)	13029	4.56
Doctorate	3090	1.08
Unknown	1896	

When Table 4.6 is examined, it is seen that college and faculty graduates constitute 34% of the total population. Population rate of illiterates is less than 1%. According to 2018 data, college or faculty graduates all around Turkey are 16% of the total population. In this sense, the education level in Karşıyaka district is above the grand average.

When the population distribution data are analyzed by literacy status among the districts of İzmir, it is seen that the lowest illiteracy rate among all districts is in Karşıyaka with 0.64% [79].

The distribution of the migration status of İzmir is examined by districts and 2018 TÜİK data are given in Table 4.7.

Table 4.7. Migration to and from the districts, net migration and net migration rate [79].

NAME OF THE DISTRICT	POPULATION IN 2018 ADNKS	MIGRATION	IMMIGRATION	NET MIGRATION (Received - Sent)	NET RATE OF MIGRATION (thousandth)
ALIAĞA	95392	6452	5089	1363	14.39
BAYINDIR	40584	1565	1277	288	7.12
BERGAMA	103185	3479	3753	274	-2.65
BORNOVA	445232	24550	25766	1216	2.73
ÇEŞME	43489	3778	2040	1738	40.78
DİKİLİ	44172	4505	2248	2257	52.44
FOÇA	33131	4034	2107	1927	59.91
KARABURUN	10603	1351	532	819	80.35
KARŞIYAKA	344140	22031	20505	1526	4.44
KEMALPAŞA	106298	4872	4967	-95	-0.89
KINIK	29803	1717	763	954	32.53
KİRAZ	43989	947	1029	-82	1.86
MENEMEN	174564	10883	8883	2000	11.52
ÖDEMİŞ	132511	3325	3719	-394	-2.97
SEFERİHİSAR	43546	4906	2277	2629	62.25
SELÇUK	36360	1704	1394	310	8.56
TİRE	84457	2737	2431	306	3.63
TORBALI	178772	11779	7632	4147	23.47
URLA	66360	5646	4125	1521	23.19
BEYDAĞ	12507	440	315	125	10.04
BUCA	499325	31179	28461	2718	5.46
KONAK	356563	17136	24010	-6874	19.09
MENDERES	93796	7357	4377	2980	32.28
BALÇOVA	79357	6802	6140	662	8.38
ÇİĞLİ	194525	15135	12401	2734	14.15
GAZİEMİR	137553	8229	8716	487	3.53
NARLIDERE	66203	4312	4785	-473	7.12
GÜZELBAHÇE	32592	3470	2259	1211	37.86
BAYRAKLI	311524	16489	21610	5121	-16.30
KARABAĞLAR	479986	22826	27046	-4220	8.75

When the migration status in İzmir given in Table 4.7 is examined, it draws attention that Karşıyaka district receives migration at the rate of 40% same as İzmir province.

Table 4.8 shows the building and population density by the acreages of the neighborhoods in Karşıyaka district.

Table 4.8. Building and population density by neighborhoods [79, 85].

Name of the Neighborhood	Population (2018)	Acreage of Neighborhood (m ²)	Built-Up Area (m ²)	Occupancy Rate (%)	Population Density (person/hectare)
Latife Hanım	2065	2763771	828012	23	7.471675475
Örnekköy	21692	1362849	657321	80	159.1665694
İmbatlı	6362	471871	359768	50	134.8249839
Nergis	8421	215639	198540	53	390.5137753
Goncalar	9427	240154	223071	70	392.539787
Bostanlı	31708	1480929	1120000	76	214.1088465
Atakent	7207	704824	310762	38	102.2524772
Yalı	37568	1822684	1531798	72	206.1136215
Demirköprü	6279	198924	170910	86	315.6481872
Fikri Altay	7846	185787	179091	96	422.3115719
Cumhuriyet	13858	1086837	903742	78	127.5076207
Şemikler	26470	1132231	418701	45	233.786215
İnönü	8043	669109	334900	50	120.2046303
Dedebaşı	19408	510879	300769	59	379.8942607
Mustafa Kemal	10113	1644754	806092	49	61.48639857
Zübeyde Hanım	17127	5713410	1428098	25	29.97684395

When Table 4.8 is examined, the neighborhood where the population per unit area is the highest is Fikri Altay Neighborhood with 422 persons/hectare and the neighborhood where the population per unit area is the least is Latifa Hanım Neighborhood with 7 persons/hectare.

According to the information obtained from Karşıyaka Police Department, the distribution of the number of crimes by neighborhoods in Karşıyaka district is given in Table 4.9.

Table 4.9. Number of crimes by neighborhoods [86].

Neighborhood	2018	2019 (As of July)	Population	2018%	2019
AKSOY	56	73	11905	0.47%	0.61%
ALAYBEY	54	69	7347	0.73%	0.94%
ATAKENT	32	112	7207	0.44%	1.55%
BAHARİYE	107	105	12882	0.83%	0.82%
BAHÇELİEVLER	194	144	26641	0.73%	0.54%
BAHRİYE ÜÇOK	123	106	13127	0.94%	0.81%
BOSTANLI	277	326	31708	0.87%	1.03%
CUMHURİYET	150	143	13858	1.08%	1.03%
DEDEBAŞI	79	90	19408	0.41%	0.46%
DEMİRKÖPRÜ	79	90	6279	1.26%	1.43%
DONANMACI	154	194	11429	1.35%	1.70%
FİKRİ ALTAY	38	43	7846	0.48%	0.55%
GONCALAR	60	41	9427	0.64%	0.43%
İMBATLI	87	95	6362	1.37%	1.49%
MAVİŞEHİR	106	134	13999	0.76%	0.96%
NERGİZ	50	39	8421	0.59%	0.46%
ÖRNEKKÖY	142	215	21692	0.65%	0.99%
ŞEMİKLER	157	195	26470	0.59%	0.74%
TERSANE	66	43	7022	0.94%	0.61%
TUNA	155	145	5868	2.64%	2.47%
YALI	190	203	37568	0.51%	0.54%
İNÖNÜ	44	22	8043	0.55%	0.27%
ZÜBEYDE HANIM	83	96	17127	0.48%	0.56%
MUSTAFA KEMAL	20	30	10113	0.20%	0.30%
LATİFE HANIM	10	7	2065	0.48%	0.34%

As seen in Table 4.9, total number of crimes is increased from 2465 in 2018 to 2710 as of July 2019. The increase in crimes in the district is attention grabbing. As it is seen in Table 4.9, the districts with the highest number of crimes are Bostanlı, Örnekköy, Şemikler and Donanmacı. Latife Hanım Neighborhood is the neighborhood with the lowest number of crimes. When the ratio of crime to population in 2018 and the ratio of crimes to population as of July 2019 are compared, it is seen that the highest increase is in Atakent Neighborhood.

The numbers of suicide attempts and suicide cases in Karsiyaka district is obtained from Karsiyaka Police Department and presented in Table 4.10 and Table 4.11 [86].

Table 4.10. Number of attempted suicides by neighborhoods [64].

Neighborhood	2018	2019 (As of July)
AKSOY	1	4
ALAYBEY	1	6
ATAKENT	0	0
BAHARİYE	0	5
BAHÇELİEVLER	3	3
BAHRİYE ÜÇOK	1	3
BOSTANLI	2	1
CUMHURİYET	2	3
DEDEBAŞI	2	1
DEMİRKÖPRÜ	0	1
DONANMACI	0	7
FİKRİ ALTAY	1	0
GONCALAR	0	0
İMBATLI	3	1
MAVİŞEHİR	1	0
NERGİZ	0	4
ÖRNEKKÖY	1	6
ŞEMİKLER	1	7
TERSANE	0	0
TUNA	1	3
YALI	6	1
İNÖNÜ	1	1
ZÜBEYDE HANIM	3	0
MUSTAFA KEMAL	1	1
LATİFE HANIM	1	0

Table 4.11. Number of suicides by neighborhoods [86].

Neighborhood	2018	2019 (As of July)
BAHARİYE	0	1
BAHÇELİEVLER	0	1
BOSTANLI	1	0
DONANMACI	0	1
GONCALAR	0	1
NERGİS	0	1
ŞEMİKLER	1	0
TUNA	1	2
ZÜBEYDE HANIM	1	0

Numbers of suicide attempts and suicides are the other data giving clues about the sociological situation of the city. According to the data obtained from Karşıyaka Police Department, there were 32 suicide attempts and 4 suicides in 2018, but these numbers were increased to 58 and 7 respectively as of July 2019. While Aksoy, Donanmacı and Şemikler neighborhoods have the highest number of suicide attempts, the highest number of suicides is in the Tuna Neighborhood (Table 4.10; Table 4.11).

4.1.1.2 Urban social facility areas in Karşıyaka

Even though the educational facilities, sports facilities, social and cultural facilities, healthcare facilities and religious areas seem to be sufficient in Karşıyaka district, need for such reinforcement areas keeps increasing each passing day due to the replacement of slums and summer resorts with apartment buildings. Although it is difficult to find new lands to be used as reinforcement areas in Karsiyaka district where the wastelands are limited, investments of central and local government continue [10].

According to the data obtained from District National Education Directorate in Karşıyaka, there are 77 educational institutions throughout the district. There is no private or public higher education institution within the boundaries of the district other than the Suat Cemile Balcıoğlu Healthcare Campus of Ege University which was opened in 2018-2019 academic year.

According to the information obtained from İzmir Provincial Health Directorate, there are 100 Family Health Centers, 8 Family Practice Centers, 2 Family Practice Centers affiliated with Katip Çelebi University, 1 Early Diagnosis and Screening Unit for Cancer, 2 District Polyclinics affiliated with Çiğli Regional Hospital, 1 Tuberculosis Dispensary, 1 Public Health Laboratory and 1 Oral and Dental Health Center in Karşıyaka District [87]. In addition to large private hospitals such as Medicalpark Hospital, Baskent University Hospital, there are private healthcare institutions serving in many different branches throughout the district.

After closure of Karsiyaka State Hospital and establishment of Çiğli Regional Hospital, there is no state hospital serving in the district.

There are many open sports areas built by İzmir Metropolitan Municipality on green fields throughout Kordon and a cycling path that reaches over Sasalı Bird Sanctuary in Karşıyaka District. In addition, there are 2 open sports fields, 1 covered swimming pool and 1 water sports center operated by Karşıyaka Municipality [88].

Karşıyaka Sports Club also contributes to sports activities and facilities in the district. Sailing Club, Karşıyaka Stadium to be rebuilt and Karşıyaka Sports Club's Facilities in Mustafa Kemal Neighborhood contribute to the city with the courses they hold.

In addition to these, there are 8 cultural centers, 1 library, 9 museums, 4 social facilities and 4 veterinary facilities of Karşıyaka Municipality in the district [88].

The Opera House being built by İzmir Metropolitan Municipality will contribute greatly to the cultural identity of both the district and İzmir [89].

The Urban regeneration Forest which will be located on an area covering 100 decares in Mustafa Kemal Neighborhood and formed with 2 olive saplings donated by contracting companies for each new flat and the Happiness Forest composed of dibbled saplings for each couple who get married in Karşıyaka are significant initiatives [88].

4.1.1.3 Planning process for study area

When upper-scale plans are examined, it is seen that 1:25000 scale Environmental Plan for İzmir Metropolis prepared by İzmir Metropolitan Municipality pursuant to Article 7 of the Decree-Law on the Organisation and Duties of the Ministry of Environment and Urban Planning was found acceptable and approved by decision numbered 05.843 of the Municipal Council of İzmir Metropolitan Municipality on 12.09.2012 and the said plan is still in effect [10].

Likewise, 1:100.000 scale Environmental Plan for İzmir-Manisa Planning Zone was prepared pursuant to Article 7 of the same Decree-Law and it was approved by the Ministry of Environment and Urban Planning on 31.12.2014 with approval no.21137. This plan was finalized after the assessment of objections made during the public display period and it is still in effect [10].

In 1:100.000 scale Environmental Plan for İzmir-Manisa Planning Zone the majority of the planning area was determined as Urban Built-Up Area (Figure 4.3).

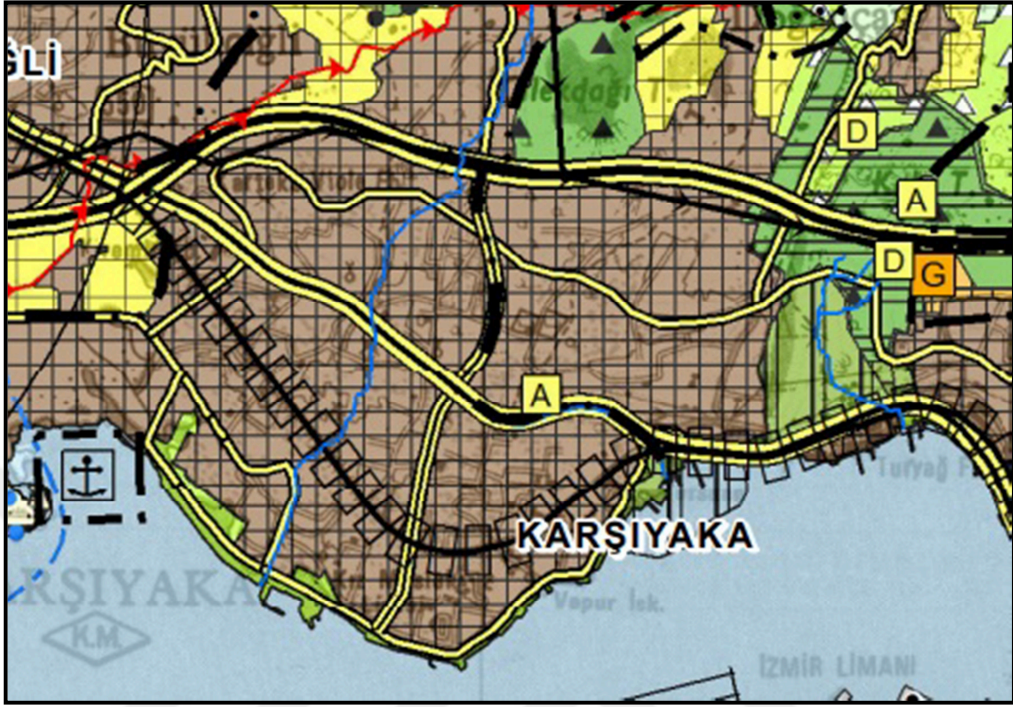


Figure 4.3. Karşıyaka in 1:100.000 scale Environmental Plan for İzmir-Manisa Planning Zone [90].

Following the amendments made to it, 1:25000 scale Environmental Plan for İzmir Metropolis was approved by the decision numbered 97509404.301.05.467 of İzmir Metropolitan Municipality's Council dated 09.04.2018 and a major part of Karşıyaka is determined as Urban Built-Up Area as seen in Figure 4.4 [10].

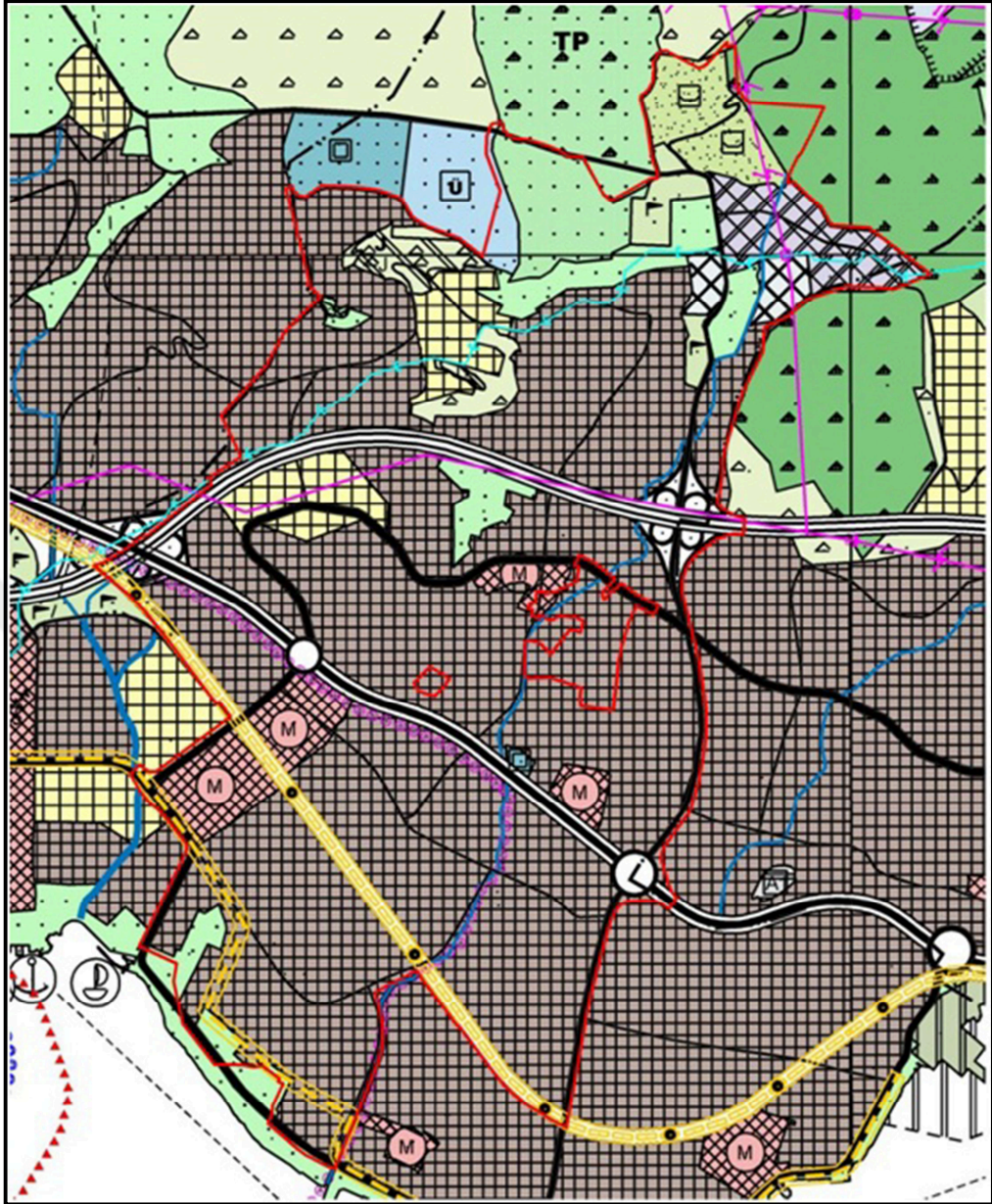


Figure 4.4. Karşıyaka in 1:25000 scale Environmental Plan for İzmir Metropolitan Area [10].

Pursuant to Article 7b of the Law for Metropolitan Municipalities published in Official Gazette no.25531 on 23/7/2004 and entered into force, metropolitan municipalities are authorized to prepare and approve the master development plans. The same article regulates that district municipalities are responsible for and authorized to prepare complementary development plans complying with master development plans but in case the district municipalities fail to prepare complementary development plan within one year following the effective date of master

development plan, preparing complementary development plans or having them prepared is under the authority and responsibility of metropolitan municipalities.

In this context, Master Plans prepared by Izmir Metropolitan Municipality for Karsiyaka District obtained from Karsiyaka Municipality are given in Figure 4.5 and Table 4.12 .



Figure 4.5. Current Master Plans for Karsiyaka District [85].

Table 4.12. Master Plans for Karşıyaka [85].

1	1:5000 scale Master Development Plan for İzmir-Karşıyaka 1st Phase approved on 21.01.2011.
2	Determination of the boundaries of the Military Security Zone of Naval Shipyard Command and the portion of the current Military Zone under the authority of IMM as Military Zone and the area between Naldöken Junction and Military Zone as green field.
3	Determination of Karşıyaka Alaybey Shipyard as a Military Zone approved on 08.05.2001
4	1:5000 scale Master Development Plan of Karşıyaka Pier approved on 20.03.2019
5	1:5000 scale Master Development Plan of plot 26675, parcel 11-12 approved on 28.09.2017
6	1:5000 scale Master Development Plan of plot 25265, parcel 5 approved on 13.11.2009 (Opera House)
7	1:5000 scale Master Development Plan for Opera Special Project Area approved on 04.04.2013
8	1:5000 scale Revised Master Development Plan for Deniz Bostanlığı approved on 20.05.2003
9	1:5000 scale Master Development Plan for Mavişehir Mass Housing Area approved on 18.09.2012
10	Additional Master Development Plan for Atakent 2nd Part approved on 18.04.1996
11	1:5000 scale Amended Master Development Plan for the land side of Karşıyaka trolley route approved on 24.04.2017
12	Revised Master Development Plan for Deniz Bostanlığı approved on 02.06.1997
13	Amended Master Development Plan for plot 26031, parcel 1 and plot 25529, parcel 1 approved on 09.05.2005
14	Amended Master Development Plan for plot 25261, parcel 1 approved on 05.11.2012
15	Master Development Plan for Mavişehir approved on 24.11.2016
16	1:5000 scale Master Development Plan for Örnekköy Urban regeneration and Development Area approved on 24.04.2017
17	1:5000 scale Master Development Plan for Bostanlı Dam Zone and Catchment approved on 03.10.2017
18	1:5000 scale Master Development Plan for Yamanlı Mountain Natural Park approved on 01.02.2016
19	1:5000 scale Master Development Plan for removal of military zone approved on 09.05.2018
20	1:5000 scale Master Development Plan for plot 25496, parcel 1 approved on 17.04.2017
21	1:5000 scale Master Development Plan İzmir-Karşıyaka 1st Phase approved on 21.01.2011.

In addition to the aforementioned development plans, there is a land in Cumhuriyet Neighborhood which was declared as a Zone Exposed to Disasters in 1997 by the Ministry of Public Works and Settlement due to the risk of rockfall. This zone was declared as a "Risk Area" under Law No. 6306 and planning activities for the area are carried out by the Ministry of Environment and Urbanization [10] (Appendix 1).

Main master development plans covering a large part of Karşıyaka district are the 1st Phase Master Development Plan and 2nd Phase Master Development Plan. The 1st

Phase Master Development Plan for Karşıyaka was accepted by decision no.01.1329 of the Council of Metropolitan Municipality on 16.12.2010 following the expiry of the public display period. The file of the plan covering Aksoy, Donanmacı, Tuna, Alaybey, Tersane, Bahçelievler, Bahariye, Bahriye Üçok Neighborhoods and some part of Bostanlı Neighborhood in Karşıyaka is reviewed in the Archive of Izmir Metropolitan Municipality's Zoning and Urban Planning Department. Although we had access to approved zoning sheets and council decisions, we could not obtain the explanation report of the plan and numerical development plan and analyses. Thus we don't have the data related to population, density, and reinforcement calculations of the plan.

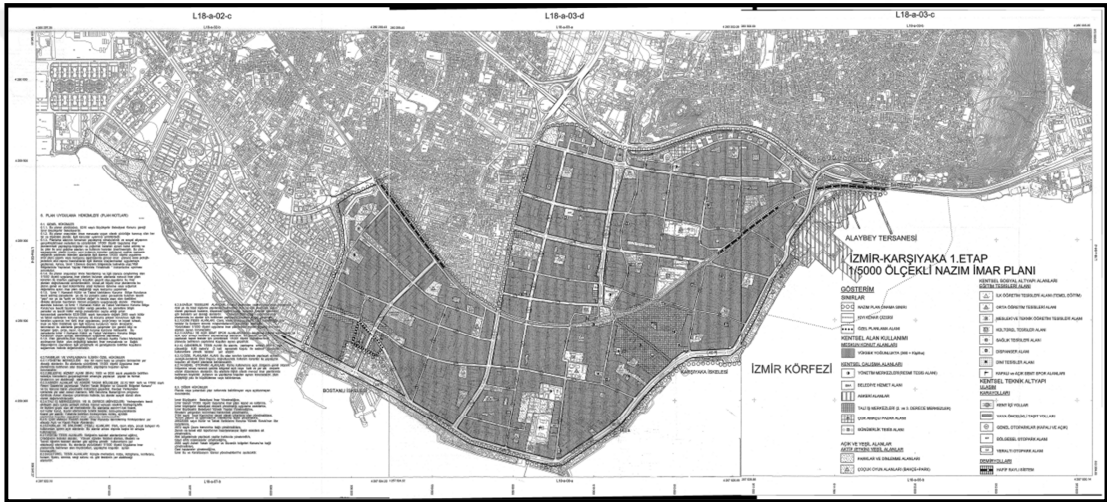


Figure 4.6. Karşıyaka 1st Phase Master Development Plan [10].

1:5000 scale Master Development Plan was accepted by the decision no.05.117 of the Council of Metropolitan Municipality on 11.02.2019 following the expiry of the public display period. As seen in Figure 4.6, the 1st Phase Master Development Plan covers the urban regeneration zones within the boundaries of Mavişehir, Örnekköy and Cumhuriyet neighborhoods and the whole area outside the coastal arrangement areas under the authority of IMM.

1:5000 scale Master Development Plan Karşıyaka 2nd Master Development Plan and Karşıyaka 2nd Phase Master Development Plan is presented in Figure 4.7 and Figure 4.8.



Figure 4.7. Boundaries of Karşıyaka 2nd Phase Master Development Plan [91].

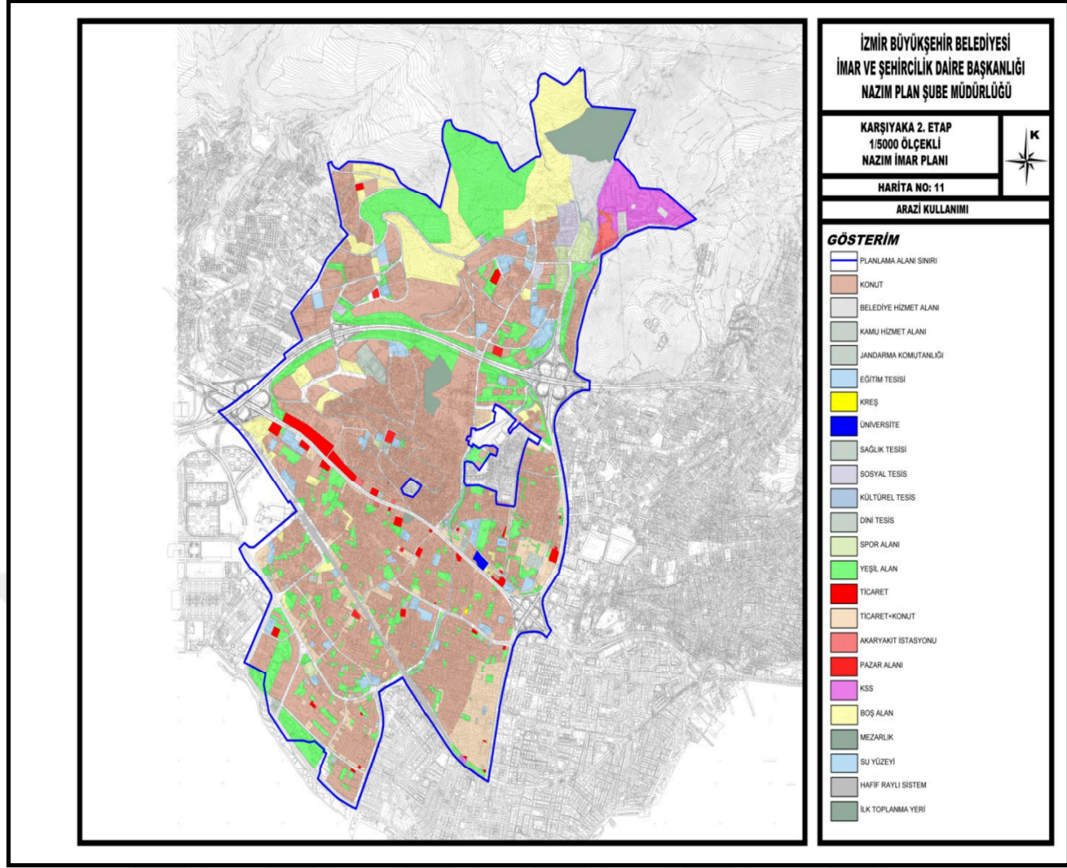


Figure 4.9. Land Use Analysis in the 2nd Phase Master Development Plan for Karşıyaka [62].

When the land use analysis in Figure 6 is examined, it is seen that most of the area is composed of housing areas. Wastelands are located only at mountainsides, in the north of the freeway. Trade is mostly located on Anadolu Street as an axis. However, there are small commercial areas where the needs of the neighborhood are met. There is no commercial center within the study area of the 2nd Phase. Although there are many green fields in the south of Anadolu Street, there are almost no green fields in the area between Anadolu Street and the freeway. The only small industrial zone and the biggest cemetery in the district, Örnekköy Cemetery are located in the north, within the boundaries of Latife Hanım Neighborhood.

47% of the area surrounded by green fields and recreational use in the north of Atakent Neighborhood are full of 1-2-3-storey villas in line with plan decisions. In line with the decisions of Implementary Development Plan, the ratio of 4-5-6-storey buildings throughout the housing zone is 41%. There are high-rise buildings around the main transportation axis and the ratio of 6 to 9-storey buildings is 5.8% while the

ratio of 12 to 15-storey buildings is 6.2% [10]. There are many open spaces within the boundaries of the neighborhood. In other words, building density is rather low on the ground but most of the buildings were built in the 70s and 90s and they lost their quality and became time-worn.

The coastal region of Bostanlı Neighborhood within the boundaries of Karşıyaka 2nd Master Development Plan are determined as 5 storeys in Implementary Development Plan and the current settlement is in compliance with the plan. The buildings on the area between the coastal region and Şehit Cengiz Topel Street are 2-storey villas and the ratio of 1 and 2-storey buildings is 29%. In the area north of Şehit Cengiz Topel Street, the ratios of 3 to 5-storey, 6-storey and 7 to 8-storey buildings are 48.6%, 22% and 1% respectively [10]. This region has also begun to develop in the 80s and although the density of time-worn buildings is dense, renovation works on parcel basis are in rapid progress.

Although the area in the north of Anadolu Street in Cumhuriyet Neighborhood is determined as high-density in Implementary Development Plan, current buildings have 1 or 2 storeys. A large part of Cumhuriyet Neighborhood is composed of housing zones having small parcel structure. The ratio of 1-storey buildings in the area is 53%, the ratio of 2-storey buildings is 28.3%, the ratio of 3-storey buildings is 12% and 93% of Cumhuriyet Neighborhood is composed of low-rise buildings with low building quality. The settlement in the Low-Cost Housing Zone within the Illegal Housing Prevention Zone located in the north of Anadolu Street is in conformity with plan decisions and so, 6% of the settlement zone is composed of 4 to 5-storey buildings. On the high-density islands in the north of Cumhuriyet Neighborhood and south of the highway, there are 7 to 11-storey low-cost buildings and the proportion to the whole area is 1% [10].

The ratio of low-quality buildings in Dedebaşı Neighborhood is high and even though it was decided to be a medium-density zone in Implementary Development Plan, the current ratio of 4 to 5-storey buildings is 21.1%, the ratio of 1-storey buildings is 26%, ratio of 2-storey buildings is 33% and ratio of 3-storey buildings is 15%. So 74% of the buildings in the area are low-rise ones. In high-density housing islands, the ratio of 6-storey buildings is 3%, the ratio of 7 to 8-storey buildings is

1.3% and the ratio of 9 to 10-storey buildings is 0.7% [10]. Since parcel-based urban regeneration works rapidly continue, old and new buildings are mixed and the street texture is rather complicated.

Housing structure in Demirköprü Neighborhood shares similarity with Dedebaşı Neighborhood and the ratio of 4 to 6-storey buildings is 8.7% in line with the Implementary Development Plan. 87% of the area is composed of 1 to 3-storey buildings and it is seen that the development is not in line with plan decisions, yet. In line with the high-density usage decisions taken for the surroundings of main transportation axis around the neighborhood, the ratio of 7 to 9-storey buildings is 4.1% and ratio of 10 to 11-storey buildings is 0.2% [10]. Parcel-based urban regeneration rapidly continues in Demirköprü Neighborhood.

While almost all of the area in Fikri Altay Neighborhood up to Anadolu Street is determined to be a medium-density usage area in Implementary Development Plan, the current ratio of 4 to 6-storey buildings is 15.4%. 83% of the area consists of 1 to 3-storey buildings and the ratio of 7 to 9-storey buildings is 1.3%, while the ratio of 10 to 11-storey buildings is 0.3% [10]. Parcel-based urban regeneration works in Fikri Altay Neighborhood exhibit a settlement where luxury apartment buildings and low quality ones are mixed.

54% of Goncalar and Nergis neighborhoods have 4 to 6-storey buildings in line with the plan decisions. The ratio of 1 to 3-storey buildings not completed in line with the plan decisions is 41%. The islands around the main transportation axes are high density zones according to plan decisions and the ratio of 7 to 9-storey buildings is 5% [10]. Parcel-based urban regeneration works continues in this neighborhood.

In addition to housing units, there are commercial areas with housing preference and sub-trade centers in İmbatlı Neighborhood along the main transportation axes. There are 3 to 7-storey zones and 9 to 14-storey zones in the Implementary Development Plan throughout the area. However, current development of the area is low-rise even on housing islands recommended to build high-rise buildings. The ratio of 1 to 3-storey buildings is 92% and the ratio of 4 to 6-storey buildings is 5.8%. The ratio of 7 to 9-storey buildings is 1.6% and the ratio of 10 to 14-storey buildings is 0.2% [10].

Parcel-based urban regeneration works by contractors continue in this neighborhood as well.

Örnekköy Neighborhood shows similarities with İmbatlı Neighborhood in terms of usage decisions and building heights. Örnekköy Neighborhood includes commercial zones with housing preference and large green fields like Regional Park in the Implementary Development Plan. There are 2 to 5-storey housing and commercial islands as well as 7 to 10-storey ones. However, 92% of the current zone is composed of 1 to 3-storey, 6.5% is composed of 4 to 6-storey and 3% is composed of 10 to 11-storey buildings [56]. Some part of Örnekköy Neighborhood is declared as an Urban regeneration Zone pursuant to Article 73 of the Municipal Law No.5393 and even though development plan process for the area is completed, housing is not started, yet.

A large part of Şemikler Neighborhood is medium-density in the Implementary Development Plan and surroundings of main transportation axes is high-density. In addition to the commercial functions of Şemikler Street in the area, there are M conditional islands that partake of sub-centers (2nd and 3rd Degree Centers). Currently, the ratio of 1 to 3-storey buildings is 85% and the ratio of 4 to 6-storey buildings is 13.7%. The ratio of high-rise buildings (7-8-9 storeys) is 1.3% [10]. The neighborhood has a low building quality and it is one of the neighborhoods where the urban regeneration activities continue rapidly.

Medium-density islands are determined in the Implementary Development Plan for Yalı Neighborhood. In the surroundings of the main transportation axes and in the large parcels, a high density decision is observed and M (2nd and 3rd. Degree Centers) conditional islands are present. 53% of the current buildings is 1 to 3-storey buildings and 42.5% of them are 4 to 6-storey ones. The ratio of 7 to 9-storey buildings is 4.4% and the ratio of 10-12-storey buildings is 1% among the high-rise buildings, Thus the total ratios is 4.5% [10]. As the neighborhood, where low-quality buildings and high-rise ones and even the luxury buildings are mixed is close to the coast and transportation links, it is one of the neighborhood where the parcel-based urban regeneration works continue rapidly.

In the development plan in effect for M. Kemal and İnönü neighborhoods, areas with large parcel texture partake of commercial centers are determined along with inhabited housing zones. 68% of the area consists of 1 to 3-storey, 11.3% 4 to 6-storey, 6.1% 7 to 9-storey and 14.6% 11 to 12-storey buildings [10].

The Implementary Development Plan for Zübeyde Hanım and Latife Hanım neighborhoods includes a small industrial area, BHAs and sports areas with large areas, nature park, cemetery and areas to be afforested along with housing zones and 81% of the current area is 1 to 3-storey, 11.3% is 4 to 6-storey, 7% is 7 to 9-storey and 0.7% is 10 to 11-storey buildings [10].

When the geological survey analysis of Karşıyaka 2nd Phase Master Development Plan is examined, it is found that geological surveys were made at different times from 2012 to present time. Article 21.1 of Spatial Plans Construction Regulation is as follows; *"Development plans cannot be made for areas where no approved geological-geotechnical or micro zoning survey reports are not available,"* and Article 21.7 is as follows; *"It is compulsory to comply with suitability for settlement maps in approved geological-geotechnical or micro zoning survey reports on which the development plan is based. When preparing the development plans, primarily micro zoning surveys, if any, are used. If they are not available, suitable geological-geotechnical surveys aimed at planning for the settlement area should be used."* There is no area within the planning boundary that does not have geological surveys in accordance with these articles (Figure 4.10).

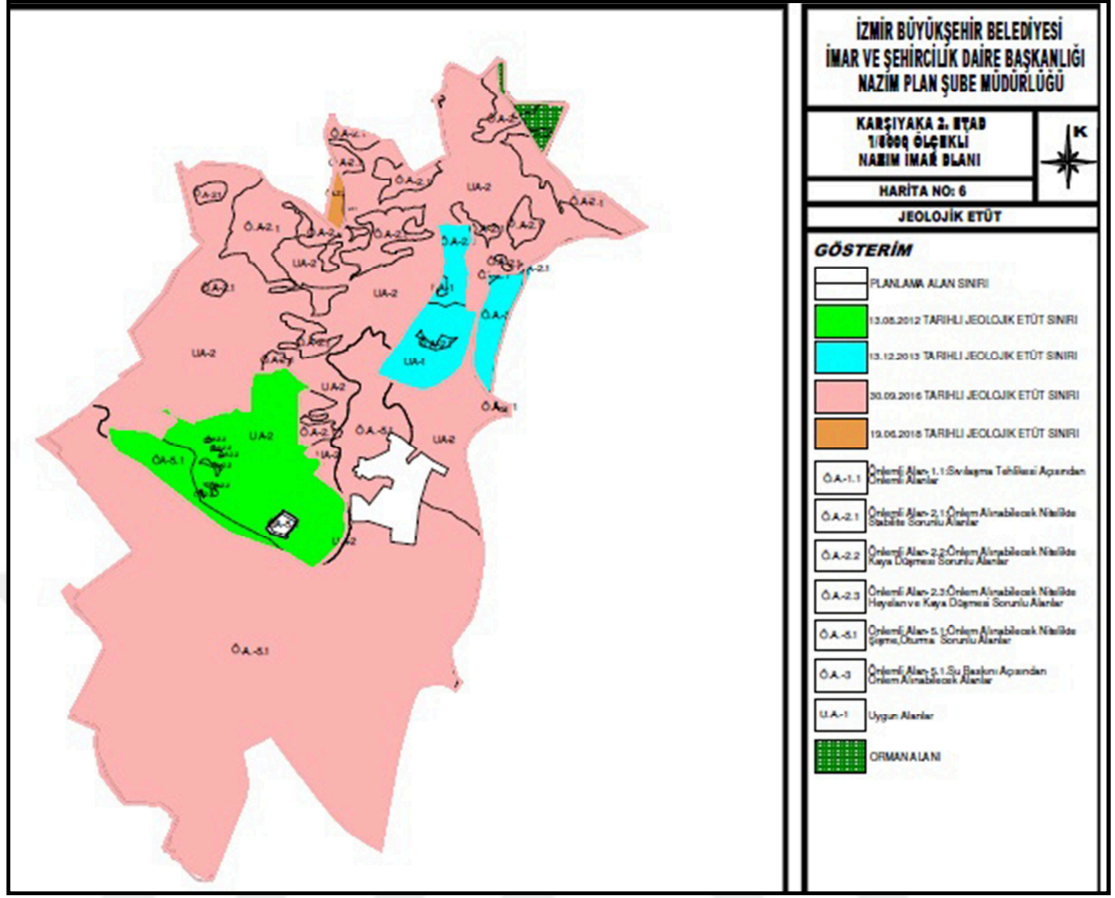


Figure 4.10. Geological Survey Analysis [91].

Natural gas lines of Izmir Gas Company and main natural gas line of BOTAŞ within the boundaries of Karşıyaka 2nd Phase Master Development Plan are shown in Figure 4.11.

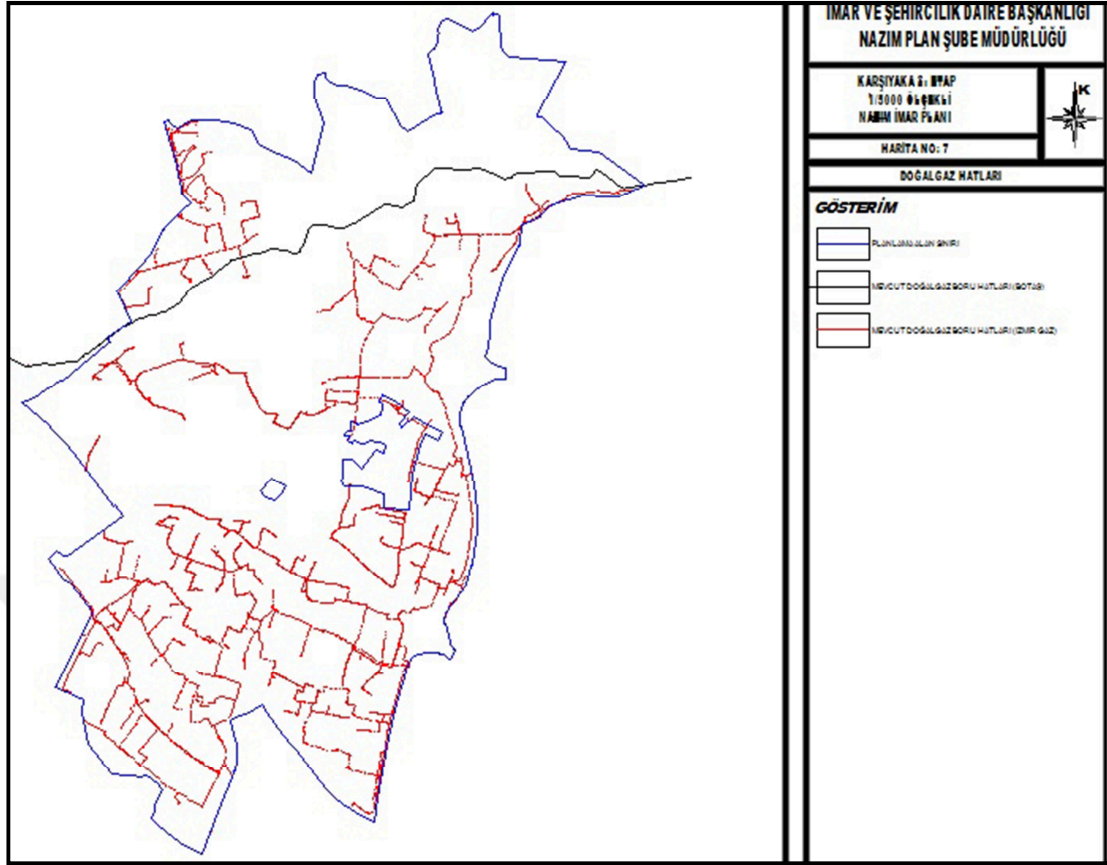


Figure 4.11. Natural Gas Lines Analysis [91].

In the meantime the plan, plan explanation report and analysis data related to the plan with respect to Örnekköy Urban regeneration and Development were accessed at the Department of Urban regeneration of İzmir Metropolitan Municipality.

The Project Area of Örnekköy Urban regeneration and Development was accepted by the Cabinet Decision No.3705 on 10/9/2012 pursuant to Article 73 of the Municipal Law No.5393. Master Development Plans for this area were prepared İzmir Metropolitan Municipality and approved on 21.03.2017. Housing works complying with the Örnekköy Urban regeneration and Development Area seen in Figure 22 did not start, yet [10].

The geological and geotechnical surveys on which Örnekköy Urban regeneration and Development Area is based were also made by İzmir Metropolitan Municipality. The analysis of suitability for settlement in the said report is seen in Figure 4.12. According to the analysis, the entire area is suitable for settlement [10].

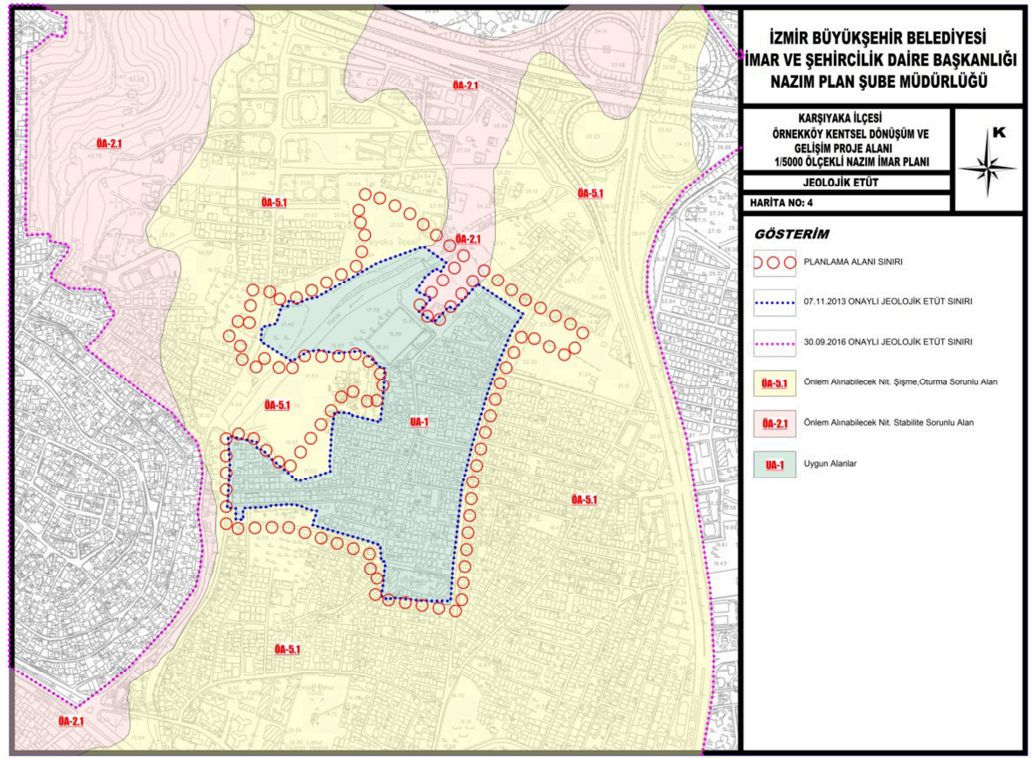


Figure 4.12. Suitability for Settlement Analysis of Örnekköy Urban regeneration and Development Area in Geological Survey [10].

When all obtained data are examined, the data regarding the crime rate, number of suicide attempts, number of suicides, building density in all neighborhoods within the boundaries of Karşıyaka district were accessed but the data such as ages of the buildings, natural gas infrastructure, locations of schools and parks could not be reached for Karşıyaka district. In this line: studies to determine suitable and priority areas for implementation of urban regeneration project in the area covering the boundaries of 2nd Phase Master Development Plan, boundaries of Örnekköy Urban regeneration and Development Area, boundaries of 1:5000 scale Master Development Plan, and the area which was declared as a zone exposed to disasters by the Ministry of Public Works and Settlement in 1997 were made and the areas for which any data could not be obtained are left out of assessment. The aforementioned areas are included in the area shown in Figure 4.13 which covers Latife Hanım, Zübeyde Hanım, Mustafa Kemal, Örnekköy, Cumhuriyet, İnönü, İmbatlı, Şemikler, Fikri Altay, Dedebaşı, Goncalar, Nergis, Demirköprü, Atakent neighborhoods and some part of Bostanlı Neighborhood.



Figure 4.13. The Area for which Data is obtained in the Study Conducted to Determine the Suitable and Priority Areas to implement Urban regeneration Project.

4.1.2 Materials used for sustainable urban regeneration area planning model study

In an attempt to develop a sustainable urban regeneration plan model, primarily the below matters emphasized in the study of Urban Task Force, which is an important source of reference for debates on the future of cities in recent years were taken into consideration to form the general framework. The matters addressed in the report titled "Towards an Urban Renaissance" are below:

- Compact city or de-fragmented urban form

- Improved public realm
- Combination of urbanism and nature
- Community development [92].
- At the detailed design analysis, determinative principles of Oktay (2001) in urban design approach are considered:
 - Identifiability by means of physical and social integrity,
 - Easy accessibility for pedestrians between important uses,
 - Environment conscious public transportation system offering options,
 - Respect to historic and traditional patterns, structures and boundaries,
 - Diversity in Use: A public space - private space association which offers a wide range of options to support the local economy from which all income groups can benefit,
 - Physical identifiability, safety, comfort, attractiveness and ability to bring together in public spaces,
 - Sensitivity to local climate, topography, history and building tradition in architectural design,
 - Close relationship with nature in design,
 - Positioning and shaping the spaces where all people come together in the manner to develop/support the social identity and culture of democracy [93].

The means that Yazar (2006) revealed in his study titled "Urban Planning Method Suggestion for Medium Scale Cities within the Frame of Sustainable Urban Development" to be identified for urban planning and objectives of these means was another study considered in the process of forming an urban regeneration area development plan for the area specified in Table 4.13 [35].

Table 4.13. Means and Objectives Set developed by Yazar (2006) [35].

Basic Fields	Means	Special Objective	General Objective
Policy-Making	Urban sustainability indicators	Analyzing the sustainability status of the city	Revealing weaknesses and strengths of the city in terms of sustainability, associating them with other fields, determining the strategy, future projection and main duty of the city complying with upper scale decisions
	Data Bank	Storing data in all fields related to urban development	
	Ecological Maps	Making ecological map of the city with the help of CBS (?) system	
	Participation	Determining the suggestions of people regarding their problems and future	
Planning	Land Use	Generating mixed use and compact city form	Making sustainable urban development of the city possible by intervening in the urban action areas
	Holistic Transportation	Prioritizing public transport, integrating alternative ways independent from automobiles	
	Housing Zones	A dwelling texture composed of dense neighborhood units where access with urban services is high	
	Environment and Infrastructure	Preventing urban sprawl, protecting natural resources, ensuring a recycling-based system to stop the pollution by urban wastes	
	Economy	Ensuring economic revival of the city, respecting to ownership, developing public resources	
	Energy	Regulating alternative and renewable energy sources for the energy used in cities	
Decision Making	Strategic EIA	Making environmental assessment of public - private space projects in frame plan	Provision of sustainable development by urban plans
	Sustainability Matrix	Assessing public - private projects for urban development in frame plan and determining the order of priority	
	Public Participation	Holding people responsible and creating urbanity awareness	
Education	Public Meetings	Raising awareness for SKG	Infusing SKG into people
	Informative documents	Raising awareness for SKG	
Participation	Meetings, conferences and so on.	Ensuring participation in all processes of planning	Ensuring participation in all processes of planning
Monitoring - Assessment	Periodical Sector Monitoring Matrices	Measuring the progress of plan implementations in short, medium and long terms, revising the plan basing on feedback of society and changes in general situation	Increasing the effectiveness of the frame plan, providing flexibility and averting consistent changes in the plan

4.1.3 Other Materials

For digitization, arrangement, processing and analysis of data related to the study area 10.2.1 ArcGIS (Esri Turkey) software is used.

No data was obtained from İzmir Metropolitan Municipality and Karşıyaka Municipality to analyze the ages of the buildings and as seen in Figure 4.14, this

study is conducted by associating the satellite images obtained on various dates on Google Earth with the boundaries of the neighborhoods.

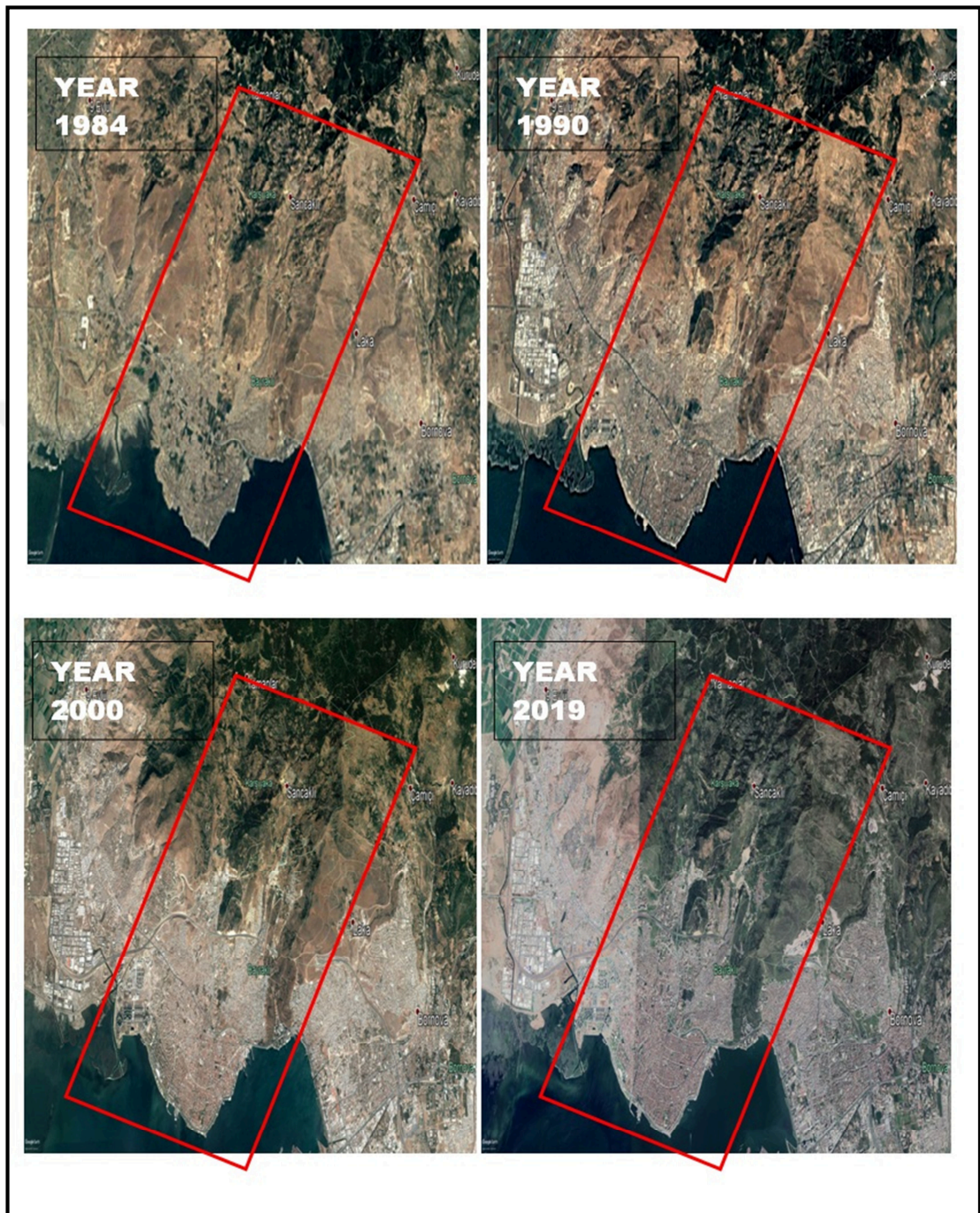


Figure 4.14. Satellite Images of Karsiyaka District and its Surroundings Obtained on Various Dates [94].

4.2 Methods

In an attempt to express the properties of city sections numerically and select the locations by assessing with the help of decision support systems (urban regeneration project area), Analytic Hierarchy Process (AHP) and Geographic Information Systems (GIS) are used together.

Study method is composed of the following phases (Figure 4.15).

1. Determination of Criteria and Criteria Subclasses
2. Determination of suitability values of criteria and criteria subclasses and preparation of data layers related to these suitability values,
3. Determination of Criterion Weights by using Analytical Hierarchy Process
4. Transfer of criteria weights to maps and preparation of suitability maps by using the ARCGIS- Weighted Overlay tool.
5. Revealing the Causes that Require Urban regeneration by Neighborhoods and Determination of Intervention Types
6. Scrutinizing the priority urban regeneration area and its problems and development of sustainable urban regeneration plan model for this area.

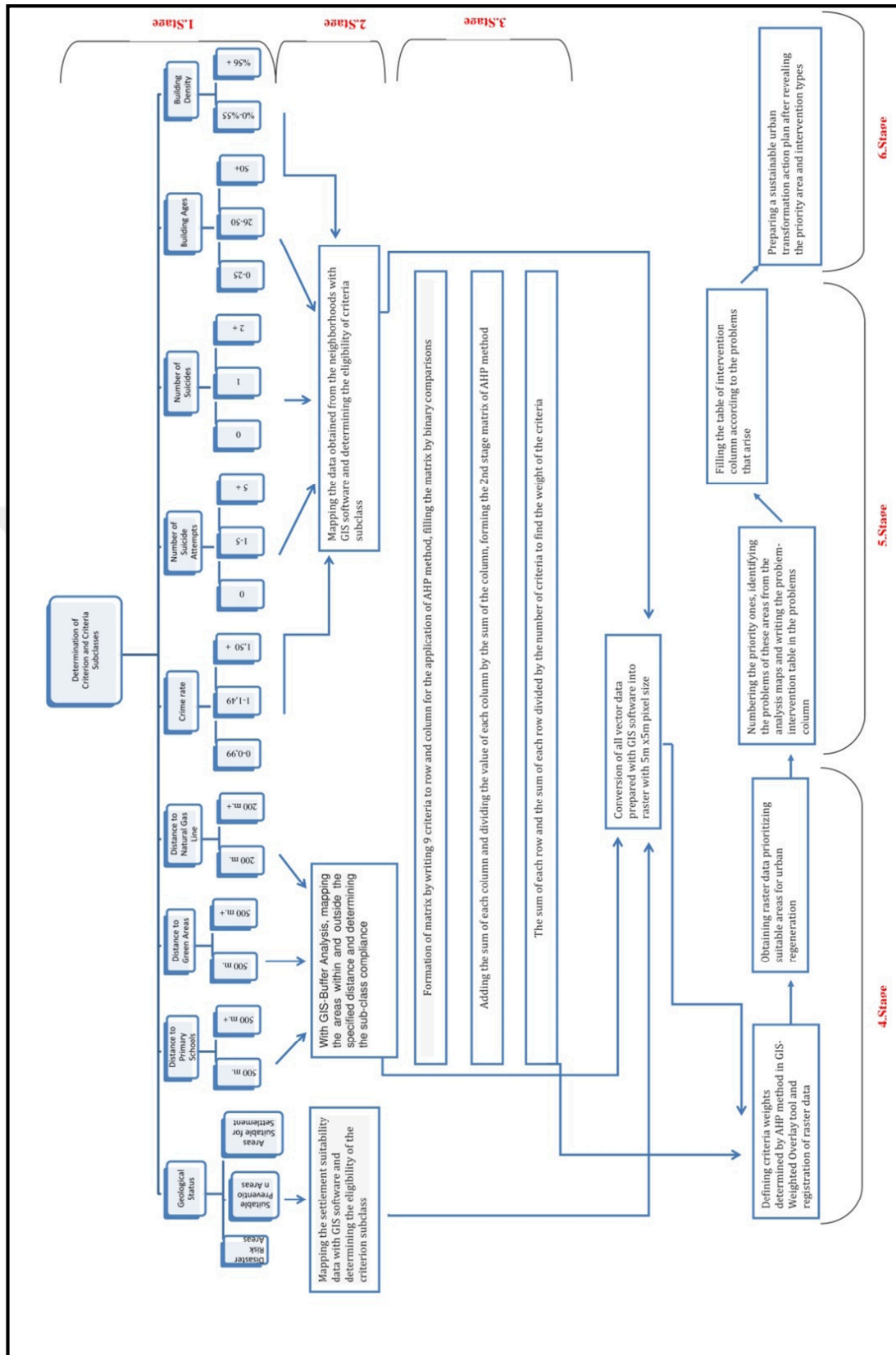


Figure 4.15. Determination of Criterion and Criteria Subclasses.

4.2.1 Analytic hierarchy process (AHP)

The main problem with decision-making is selecting the most suitable one among competing alternatives or the alternatives which have different superiority over each other. Analytical hierarchy process, which is used to make the decision-making process effective, was developed by T.L. Saaty in 1971-1975 at Wharton School University of Pennsylvania [95]. According to Saaty (2004), "the analytic hierarchy process is the decision mechanism instinctively adopted by mankind when they encounter decision-making problem and this mechanism is not taught to mankind but it is there since their existence" [96, 97].

In his study titled "Decision-Making with the Analytic Hierarchy Process" Saaty (2008) states that it is argued that everything in the inter-dependent universe are related/dependent to each other and whether this argument is rubbish or if there is a reality behind this argument and if we know how to measure the abstract values, we would have a wider perspective than we can scientifically actualize and assess everything by using many more factors. He also states that we have to interpret our numeric values by their priority in terms of their meaning and usefulness and numeric values don't have the same degree of significance for every problem and significance is relative [98].

The establishment of the ECHR decision hierarchy begins at the highest level by placing the general purpose of the problem. Later on, the criteria to be used to assess the alternatives are determined and these criteria are arranged in an hierarchical order. This hierarchy includes a level composed of criteria and the level or levels at which each criterion is divided into sub-criteria. By placing decision alternatives to the problem at the lowest level of the hierarchy, the hierarchy formation process is completed. In AHS, a decision hierarchy composed of objective, criteria and sub-criteria levels and options is established (Figure 4.16) [98].

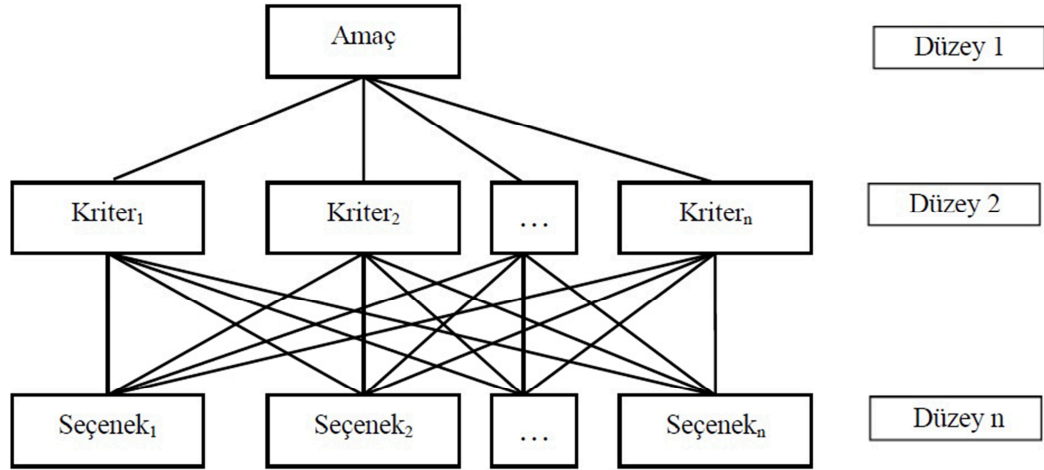


Figure 4.16. A simple AHP decision hierarchy composed of objectives, criteria and options [98].

In order to compare the significance of factors to each other or how dominant they are over each other by considering the criteria or properties, we need scaled numbers that indicate this [98]. If judgments are used in comparison instead of rates, the scale (Table 4.14) on which AHP method is based is used [97].

Table 4.14. Basic scale of the analytic hierarchy process [97].

Significance Value	Definition	Description
1	Equally Significant	Equality of two activities in terms of objective
2	Light or Poor	
3	Moderately Significant	Activities are regarded poorer than or superior to each other by experiences and opinions
4	Above Moderate	
5	Strongly Significant	Activities are regarded strongly superior to another by experiences and opinions
6	Above Strong	
7	Strongly Significant	One activity is more significant than another
8	Very very strong	
9	Definitely Significant	One activity is more significant than another at the possible value

4.2.1.1 Determination of criteria and criteria subclasses

Criteria and criteria subclasses are determined by using the literature review and data obtained from related institutions (Table 20). The criteria established for identifying and prioritizing urban regeneration project areas are grouped under 9 headings. 4.1.6. As stated in the Other Materials section, adding numerous economic, social and physical criteria about the district to these criteria will make it possible to obtain more precise results. However these criteria are determined as geological status, distance to access primary schools, distance to access green fields, closeness to natural gas line, crime rate, suicide rate, suicide attempt rate, ages of buildings and building intensity. Article 12 of the Regulation of Spatial Plans is taken into consideration for distance of access to primary schools and green fields and Article 18 of Zoning Law No.3194 is taken into consideration for building density. In forming other criterion subclasses, significant groups are established in accordance with the quality of data.

4.2.1.2 Determination of suitability values of criteria sub-classes and preparation of data layers for these suitability values with GIS

In this section, all criteria sub-classes were examined individually and whether or not they point to areas that are suitable for urban regeneration was determined. This suitability analysis was then mapped with the help of GIS.

When the criteria sub-classes were considered, it was noted that while some of them can be determined as suitable or unsuitable, the suitability value for others required scaling. In this respect, a 3-degree scaling was performed in the creation of suitability maps of the criteria sub-classes and scoring was performed by using the values of 0, 2, 4.

In the criteria maps, the scoring and the corresponding suitability values and the levels of suitability are as given below.

“0” Not Required

“2”: Moderately Required

“4”: Required

Using ArcGIS 10.2.1. software, the suitability values were mapped with different methods/ tools according to the characteristics of each criterion.

For example, since green areas and areas outside the walking distance of schools (500 m) are considered as areas in need of urban regeneration, Buffer Analysis was used for mapping these areas. Buffer tool creates buffer polygons around input features to a specified distance.

First, a point layer was created in which all primary schools are marked, then, the Buffer Tool which is under the Geoprocessing heading of the ArcGIS 10.2.1. software was selected to complete the process. Through this method, the areas that are within the district area but outside the buffer zones were mapped as areas where urban regeneration intervention was required.

4.2.1.3 Determination of criteria weights using analytical hierarchy process

First, pairwise comparisons were made to determine weights of each criterion. (Pairwise comparisons). The purpose of these pairwise comparisons was to determine the significance of one criterion over another. The number of pairwise comparisons to be made according to our criterion number was also varied.

Table 4.15. Number of Comparisons [106].

Number of things	1	2	3	4	5	6	7	n
Number of comparisons	0	1	3	6	10	15	21	$\frac{n(n-1)}{2}$

Since there were 9 criteria in the study, there were a total of 36 pairwise comparisons. The basic scale of the given Analytic Hierarchy Process given in Table 4.15 was used in determining the importance/ priority of one criterion against the other. To give an example from among these 36 comparisons, in the case shown in Figure 4.17, it can be seen that the Geological Status is more important than the Access Distance to Primary School.

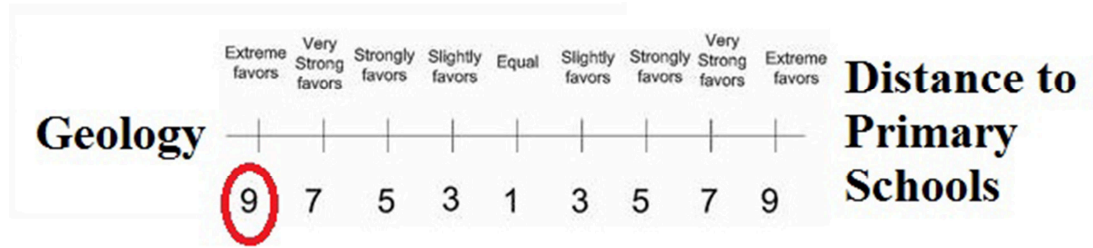


Figure 4.17. Pairwise Comparison Example [106].

When preparing comparison tables, the importance of one criterion over the other can be determined via studies of experts, survey studies or individual decisions. In this study, individual decisions were used to determine criteria weights. As a result of these pairwise comparisons, a pairwise comparison matrix was formed.

Table 4.16. Pairwise Comparison Matrix [96].

	Criterion 1	Criterion 2	...	Criterion n
Criterion 1	P_{11}	P_{12}	...	P_{1n}
Criterion 2	P_{21}	P_{22}	...	P_{2n}
...
Criterion n	P_{n1}	P_{n2}	...	P_{nn}

For the purpose of applying the Matrix shown in Table 4.16 to the criteria of the research, if the resulting value of the pairwise comparison is on the left side, an actual value is coded into the matrix, while a fractional value is coded if the resulting value is on the right side. [106]

The column values of the formed matrix are added as shown in figure 4.18 and then each value in this column is divided by the total column value as shown on figure 4.19. The sum of the resulting values should be 1 for each column [106]

$\sum_{i=1}^n P_{i1}$	$\sum_{i=1}^n P_{i2}$	\dots	$\sum_{i=1}^n P_{in}$
-----------------------	-----------------------	---------	-----------------------

Figure 4.18. Calculation of column totals [97].

	Kriter 1	Kriter 2	...	Kriter n
Kriter 1	$\frac{P11}{\sum_{i=1}^n Pi1}$	$\frac{P12}{\sum_{i=1}^n Pi2}$...	$\frac{P1n}{\sum_{i=1}^n Pin}$
Kriter 2	$\frac{P21}{\sum_{i=1}^n Pi1}$	$\frac{P22}{\sum_{i=1}^n Pi2}$...	$\frac{P2n}{\sum_{i=1}^n Pin}$
...
Kriter n	$\frac{Pn1}{\sum_{i=1}^n Pi1}$	$\frac{Pn2}{\sum_{i=1}^n Pi2}$...	$\frac{Pnn}{\sum_{i=1}^n Pin}$

Figure 4.19. Rows divided by the sum of the columns [97].

Then, in order to determine the importance level of the criteria, the mean is calculated by dividing the sum of each row by the number of criteria. According to the data obtained from the calculations given in Figure 4.20, the values in the row average column indicate the relative importance levels of the criteria [105].

	Önem Düzeyi (Kriter Ağırlığı)
Kriter 1	$\frac{\frac{P11}{\sum_{i=1}^n Pi1} + \frac{P12}{\sum_{i=1}^n Pi2} + \dots + \frac{P1n}{\sum_{i=1}^n Pin}}{n} = W11$
Kriter 2	$\frac{\frac{P21}{\sum_{i=1}^n Pi1} + \frac{P22}{\sum_{i=1}^n Pi2} + \dots + \frac{P2n}{\sum_{i=1}^n Pin}}{n} = W21$
...	...
Kriter n	$\frac{\frac{Pn1}{\sum_{i=1}^n Pi1} + \frac{Pn2}{\sum_{i=1}^n Pi2} + \dots + \frac{Pnn}{\sum_{i=1}^n Pin}}{n} = Wn1$

Figure 4.20. Determination of criteria Weights [97].

4.2.2 Transfer of criteria weights to maps and the generation of conformity maps with ARCGIS-weighted overlay tool

The initial process in this chapter is converting the maps that were prepared for criteria and criteria sub-classes to rasters. As shown in Figure 4.21, the conversion of map sheets for each criterion is done using the Model Builder tool of ArcGIS 10.2.1., and they are then reclassified.

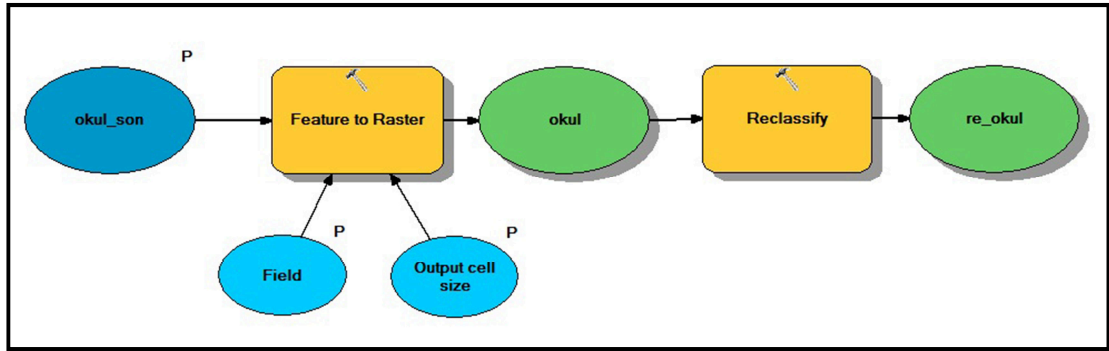


Figure 4.21. Conversion of map sheets prepared for criteria and criteria sub-classes with Model Builder to rasters.

Following this process, all rasters are overlaid, as shown in figure 4.22, by entering the criteria weights determined by the AHP method to the table segment of the Weighted Overlay tool of the ArcGIS 10.2.1 software, which weighs multiple raster layers according to each other and within themselves to create a new layer by overlaying them one other.

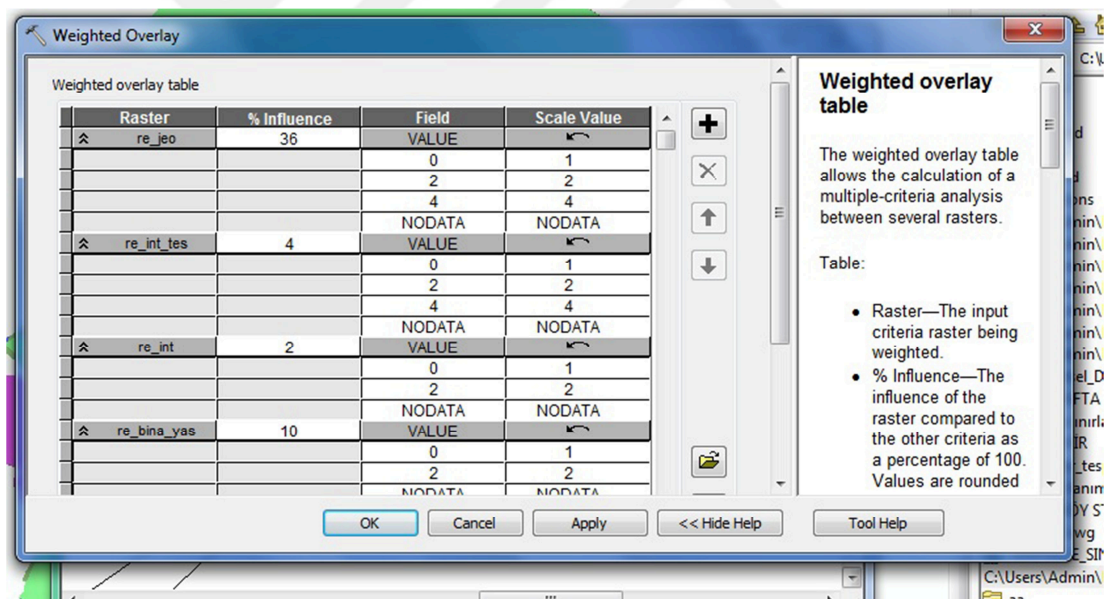


Figure 4.22. Entering the criteria weights determined using AHP in the Weighted Overlay Tool Table and Forming the Suitability Analysis Map.

In the new layer that has been formed as a result of the overlay, the areas that are suitable and unsuitable to the criteria that you have determined in accordance with your evaluation appear as a gradient.

4.2.3 Determination of causes that require urban regeneration on the basis of neighborhoods and determination of intervention forms

According to the gradation we had previously established, the priority ranking of areas that were determined using the Weighted Overlay tool of ArcGIS 10.2.1. software was tabulated and which areas required what type of intervention was indicated on this table.

4.2.4 Examination of the priority urban regeneration area and its problems and the development of sustainable urban regeneration plan model for this area

The highest priority area in need of urgent urban regeneration, which was determined according to the table which indicates the priority rankings and intervention types, was addressed in this section. The extent to which this area has problems related to the identified criteria and sub-criteria was discussed in detail. What types of studies should be done in consideration of the sustainable planning criteria to be carried out in the development plan study to be established to solve these problems were discussed.

5. FINDINGS

5.1 Determination of Criteria and Criteria Sub-classes

According to the data obtained from İzmir Metropolitan Municipality, Karşıyaka Municipality, TURKSTAT and the information obtained as a result of the literature review, 9 criteria for identifying and prioritizing urban regeneration project areas and the sub-classes for these criteria were determined as indicated in Table 5.1.

Table 5.1. Criteria and Criteria Sub-classes for Determining Urban regeneration Areas.

Geological Status	Distance to Primary Schools	Distance to Green Space	Proximity to Natural Gas Line	Crime Rate	Number of Suicide Attempts	Number of Suicides	Building Ages	Building Density
Disaster risk areas	0-500 m	0-500 m	0-200 m	0-1	0	0	0-10	0-55%
Areas not suitable for settlement	500 m-+	500 m-+	200 m-+	1-1.99	1-5	1	11-25	56%-+
Suitable areas with settlement prevention				2+	5+	2+	26-50	
Areas suitable for settlement							50+	

5.2 Determining The Suitability Values Of Criteria Sub-Classes And Preparation Of Data Layers For These Suitability Values With GIS

As detailed below, 9 determined criteria and their criteria sub-classes were mapped using ArcGIS 10.2.1. software according to their suitability values.

5.2.1 Geological status

Since Disaster Risk Areas and Areas Unsuitable for Settlement, which are both among the sub-classes formed through the combination of the data which was obtained by the combination of settlement suitability maps of geological and geotechnical survey reports made in the Karşıyaka District, areas that should be addressed with the urban regeneration project, they were determined to be suitable areas.

Table 5.2. Suitability Values of Criteria Sub-classes Related to Geological Status Criteria.

Geological Status	Disaster risk areas	Required	4
	Suitable areas with settlement prevention	Moderately Required	2
	Areas suitable for settlement	Not Required	0

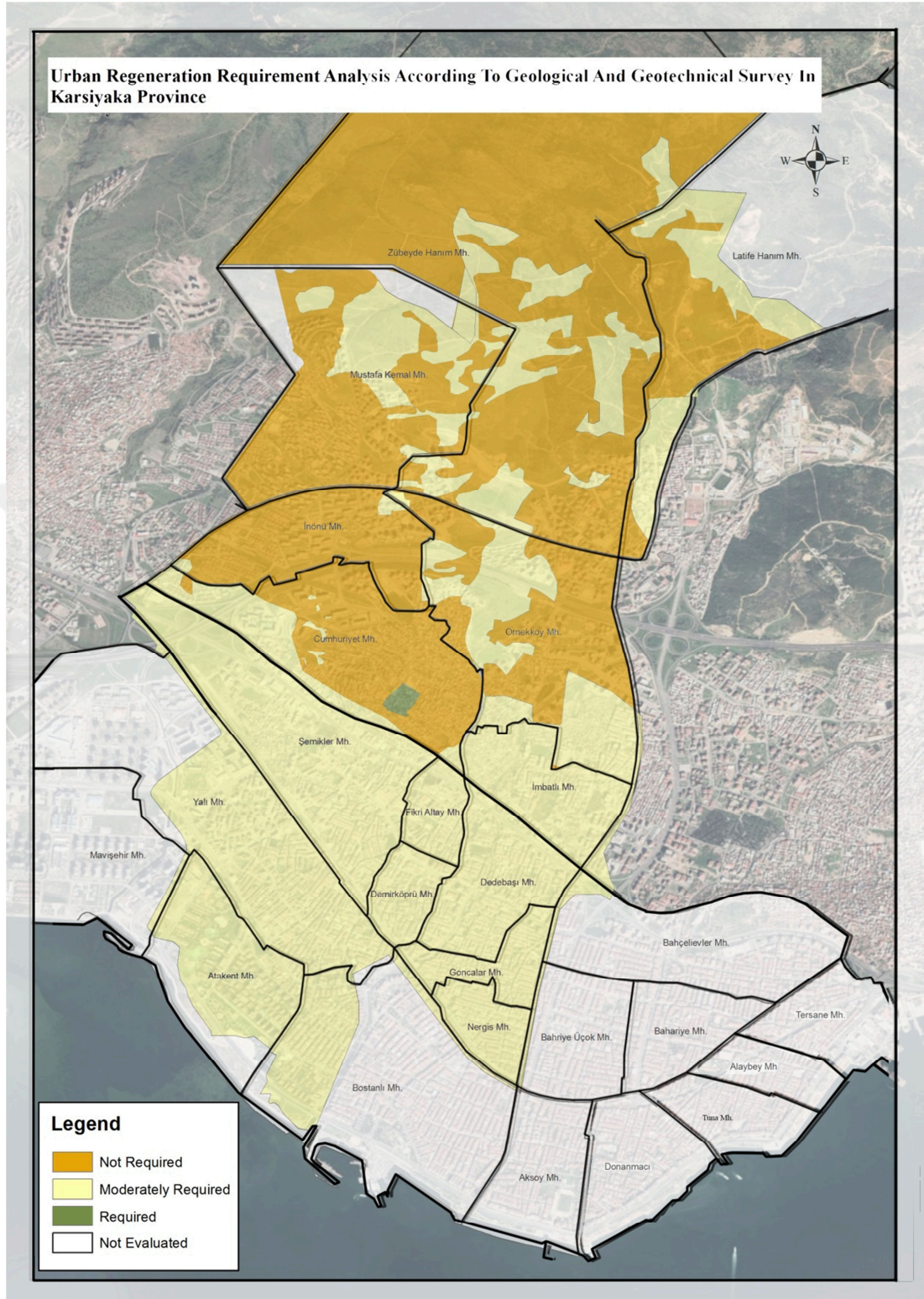


Figure 5.1. Urban Regeneration Requirement Analysis According To Geological And Geotechnical Survey in Karşıyaka District.

5.2.2 Distance to primary schools and green areas

According to the criteria sub-classes which were formed in consideration of the statement of *"...In development plans, functions of children's parks, playgrounds, local open sports fields, family health centers, nurseries, kindergartens, playschools and primary schools and functions of secondary schools and the functions of high schools may be planned within the area of service effect that is reachable on foot by considering approximately 500 meters, 1000 meters, and 2500 meters respectively."* of the 12th Article of Spatial Planning and Construction Regulation, any area that is more distant than 500 meters to a primary school and/or green area is an area that should be addressed through an urban development project.

Table 5.3. Suitability Values of Criteria Sub-classes Related to Access Distance to Primary Schools.

Distance to Primary Schools	0-500 m	Not Required	0
	500 m-+	Required	4

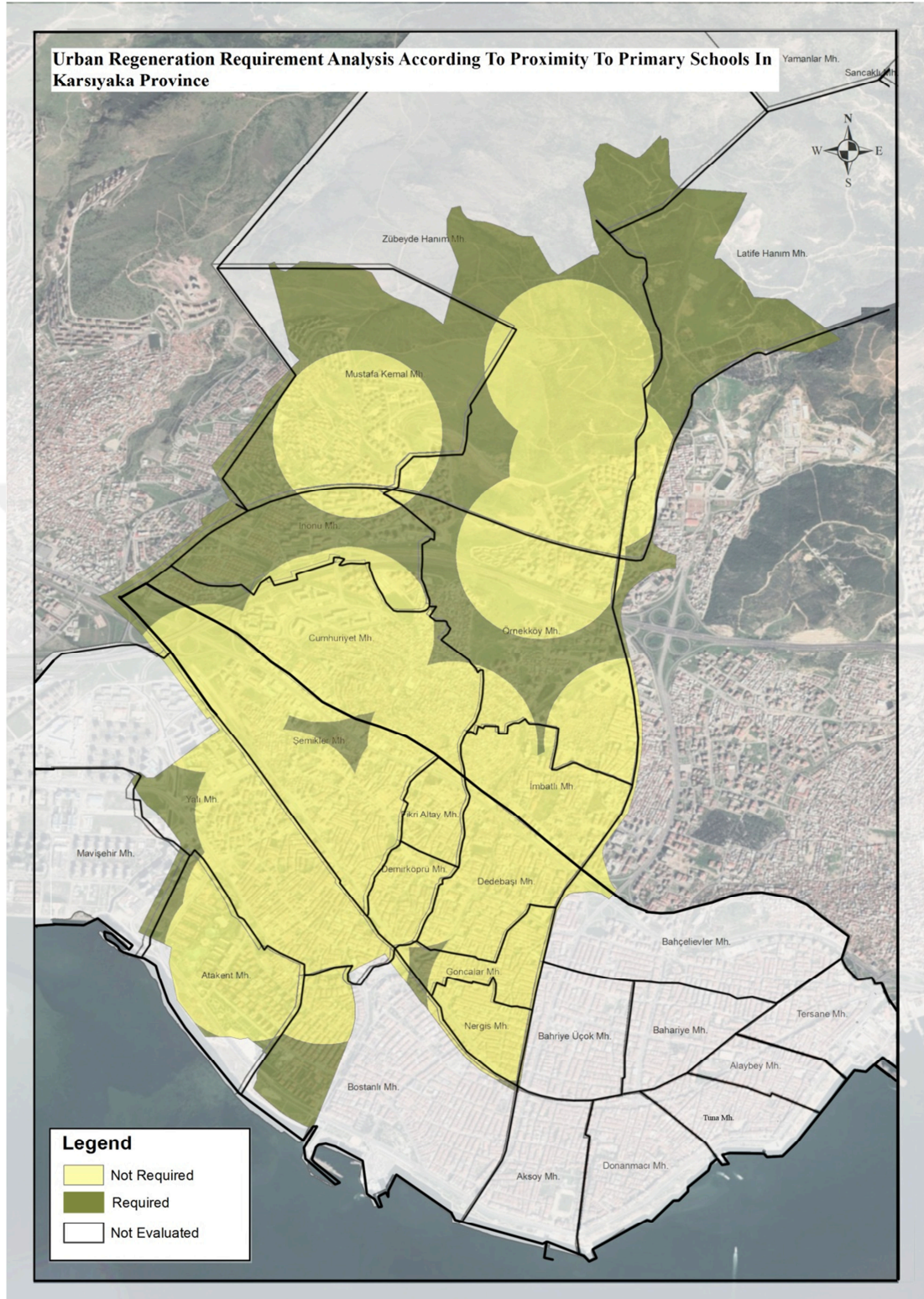


Figure 5.2. Urban Regeneration Requirements Analysis According to the Proximity to Primary Schools in Karşıyaka District.

Table 5.4. Suitability Values of Criteria Sub-classes Related to Access Distance to Green Areas.

Distance to Green Space	0-500 m	Not Required	0
	500 m-+	Required	4



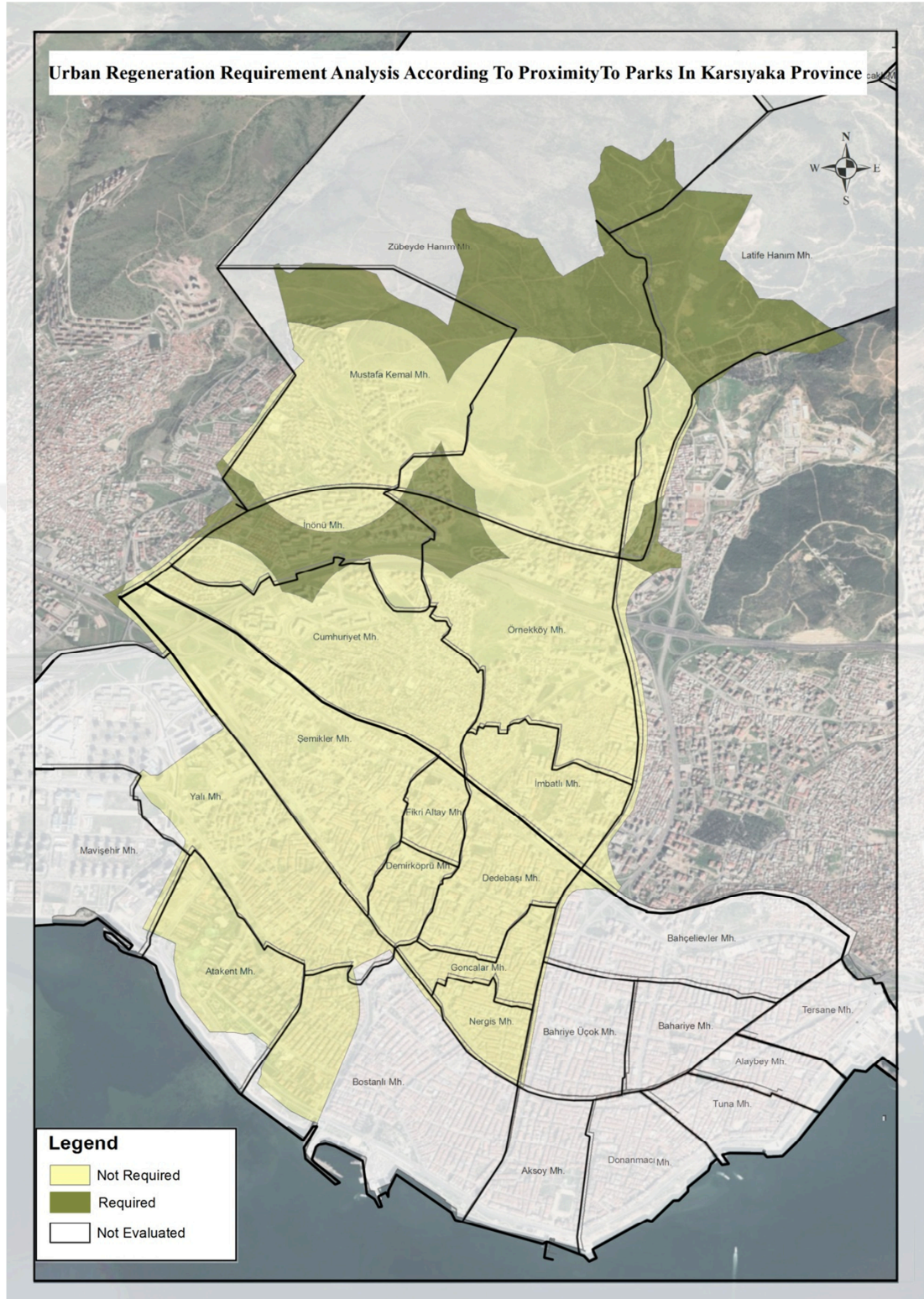


Figure 5.3. Urban Regeneration Requisition Analysis According to Proximity to Parks in Karşıyaka District.

5.2.3 Proximity to natural gas lines

The criteria sub-classes related to this criterion were prepared based on the statements which indicate that the İzmir Gas company that is responsible with establishing and commissioning natural gas lines in İzmir requires a sufficient number of applications in the street of the applicant in order to provide the applicant with a natural gas line connection. Areas that are more than 200 m away from a natural gas line are defined as those areas that do not require natural gas infrastructure and these are areas in which the relevant company does not make any investments. Therefore, they are identified as suitable areas for the urban regeneration project [10].

Table 5.5. Suitable Values of Criteria Sub-classes Related to Proximity to Natural Gas Line.

Proximity to Natural Gas Line	0-200 m	Unsuitable	0
	200 m-+	Suitable	4

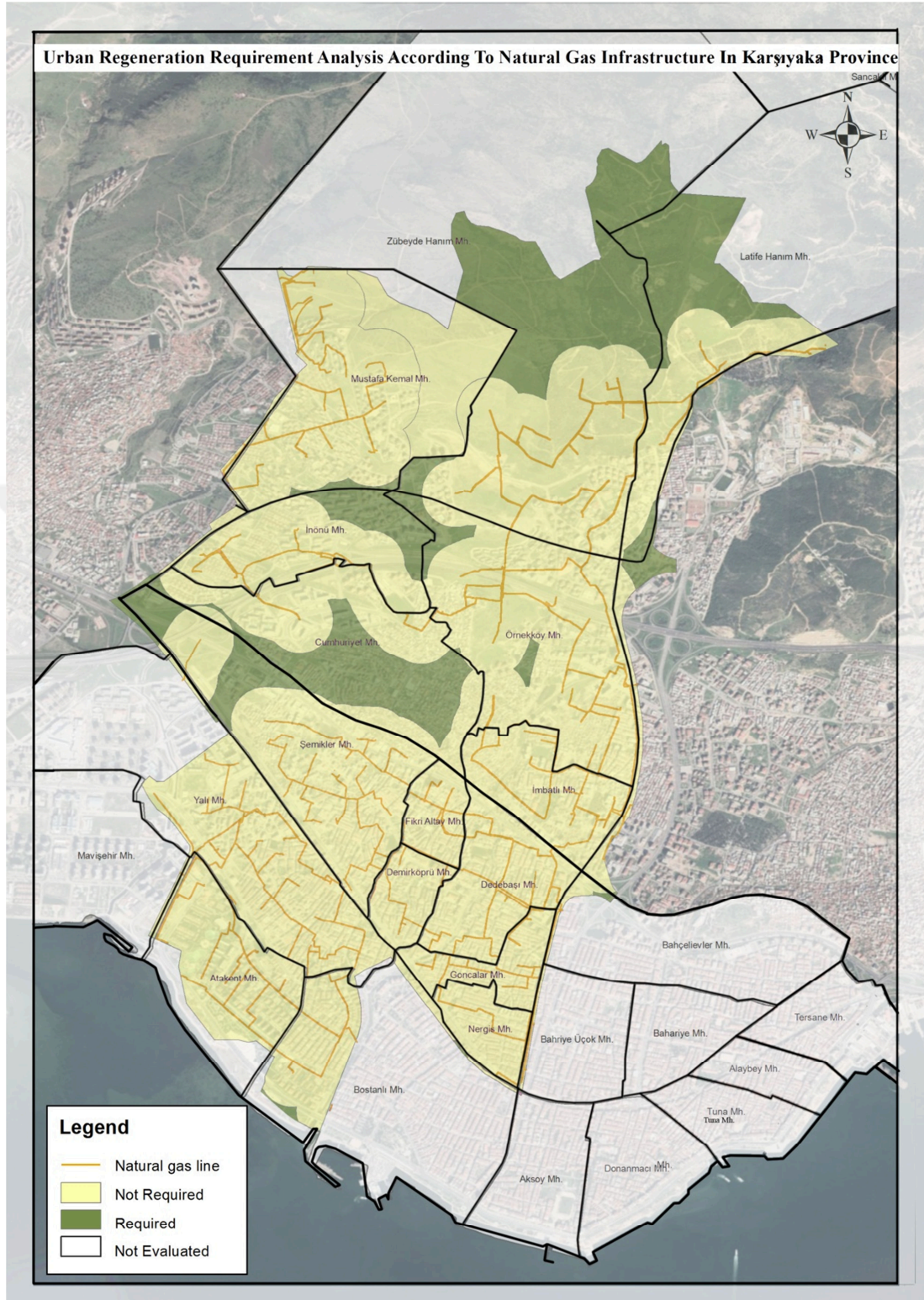


Figure 5.4. Urban Regeneration Requirement Analysis According to Natural Gas Infrastructure in Karşıyaka District.

5.2.4 Crime rate

The following 3 criteria sub-classes were formed by grouping the crime rate data on neighborhood base obtained from Karşıyaka District Police Department. In this respect, the areas with a crime rate between 0 and 1 were not included in the areas that require urban regeneration projects, and those with a crime rate of more than 1 were identified as areas requiring intervention with urban regeneration. However, the values were scaled within themselves in order to establish the priority order for this intervention.

Table 5.6. Suitability Values of Criterion Sub-classes Related to Crime Rate Criterion.

Crime Rate	0-0.99	Not Required	0
	1-1.49	Moderately Required	2
	1.50+	Required	4

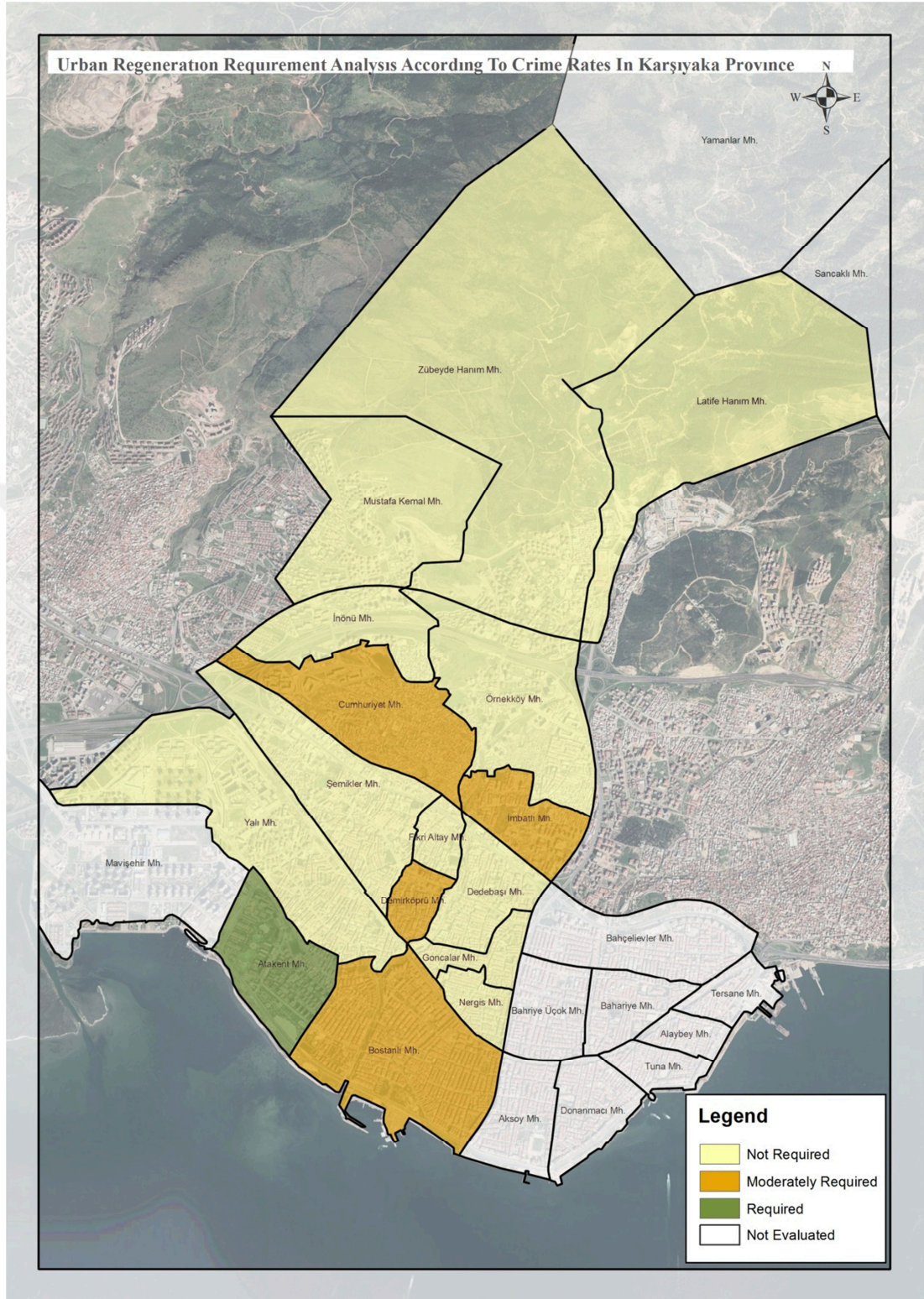


Figure 5.5. Urban Regeneration Requirement Analysis According to Natural Crime Rates in Karşıyaka District.

5.2.5 Number of suicide attempts

In order to determine the suitability values of the criterion sub-classes of this criterion, the 3-point scaling described under chapter 4.2.1.2. was employed. 3 criterion sub-classes were formed through the grouping study carried out on the data obtained from Karşıyaka Police Department. Areas with the number of suicide attempts of 0 were identified as areas that do not require the intervention of urban regeneration, while areas between 1-5 were defined as medium suitability areas, and areas with values higher than 5 were defined as areas requiring urban regeneration intervention.

Table 5.7. Suitability Values of Criterion Sub-classes Related to Suicide Attempts Criterion.

Number of Suicide Attempts	0	Not Required	0
	1-5	Moderately Required	2
	5+	Required	4

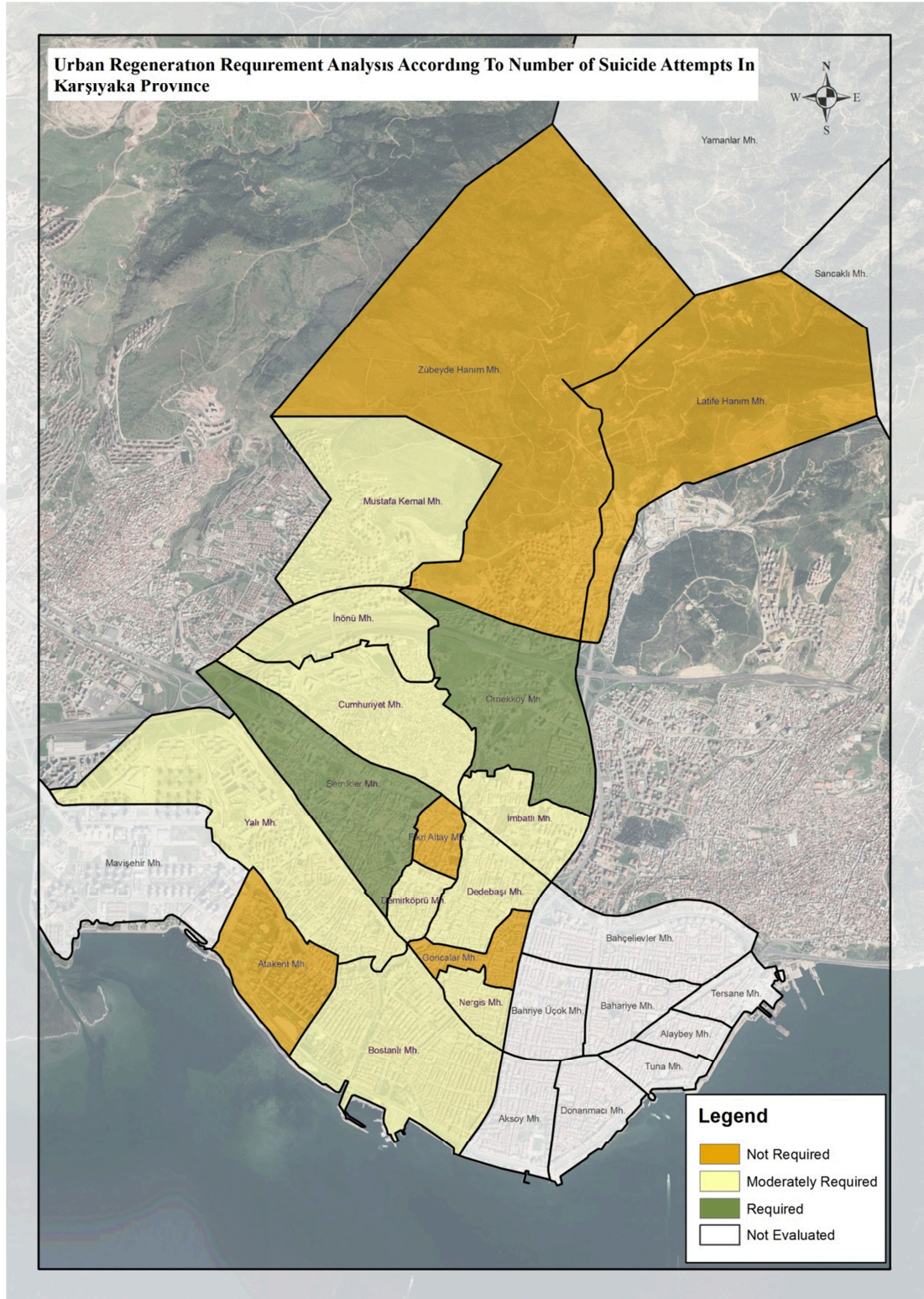


Figure 5.6. Urban Regeneration Requirements Analysis According to the Number of Suicide Attempts in Karşıyaka District.

5.2.6 Number of suicides

In order to determine the suitability values of the criterion sub-classes of this criterion, the 3-point scaling described under chapter 4.2.1.2. was employed. 3 criterion sub-classes were formed through the grouping study carried out on the data obtained from Karşıyaka Police Department. Areas with 0 suicide were identified as areas that do not require the intervention of urban regeneration, while areas between 1-2 were defined as medium suitability areas, and areas with values 2 and above were defined as areas requiring urban regeneration intervention.

Table 5.8. Suitability Values of Criterion Sub-classes Related to Number of Suicides Criterion.

Number of Suicides	0	Not Required	0
	1	Moderately Required	2
	2+	Required	4

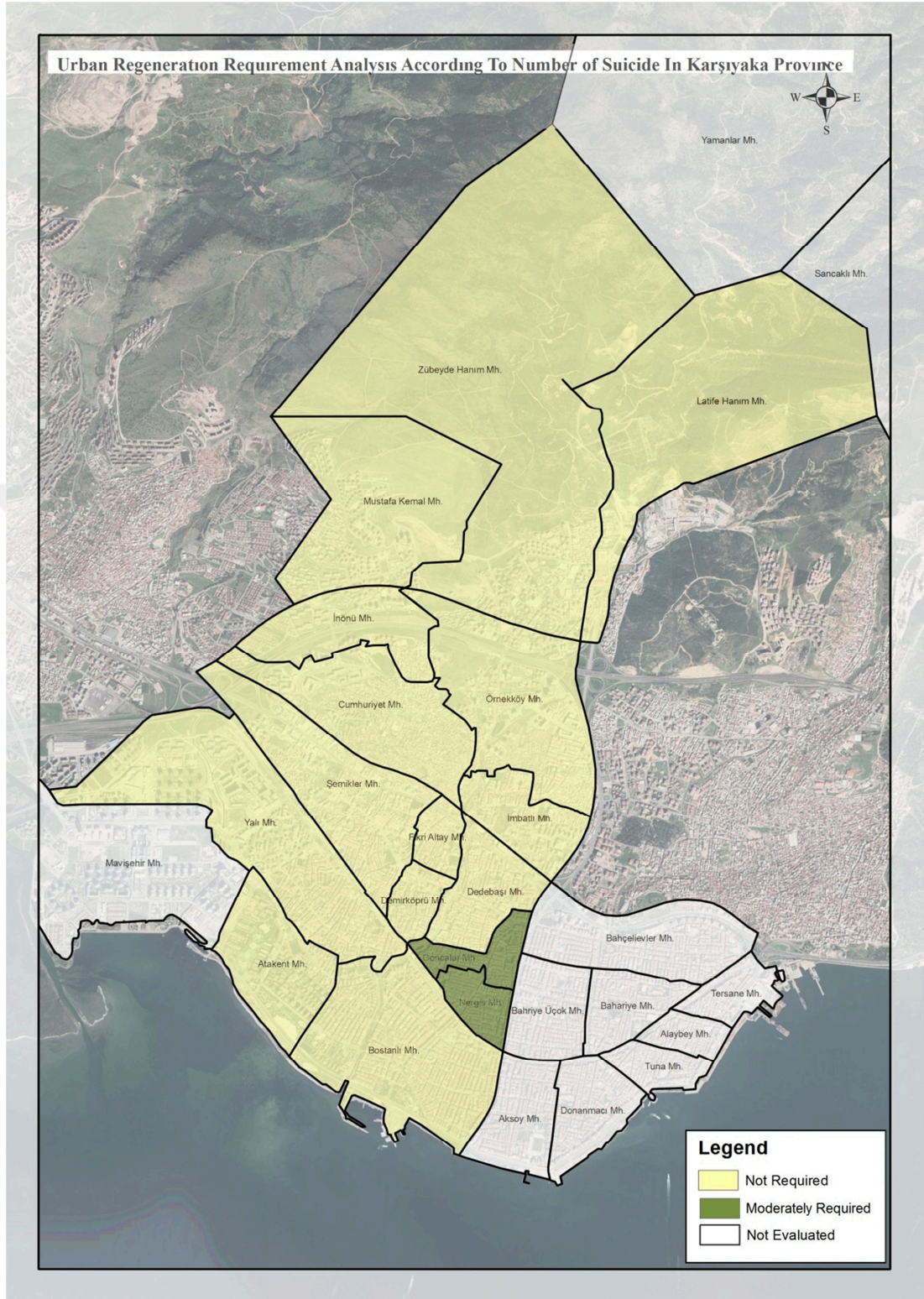


Figure 5.7. Urban Regeneration Requirements Analysis According to the Number of Suicides in Karşıyaka District.

5.2.7 Building ages

4 criterion sub-classes were formed as a result of the grouping that was carried out according to the neighborhood-based study that was formed as a result of the observations made around Karşıyaka. As a result of the scale that was formed based on the information that the maximum age of a concrete building is 50 years (citation), the areas in which the age of the buildings were up to 10 years were identified as areas that do not need the intervention of urban regeneration, while areas in which the age of the buildings was older than 10 years were identified as areas that required the intervention of urban regeneration, and these areas were prioritized according to their building age groups.

Table 5.9. Suitability Values of Criterion Sub-classes Related to Building Age Criterion.

Building Ages	0-25	Not Required	0
	26-50	Moderately Required	2
	50+	Required	4

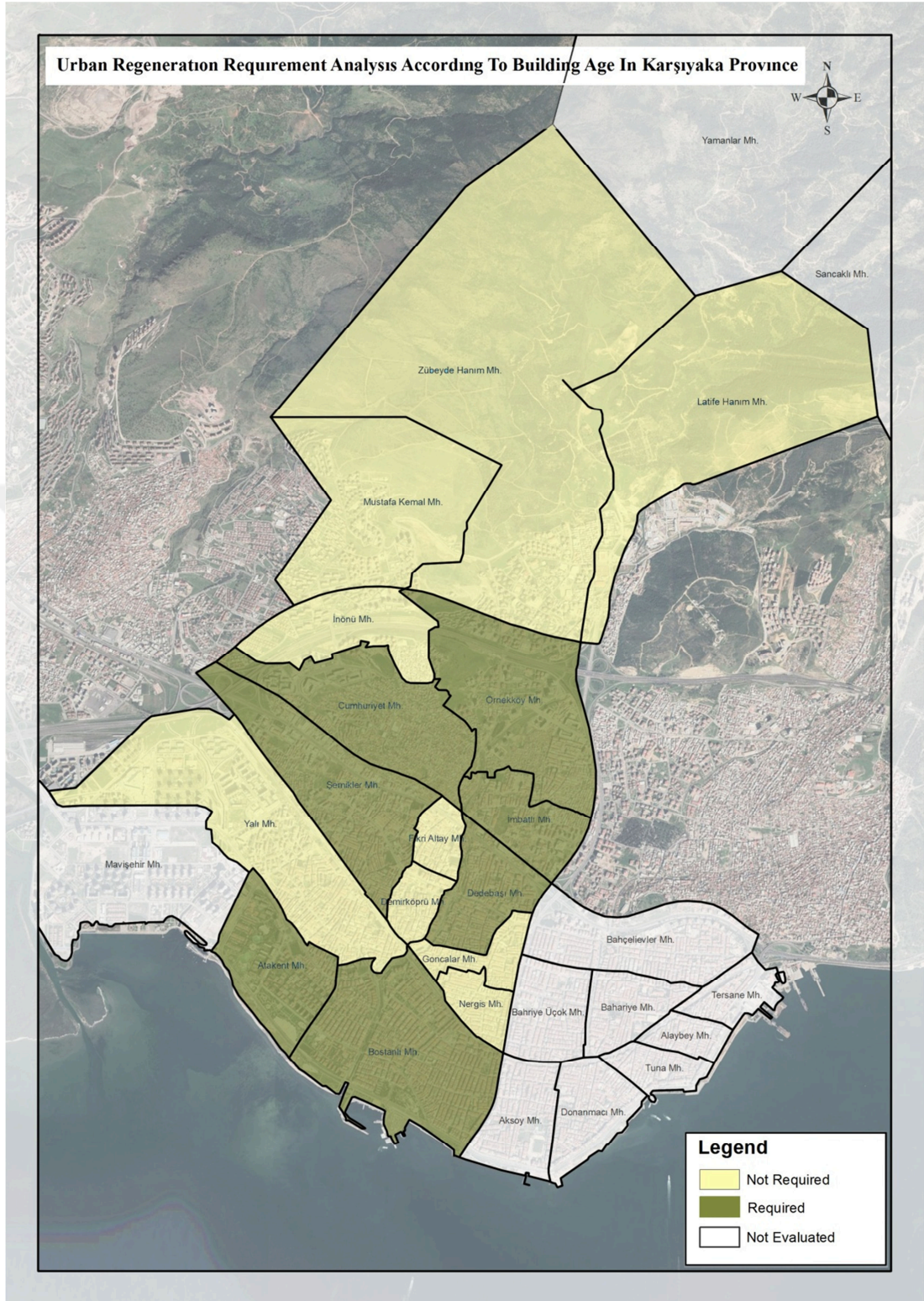


Figure 5.8. Urban Regeneration Requirements Analysis According to Building Age in Karşıyaka District.

5.2.8 Building density

According to the Article 18 of the Zoning Law Numbered 3194, a 40% development readjustment share is taken from parcels located within the readjustment zone for the purpose of establishing roads and other social and cultural facilities and zones within the zoning plan. With the "Law on the Amendments to the Land Registry Law and Certain Other Laws", which was put into force after being published on the Official Gazette dated 10.07.2019 and numbered 30827, this rate was increased to 45%. In this context, it was attempted to ascertain the information on whether settlement areas have sufficient facilities through building density calculations and the areas where the building density is above 56% were identified as areas that require intervention by urban regeneration, as less than 45% of the total area is designated for roads and other facilities, and areas with a building density value lower than 55% were identified as areas that do not require intervention by urban regeneration.

Table 5.10. Suitability Values of Criterion Sub-classes Related to Building Density Criterion.

Building Density	0-55%	Not Required	0
	56%-+	Required	4

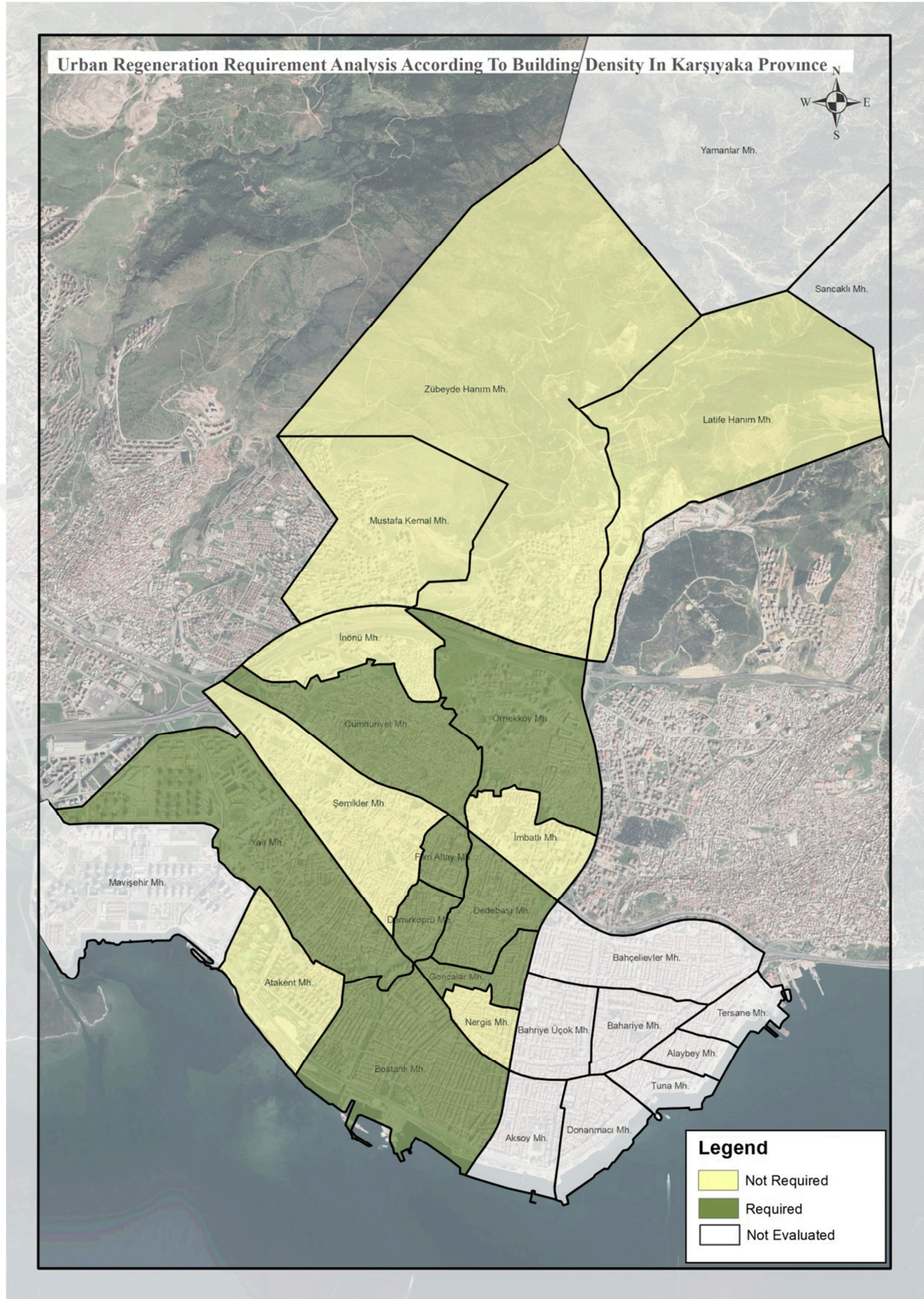


Figure 5.9. Urban Regeneration Requirement Analysis According to Building Density in Karşıyaka District.

5.3 Findings On Criterion Weights

As it was explained in detail under Chapter 4.2.3 on Methods, the primary structure of the matrix was established in the first stage by placing 9 criteria on columns and the row. Then, the importance of each criterion was determined and the matrix was filled. The importance of one criterion compared to the other was determined based on the dynamics of the area and the studies in the literature [14, 15]. After the entire matrix was filled, the sum of each column was taken.

In stage 2, each value in the column was divided by the total value of the column. As it can be seen by the Stage 2 field of Table 26, the sum of the values obtained for each column was 1.

In the third stage, the formula stated in Chapter 4.2.3. was employed to determine the criteria weights. According to this formula, the mean is calculated by dividing the total for each row by the number of criteria. This mean value column indicates the weight of each criterion in each row. According to this, the highest weighted criterion was Geological Status with 0.36 and the lowest weight criterion were the Proximity to Natural Gas Line and the Number of Suicides, with both averaging at 0.02.

Table 5.11. Determination of Criterion Weights Stage 1 and 2.

Stage 1									
	Geologic al Status	Distance to Primary Schools	Distance to Green Areas	Proximit y to Natural Gas Line	Crime Rate	Number of Suicide Attempts	Number of Suicides	Building Ages	Building Density
Geological Status	1.000	9.000	9.000	9.000	5.000	9.000	9.000	5.000	7.000
Distance to Primary Schools	0.111	1.000	3.000	5.000	0.333	5.000	5.000	0.333	0.200
Distance to Green Areas	0.111	0.333	1.000	5.000	0.200	5.000	5.000	0.333	0.333
Proximity to Natural Gas Line	0.111	0.200	0.200	1.000	0.143	0.333	0.333	0.143	0.143
Crime Rate	0.200	3.000	5.000	7.000	1.000	5.000	5.000	3.000	3.000
Number of Suicide Attempts	0.111	0.200	0.200	3.000	0.200	1.000	3.000	0.200	0.143
Number of Suicides	0.111	0.200	0.200	3.000	0.200	0.333	1.000	0.200	0.143
Building Ages	0.200	3.000	3.000	7.000	0.333	5.000	5.000	1.000	0.333
Building Density	0.143	5.000	3.000	7.000	0.333	7.000	7.000	3.000	1.000
TOTAL	2.098	21.933	24.600	47.000	7.743	37.667	40.333	13.210	12.295
Stage 2									
Geological Status	0.477	0.410	0.366	0.191	0.646	0.239	0.223	0.379	0.569
Distance to Primary Schools	0.053	0.046	0.122	0.106	0.043	0.133	0.124	0.025	0.016
Distance to Green Areas	0.053	0.015	0.041	0.106	0.026	0.133	0.124	0.025	0.027
Proximity to Natural Gas Line	0.053	0.009	0.008	0.021	0.018	0.009	0.008	0.011	0.012
Crime Rate	0.095	0.137	0.203	0.149	0.129	0.133	0.124	0.227	0.244
Number of Suicide Attempts	0.053	0.009	0.008	0.064	0.026	0.027	0.074	0.015	0.012
Number of Suicides	0.053	0.009	0.008	0.064	0.026	0.009	0.025	0.015	0.012
Building Ages	0.095	0.137	0.122	0.149	0.043	0.133	0.124	0.076	0.027
Building Density	0.068	0.228	0.122	0.149	0.043	0.186	0.174	0.227	0.081
TOTAL	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Table 5.12. Determination of Criterion Weights Stage 3.

	Criterion Weights (W)
Geological Status	0.35
Distance to Primary Schools	0.07
Distance to Green Areas	0.05
Proximity to Natural Gas Line	0.03
Crime Rate	0.17
Number of Suicide Attempts	0.04
Number of Suicides	0.02
Building Ages	0.10
Building Density	0.17
TOTAL	1.000

5.4 Findings on Priority Analysis of Urban Regeneration Areas

In this section, the maps prepared for each of the 9 criteria determined by AHP Method were first converted to rasters. Then, "Suitable Area for Urban regeneration" analysis obtained by overlapping all rasters according to the weight determined by AHP method is shown in Figure 5.10. According to the analysis performed, it was revealed that some parts of Bostanlı, Atakent, Dedebaşı, Demirköprü Neighborhoods, Cumhuriyet, Örnekköy, Yalı and Goncalar Neighborhoods require urban regeneration, and that most of the Neighborhoods of Mustafa Kemal, Zübeyde Hanım, İnönü and Latife Hanım did not require urban regeneration, while other areas required moderate urban regeneration.

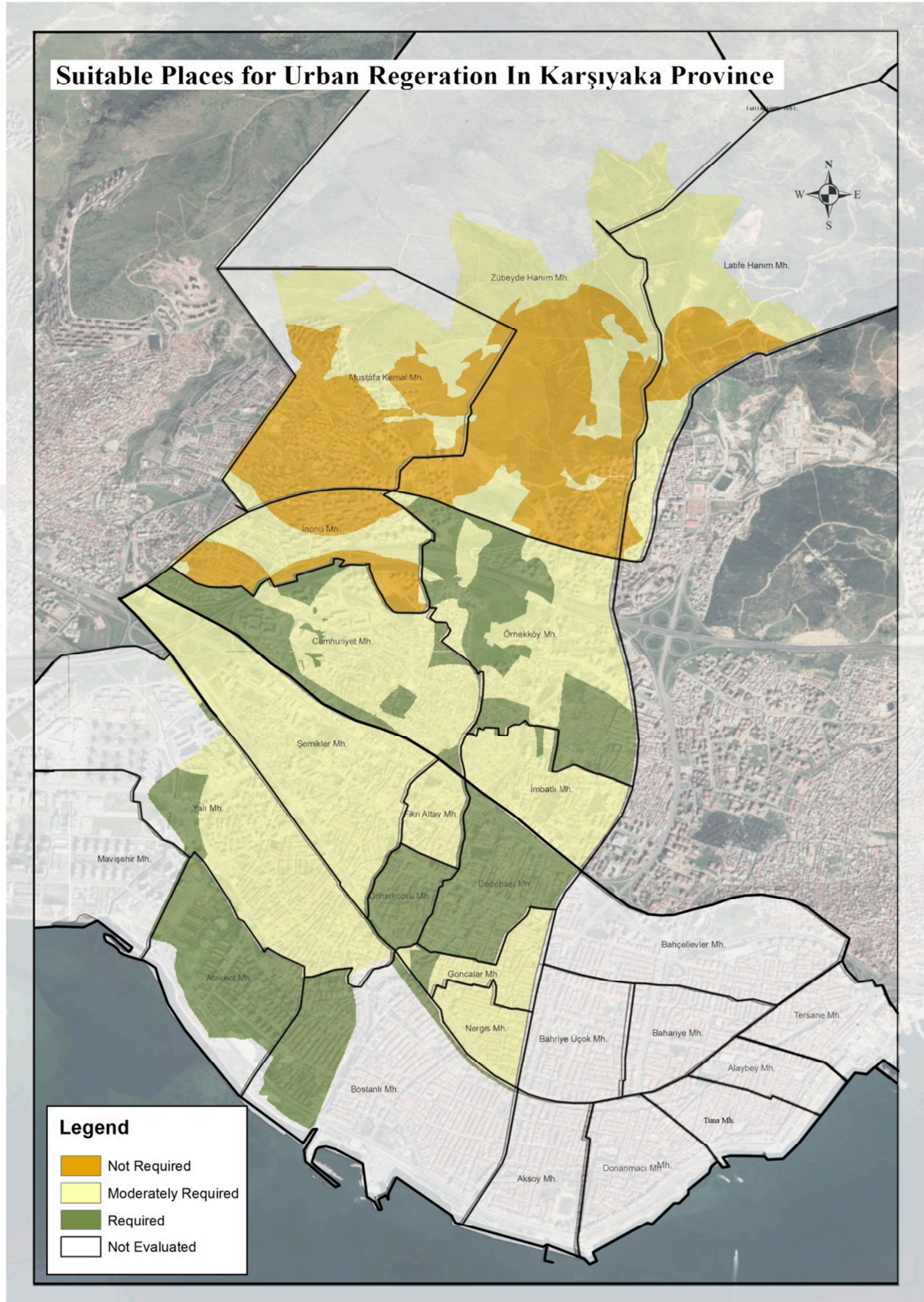


Figure 5.10. Urban Regeneration Requirement Analysis in Karşıyaka Province.

5.5 Determination of Causes that Require Urban regeneration by Neighborhood and Determination of Intervention Forms

What criterion or criteria were more weighted in which neighborhoods, urban regeneration requirement status, and which neighborhoods need what kind of intervention have been determined by analyzing the prioritization obtained from the Suitable Area for Urban regeneration Analysis created to identify the Urban regeneration Areas and examining the maps prepared for the eligibility of 9 criteria and criteria subclasses determined within the scope of the study.

Table 5.13. Reasons Requiring Neighborhood-Based Transformation and Forms of Intervention.

Neighborhood Name	Necessity of Urban regeneration	Predominantly Problematic Criteria	Intervention Type
ATAKENT	3	Building Age, Crime Rate	Physical, Social
BOSTANLI	3	Building Age, Building Density, Crime Rate	Physical, Social
CUMHURİYET	3.2	Building Density, Lack of Natural Gas Installation, Crime Rate, Building Age, Geological Status	Physical, Social
DEDEBAŞI	3	Building Density, Building Age	Physical
DEMİRKÖPRÜ	3	Building Density, Crime Rate	Physical, Social
FİKRİ ALTAY	2	Building Density,	Physical
GONCALAR	3.2	Building Density, Number of Suicides	Physical, Social
İMBATLI	2	Crime Rate, Building Age	Physical
NERGİZ	2	Number of Suicides	Social
ÖRNEKKÖY	3.2	Building Density, Lack of Primary School, Lack of Natural Gas Installation, Building Age, Attempted Suicide	Physical, Social
ŞEMİKLER	2	Building Age, Attempted Suicide	Physical, Social
YALI	3.2	Building Density,	Physical
İNÖNÜ	2.1	Lack of Green Space, Lack of Primary School, Lack of Natural Gas Installation	Physical
ZÜBEYDE HANIM	2.1	Lack of Primary School	Physical
MUSTAFA KEMAL	2.1	Lack of Primary School	Physical
LATİFE HANIM	2.1	Lack of Primary School	Physical
3: Required 2: Moderately Required 1: Not Required			

When neighborhoods are considered according to Table 5.13:

It is seen that the buildings in Atakent Neighborhood are quite old and the crime rate is high. Building Age criterion is one of the most effective criteria with 10% weight. Accordingly, the suitability analysis revealed that it is one of the areas requiring urban regeneration. Due to the structural aging in the area, a physical transformation is needed. However, the crime rate of 1.55 suggests that there are issues that need to be addressed socially.

It is seen that the buildings in Bostanlı Neighborhood are quite old, and the building density and crime rate are high. Building age criterion and building density criterion are the most effective criteria with 10% and 17% weight, respectively. Accordingly, the suitability analysis revealed that it is one of the areas requiring urban regeneration. The ratio of residential areas in the neighborhood to total area is quite high as 76%. Due to the structural aging in the area, a physical transformation is needed. However, the high crime rate suggests that there are issues that need to be addressed socially.

It is seen that many problems coexist in the Cumhuriyet Neighborhood. Building density, lack of natural gas installation, crime rate, building age, and all of the geological status criteria are seen in some parts of this neighborhood. The ratio of residential areas to the total neighborhood area is 78%. Since all these problems do not overlap spatially across the neighborhood, in the suitability analysis, a part of the neighborhood appeared to require urban regeneration while the other part appeared to require moderate urban regeneration. The geological situation has the highest weight with 36%, but while the entire neighborhood is suitable for settlement according to the geologic and geotechnical survey report habitability analysis, a small part of it has been identified as a disaster risk area due to rockfall. Considering all this, it is seen that the neighborhood needs both physical and social intervention.

The problems of Dedebaşı neighborhood are seen as building age and building density. Since the weight of both criteria is high, the neighborhood has emerged as an area requiring urban regeneration in the suitability analysis. The neighborhood needs physical intervention due to its problems.

The problems of Demirköprü neighborhood were identified as building density and crime rate. The residential areas in the neighborhood cover 86% of the total area.

Social equipment areas and roads constitute only 14% of the total area. The crime rate is quite high with 1.43. In the suitability analysis, this neighborhood was identified as an area requiring urban regeneration. Accordingly, it can be said that the neighborhood needs both physical and social intervention.

The prominent problem of the Fikri Altay neighborhood is the building density. 96% of the neighborhood is a residential area. It has the highest building density in the study area. Although it has a high building density with 17%, since the neighborhood has a low rate of other problems, it has been identified as an area requiring moderate urban regeneration in the suitability analysis. It was determined that the neighborhood needed physical intervention.

The two prominent criteria in the Goncalar neighborhood are the building density and number of suicides. The residential areas in the neighborhood cover an area of 70%. As the spatial distribution of the problems throughout the neighborhood does not overlap in some places, as a result of the suitability analysis, one part of the neighborhood emerged as an area requiring urban regeneration, while the other emerged as an area requiring moderate urban regeneration. The neighborhood needs physical and social intervention.

The need for moderate urban regeneration of the İmbatlı Neighbourhood was revealed by the suitability analysis. The main problems of the neighborhood are crime rate and building age. The neighborhood has a high crime rate with 1.49. Accordingly, it is seen that the neighborhood needs social and physical intervention.

The most important problem in Nergiz Neighborhood is the number of suicides. There are only two neighborhoods in the study area that have the number of suicides problem. In the suitability analysis, the neighborhood was identified as the area requiring moderate urban regeneration. The neighborhood needs social intervention.

There are many problems together in Örnekköy Neighborhood. Both social and physical intervention is needed to solve the problems identified as building density, lack of primary school, lack of natural gas installation, building age, and attempted suicide. While residential areas cover 80% of the total area of the neighborhood, roads and accessory space have only a 20% share. As a result of the fact that these problems spread to different parts of the neighborhood, in suitability analysis, one

part of the neighborhood was identified as an area requiring urban regeneration, while the other part was identified as an area requiring moderate urban regeneration.

The most important problems of the Şemikler neighborhood are the building age and the number of attempted suicide. In the suitability analysis, it is seen that the neighborhood needs moderate urban regeneration. It is seen that the neighborhood needs physical and social intervention.

The prominent problem of the Yalı Neighborhood is building density. 72% of the neighborhood is covered by residential areas. The total area covered by roads and social facilities is only 28% of the neighborhood. In the suitability analysis, a small portion of the neighborhood was identified as an area requiring urban regeneration. Most of the neighborhood is an area requiring moderate urban regeneration. There is a need for physical intervention in the neighborhood.

Unlike other neighborhoods, İnönü Neighborhood is a completely forgotten neighborhood that has problems such as lack of green space, lack of primary school, and lack of natural gas installation. However, since the weight of the mentioned criteria is low, some of the neighborhood has emerged as an area requiring moderate urban regeneration, while the part has emerged as an area that does not require urban regeneration. The neighborhood needs physical intervention.

Some part of Zübeyde Hanım, Latife Hanım and Mustafa Kemal Neighborhoods showing similar characteristics were identified as areas requiring moderate urban regeneration, while other parts were identified as areas not requiring urban regeneration. When the analysis sheets showing the distances of the primary schools are examined, the northern parts of these neighborhoods appear to have primary schools, but when the land use sheets are examined, it is determined that most of the areas in question are empty.

5.6 Examination of the priority urban regeneration area and its problems and development of sustainable urban regeneration plan model for this area

When Table 5.13 is examined, it is noteworthy that the neighborhoods where there are many different problems together are Cumhuriyet and Örnekköy Neighborhoods.

According to the results obtained from the suitability analysis, some parts of these neighborhoods emerged as areas requiring urban regeneration, while the other parts emerged as areas requiring moderate urban regeneration.

In this respect, it is seen that the areas that need urban regeneration intervention with the highest priority are the regions identified as areas requiring urban regeneration as a result of suitability analysis in Örnekköy and Cumhuriyet Neighborhoods as shown in Figure 5.11.

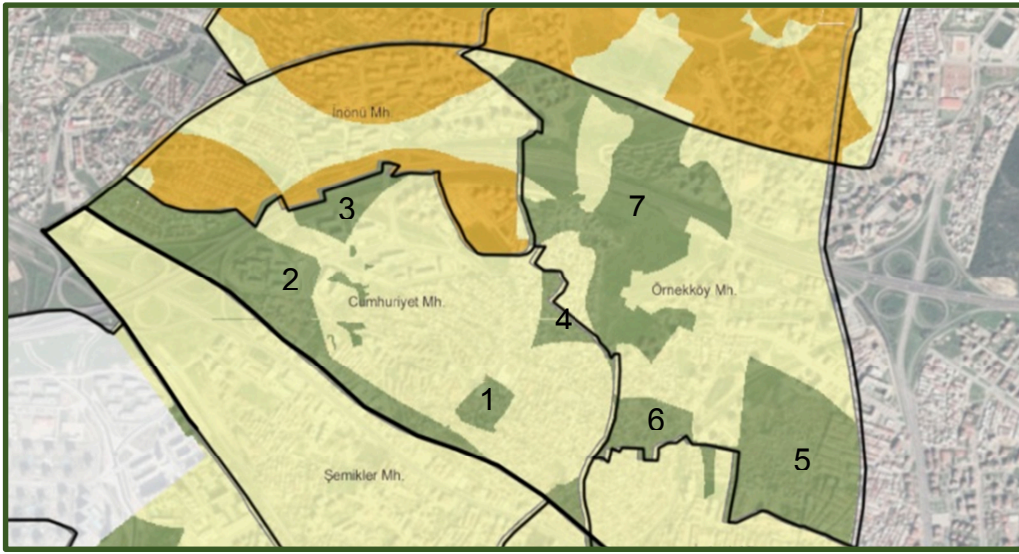


Figure 5.11. Areas With The Highest Priority For Urban regeneration.

When these regions are examined in detail, the problems of Area 1, identified as the area requiring urban regeneration in Cumhuriyet Neighborhood and seen in green in Figure 5.11 are as follows:

- Not suitable for settlement due to being in disaster risk area,
- Lack of natural gas infrastructure,
- The crime rate is 1.03,
- The area allocated to residential areas covers 78% of the total area,
- Areas allocated to road and accessory space are below 45% as 22%,
- The average building age is over 25 years.

The problems of Area 2 located to the north of Anadolu Street are as follows:

- Insufficient areas for accessing to primary schools,
- Lack of natural gas infrastructure,
- It is a habitable area geologically with precautions,
- The crime rate is 1.03,
- The area allocated to residential areas covers 78% of the total area,
- Areas allocated to road and accessory space are below 45% as 22%,
- The average building age is over 25 years.

The problems of Area 3 located to the south of İnönü Neighborhood are as follows:

- Insufficient areas for accessing green spaces,
- The crime rate is 1.03,
- The area allocated to residential areas covers 78% of the total area,
- Areas allocated to road and accessory space are below 45% as 22%,
- The average building age is over 25 years.

The problems of Area 4 located to the west of Örnekköy Neighborhood are as follows:

- Insufficient areas for accessing to primary schools,
- Lack of natural gas infrastructure,
- The crime rate is 1.03,
- The area allocated to residential areas covers 78% of the total area,
- Areas allocated to road and accessory space are below 45% as 22%,
- The average building age is over 25 years.

The problems of Area 5, which is identified as an area requiring urban regeneration in Örnekköy Neighborhood and seen in green in Figure 30, located to the south east of the neighborhood, are as follows:

- Since 6 people have attempted suicide as of June 2019, the number of attempted suicides is high,
- The crime rate is 0.99,
- The area allocated to residential areas covers 80% of the total area,
- The areas allocated to road and accessory space are below 45% as 20%,
- It is a habitable area geologically with precautions,
- The average building age is over 25 years.

The problems of Area 6, which is adjacent to Cumhuriyet and İmbatlı Neighborhoods, located to the southwest of the neighborhood are as follows:

- Since 6 people have attempted suicide as of June 2019, the number of attempted suicides is high,
- The crime rate is 0.99,
- The area allocated to residential areas covers 80% of the total area,
- The areas allocated to road and accessory space are below 45% as 20%,
- It is a habitable area geologically with precautions,
- The average building age is over 25 years.

The problems of Area 7, which is adjacent to İnönü, Zübeyde Hanım and Cumhuriyet Neighborhoods, located to the northwest of the neighborhood are as follows:

- Insufficient areas for accessing green spaces,
- Insufficient areas for accessing to primary schools,
- Presence of areas without natural gas infrastructure,
- Since 6 people have attempted suicide as of June 2019, the number of attempted suicides is high,
- The crime rate is 0.99,
- The area allocated to residential areas covers 80% of the total area,
- The areas allocated to road and accessory space are below 45% as 20%,

- It is a habitable area geologically with precautions,
- The average building age is over 25 years.

When the fragmentary structure and problems of the areas are taken into consideration, it is clear that the transformation works in the area should first be considered in terms of their location and potential within the city of İzmir, and that how they should be assessed in line with the needs of the city needs to be laid out. Then, the importance of these areas should be emphasized for Karşıyaka district, and a holistic strategic intervention plan should be prepared.

After determining how to intervene in the area in line with the district targets, it is foreseen that these areas can be handled stage by stage. Taking into account the components of sustainable urban regeneration discussed in Section 2, first of all, the requests of the people should be listened with a participatory approach, and the problems identified individually for each region shown in Figure 30 and these requests should be combined, and the planning process should be started.

6. ASSESMENT AND CONCLUSION

In this section, firstly the scope and content of the study are summarized and the results of the study are being emphasized. Afterwards, suggestions were made to make this study guide future studies and make it more comprehensive.

6.1 Summing Up

Under the pressure of intensive immigration, our cities, which have grown rapidly since the 1950s, have almost no area to build today. In today's cities, which grow beyond the physical thresholds towards fertile agricultural lands, forests and river beds, the existence of economic differences as well as the difficulties caused by the coexistence of people from different cultures raises many problems. The spatial distribution of these problems, that can be grouped physically, socially and economically in general, and the interventions that are required for the elimination of these problems form the basis of the concept of urban regeneration [13].

Two different methods are being used to determine the urban regeneration area in our country. These methods can be summarized as determination of risky structures and risky areas in accordance with the Law No. 6306 and determination of residential areas, industrial areas, commercial areas, technology parks, public service areas, recreation areas and all kinds of social urban regeneration and development project areas in order to create reinforcement areas, to reconstruct and restore the old parts of the city, to protect the historical and cultural texture of the city or to take measures against earthquake risk by municipalities according to Municipal Law No. 5393 [49, 53].

In line with these methods, parts of the city with physical problems are generally chosen as the application area, and the buildings are demolished and new buildings

are constructed after the agreements with the property owners are being made in accordance with a zoning plan.

But; there is no study that is made by examining all the problems of the city and the spatial distribution of these problems, and shows which types of urban, physical or economic urban regeneration needs.

This study is occurred from the idea of prioritizing the intervention needs of these problematic regions after revealing the spatial distribution of the problems of the city, and then identifying the specific intervention forms in the determined areas instead of addressing the whole of the city to make sustainable urban regeneration plans and so ensure similar problems will not occur again these areas.

With the idea of developing a mathematical method would increase the consistency of application, a method such as combination of AHP and GIS softwares, which are despite being used on many different land use planning study for land choosing had never been used for determining urban regeneration area, for realization of the above-mentioned process.

Social, physical and economic data were tried to be obtained for Karsiyaka District of İzmir Province, which was selected as the study area, 9 criteria that require urban regeneration intervention have been determined in line with the data obtained from İzmir Metropolitan Municipality, Karsiyaka Municipality, Karsiyaka District Police Department and TÜİK İzmir Regional Directorate. In line with these criteria, Karsiyaka District was categorized as 3 groups which are “not necessary”, “moderately necessary” and “necessary” groups according to the need for urban regeneration intervention in the section 4.2.1.

After determining which problems exist and what kind of intervention these problems require in “necessary” areas, the fact that the most priority areas were identified in Cumhuriyet District and Örnekköy District as the areas numbered in Figure 21 had been put down.

It has become clear that sustainable urban regeneration projects should be implemented in order to eliminate and prevent the problems in these areas to reoccur and this is possible with the development plans for sustainable urban regeneration.

In the city development plans that will be made in order to ensure social, physical and economic balance in designated areas and thus to ensure sustainability;

- There should not be structuring in disaster risk prone areas, and these areas should be used as open areas.
- New structuring should be made in the area that buildings are old. However, it should be taken into consideration that because dimensions of the parcels are quite small, city development plan should include sanctions on the structuring of more than one parcel together.
- New parceling should be made on parcels if possible and insufficient reinforcement areas should be maximized.
- Due to the fact that there are no geologically unsuitable areas outside the disaster risk prone area within the boundaries of the study area, and even the most of them are suitable areas, the amount of open area and green space should be increased and thus the quality of environment and life should be increased.
- Green building components should be used to the extent that the project budget allows.
- Transportation planning should strengthen the connection of these areas with Karsiyaka district center and light rail system connection should be made to Ornekkoy District via Girne Boulevard.
- Planning for pedestrian and bicycle transportation should be made and the connection to city's general bicycle network should be established.
- Green technologies should be used in transportation vehicles.
- The area should not be planned as a mere residential area; combined usage should be envisaged.
- The need for transportation systems should be reduced by creating sub-centers in these neighborhoods.
- Training and informing activities should be carried out to solve social problems in the area.

- In order to ensure economic sustainability, vocational training should be provided in the region by local authorities.
- Cooperatives and women's organizations should be supported.
- Sports and cultural activities need to be increased in order to increase the loyalty of young people to the area. Accordingly, the areas where these services will be provided should be determined in the plan.
- In order to solve environmental problems, it is necessary to establish an infrastructure for separation of wastes on site and to provide necessary trainings.
- Precautions be taken to reduce carbon emissions and attention should be paid to use local and recycled materials with low carbon footprints during construction.
- Necessary measures should be taken in order to prevent local people from leaving the region, and the places where they can live in harmony with the new settlers that will come to the building stock should be designed.
- Information meetings should be held at every stage of the planning.
- The process should be continuously monitored, evaluated, and strategy changes should be made at non-functioning points.
- Urban adaptation to climate change should be an objective in all kinds of urban regeneration projects that will be produced, spatial solutions should be produced in order to reduce urban heat island effects, increase biodiversity, improve air quality, reduce energy consumption and create areas that generate their own energy.
- To enable the citizens to benefit from the global services offered by the city as well as ecosystem services should be main objective of all planning studies to be made.

The areas in need of urban regeneration depending on the unique problems that they are facing have been determined in case of Karşıyaka District within the scope of this study. In consideration of all the data gathered and analyzed within the study have

been evaluated and a sustainable urban regeneration action plan for the study area has been proposed in Table 6.1.



Table 6.1: Sustainable Urban Regeneration Action Plan

AIMS		STRATEGIES		ACTIONS			
Nu	Aim	Nu	Strategy	Nu	Action	Responsible Organization	Period
ELIMINATION OF PHYSICAL, SOCIAL AND ENVIRONMENTAL PROBLEMS							
1	Creating a sustainable macroform	1	The creation of a macroform compatible with the terrain structure will be supported.	1	Slope, view, hydrology, etc. data of the study area will be evaluated and a macroform compatible with the terrain structure will be planned.	Municipality / Ministry of Environment & Urbanization	1
				2	Planning studies will be carried out in accordance with the settlement analysis obtained from the Geological Surveys.	Municipality / Ministry of Environment & Urbanization	1
				3	Planning studies will be carried out in line with the prerequisite for the protection of fertile agricultural soils and forest areas by considering soil classes and land use information.	Municipality / Ministry of Environment & Urbanization	1
2	Creating sustainable and diversified structures	1	Sustainable structures will be built.	1	The buildings will be designed with natural lighting and natural ventilation.	Municipality / Private Sector Ministry of Environment & Urbanization	2
				2	Energy efficient and recycled materials will be used.	Municipality / Private Sector Ministry of Environment & Urbanization	2
				3	Renewable energy sources will be used to meet the energy needs.	Municipality / Private Sector	2

				Ministry of Environment & Urbanization	
		4	Local materials will be used.	Municipality / Private Sector Ministry of Environment & Urbanization	2
		5	Building insulation will be provided at the lowest level.	Municipality / Private Sector Ministry of Environment & Urbanization	2
		6	In order to reduce energy consumption, the buildings will have automation / intelligent building systems.	Municipality / Private Sector Ministry of Environment & Urbanization	2
		7	Gray water recycling and rain water collection systems will be installed.	Municipality / Private Sector Ministry of Environment & Urbanization	2
2	Structures of different sizes will be constructed.	1	For the silhouette of the area and air circulation, structures will be designed with different heights to be compatible with the land.	Municipality / Private Sector Ministry of Environment & Urbanization	2
		2	Housing units will be designed in different sizes to support social diversity and offer solutions to different needs and different budgets.	Municipality / Private Sector Ministry of Environment &	2

		3	Mixed use will be supported.	1	In the study area, areas with different functions that will meet the daily needs of the inhabitants will be planned.	Urbanization Municipality / Ministry of Environment & Urbanization	1
				3	Areas where production activities and commercial activities will take place will be planned so that the study area does not turn into a dormitory settlement.	Municipality / Ministry of Environment & Urbanization	1
3	Creating a sustainable transportation system	1	Different transportation systems will be used together.	1	Planning activities will be carried out to support pedestrian transportation.	Municipality / Ministry of Environment & Urbanization	1
				2	Bicycle paths will be designed.	Municipality / Ministry of Environment & Urbanization	1
				3	Public transportation alternatives will be developed to provide transportation to different areas of the city.	Municipality / Ministry of Environment & Urbanization	1
		2	Carbon emissions from transport will be minimized.	1	Public transportation with green energy will be preferred.	Municipality / Ministry of Environment & Urbanization	2
				2	Policies to promote bicycle and pedestrian transport will be developed.	Municipality / Ministry of Environment & Urbanization	1, 2
		3	Quality and inclusiveness	1	Standards will be developed for the use	Municipality /	1,2

			in public transport systems will be increased.		of public transport services by those with limited mobility.	Ministry of Environment & Urbanization	
				2	The service quality and technological level of public transportation systems will be improved.	Municipality / Ministry of Environment & Urbanization	1,2
4	Creating a sustainable infrastructure system	1	Energy consumption will be reduced.	1	Street lighting throughout the study area will be sensitized to daylight and movement.	Municipality / Ministry of Environment & Urbanization	2
				2	By using renewable energy generation, network electricity usage will be reduced.	Municipality / Ministry of Environment & Urbanization	2
		2	A safe sewage system will be established.	1	Policies will be developed to prevent untreated wastewater from entering the sewage system.	Municipality / Ministry of Environment & Urbanization	1
		3	Policies will be developed to prevent untreated wastewater from entering the sewage system.	1	Gray water and rain water storage projects will be made throughout the area and green areas will be irrigated in this way.	Municipality / Ministry of Environment & Urbanization	1,2
		4	Waste management system will be established.	1	Wastes will be separated on site.	Municipality / Ministry of Environment & Urbanization	1,2
5	To make social reinforcement areas adequate and to	1	Accessibility and quality of social reinforcement areas will be improved.	1	School, green area, health facility, religious facilities such as social equipment areas such as pedestrian	Municipality / Ministry of Environment &	1

	ensure a balanced distribution				access will be planned for every citizen	Urbanization	
				2	The social reinforcement area required by the total population will be provided by the plan.	Municipality / Ministry of Environment & Urbanization	1
				3	The continuity of the open and green areas in the study area will be ensured by the plan.	Municipality / Ministry of Environment & Urbanization	1
				4	Squares where the public can gather and establish social networks will be established.	Municipality / Ministry of Environment & Urbanization	1
6	To ensure the protection of natural and cultural values	1	Protection and preservation of cultural values will be ensured.	1	In case there are underground or above ground structures that need to be protected in the area, these structures will be protected and brought into daily life.	Municipality / Ministry of Environment & Urbanization / Ministry of Culture & Turizm	1,2
				2	Trainings will be provided for the continuity of local crafts.	Municipality / Ministry of Environment & Urbanization / Ministry of Education	3
				3	Cultural values such as local oral heritage will be recorded.	Municipality / Ministry of Environment &	3

					Urbanization / Ministry of Culture & Turizm		
		2	Preservation and preservation of natural values shall be ensured.	1	Plan decisions will determine the paths to be followed for natural values that need to be protected.	Municipality / Ministry of Environment & Urbanization	1
				2	Inventory of natural values will be created.	Municipality / Ministry of Environment & Urbanization	1
				3	Necessary measures will be developed to prevent damage in these areas and sanctions to be applied in case of destruction will be determined.	Municipality / Ministry of Environment & Urbanization	1
				4	Energy efficient and ecological environment design will be made.	Municipality / Ministry of Environment & Urbanization	1,2
7	Ensuring urban adaptation to climate change	1	Measures will be taken against natural disasters.	1	Studies will be conducted to identify areas at risk of disaster.	Municipality / Disaster & Emergency Management Presidency / Ministry of Environment & Urbanization	1
				2	Earthquake collection zones will be established.	Municipality / Disaster & Emergency Management Presidency /	1

						Ministry of Environment & Urbanization	
				3	Risk mitigation planning policies will be developed in risky areas in terms of floods and floods.	Municipality / Disaster & Emergency Management Presidency / Ministry of Environment & Urbanization	1
				4	Building standards will be developed in accordance with disasters.	Municipality / Disaster & Emergency Management Presidency / Ministry of Environment & Urbanization	2
8	Improving environmental quality	1	Air quality will be improved.	1	Pollution measurements will be made.	Municipality / Ministry of Environment & Urbanization	1,2,3
				2	Pollutant sources will be identified and disposed of.	Municipality / Ministry of Environment & Urbanization	1,2
				3	Policies to reduce carbon emissions will be developed.	Municipality / Ministry of Environment & Urbanization	1
		2	Soil quality will be	1	Pollution measurements will be made.	Municipality /	1,2,3

			improved.			Ministry of Environment & Urbanization	
				2	Pollution sources will be identified and policies for disposal will be developed.	Municipality / Ministry of Environment & Urbanization	1,2
		3	Water quality will be improved.	1	Pollution measurements will be made.	Municipality / Ministry of Environment & Urbanization	1,2,3
				2	Pollution sources will be identified and necessary treatment facilities will be built.	Municipality / Ministry of Environment & Urbanization	1,2
				3	The quality and quantity of ground and surface water resources will be measured and monitored by the information system.	Municipality / Ministry of Environment & Urbanization	1,2,3
ELIMINATION OF ECONOMIC PROBLEMS							
1	Solving the problem of unemployment	1	New employment opportunities will be provided.	1	Training will be provided on cooperatives and support will be given to cooperatives.	Municipality / Ministry of Education / TEA/ SMEDO	3
				2	Incentives will be given to women entrepreneurs.	Municipality / Ministry of Family & Labor / TEA/ SMEDO	3
				3	Support will be provided to local firms if they employ women.	Municipality / Ministry of Family & Labor / TEA/ SMEDO	3

				4	Trainings will be provided for the production and marketing of local products and incentives will be given to SMEs for the establishment of production facilities.	Municipality / Ministry of Family & Labor / TEA/ SMEDO	3
				5	A local employment center will be established.	Municipality / Ministry of Family & Labor / TEA/ SMEDO	3
		2	The workforce will be qualified.	1	Work and training programs will be organized through local venture firms.	Municipality / Ministry of Family & Labor / TEA/ SMEDO	3
				2	Trainings will be given for women workforce.	Municipality / Ministry of Education / TEA/ SMEDO	3
2	Creating a settlement that contributes to the urban economy	1	Investments in the region will be increased.	1	Policies will be developed to enable investors to choose a place in line with the economic identities / identities to be determined in the field.	Municipality / Ministry of Environment & Urbanization	3
ELIMINATION OF SOCIAL PROBLEMS							
1	Improving education level	1	Literacy rate will be increased.	1	Literacy courses will be given.	Municipality / Ministry of Education	3
				2	Campaigns will be developed to encourage reading in the library and reading rooms.	Municipality / Ministry of Education	3
		2	The last completed school level will be upgraded.	1	After compulsory education, campaigns will be organized to encourage the continuation of education.	Municipality / Ministry of Education	3
		3	Labor force will be provided with vocational	1	Schools will be opened in the region to provide vocational training.	Municipality / Ministry of Education	3

			training.				
				2	Vocational courses will be opened.	Municipality / Ministry of Education / TEA/ SMEDO	3
				3	Youth centers offering education and arts programs will be established.	Municipality	3
2	Reducing the crime rate	1	Substance addiction will be reduced.	1	Information and training on substance abuse will be provided.	Municipality / Ministry of Family & Labor / Ministry of Health	3
				2	Psychological treatment support will be provided for drug addicts.	Municipality / Ministry of Family & Labor / Ministry of Health	3
				3	Policies will be developed to prevent the sale of substances.	Municipality / Ministry of Internal Affairs	3
		1	Other crimes will be reduced.	1	Security cameras will be increased for extortion and theft of common crimes.	Municipality / Ministry of Internal Affairs	3
				2	The desolation resulting from the construction and transportation network will be prevented.	Municipality / Ministry of Environment & Urbanization	3
				3	Training and information meetings on crime will be held.	Municipality / Ministry of Internal Affairs	3
3	Creating awareness of urbanism	1	The values of citizenship and loyalty to the place will be developed / increased.	1	Establishment of national associations will be supported.	Municipality	3

				2	Advertising campaigns will be organized about the values and importance of the site.	Municipality	3
				3	Local festivals and fairs will be organized.	Municipality	3
				4	City council will be established.	Municipality	3
		2	Integration of migrants to the city will be ensured.	1	Information meetings and trainings on urbanism and urban life will be organized.	Municipality	3
				2	All social, economic and physical decisions to be taken for the study area shall be ensured by the participation of all segments.	Municipality / Ministry of Environment & Urbanization	3
				3	Spending time together will increase the social areas.	Municipality / Ministry of Environment & Urbanization	3
4	Solving other social problems	1	Assistance and protection will be carried out.	1	Women's and children's shelters will be established.	Municipality / Ministry of Family & Labor / Ministry of Health	3
				2	There will be markets where low-income citizens can shop.	Municipality	3
				3	Elderly nursing homes will be established.	Municipality / Ministry of Family & Labor	3
				4	Child care centers will be established for	Municipality /	3

					working mothers.	Ministry of Family & Labor	
				5	The vaccination house will be established.	Municipality / Ministry of Family & Labor	3
		2	Socio-cultural activities will be increased.	1	Socio-cultural areas such as cinema and theater will be provided to operate.	Municipality / Private Sector Ministry of Internal Affairs	3
				2	Sports fields will be created.	Municipality / Ministry of Environment & Urbanization	1
1: Development Plan Phase, 2: Project Implementation Phase, 3: Stage After Field Meeting with User							

6.2 Achievements and Shortcomings

During the literature review, it has been determined that most of the studies in the field of urban regeneration are about examining the urban regeneration project in a region or how a transformation project should be implemented in the areas that are declared as urban regeneration areas.

However, no study has been found that identifies the spatial distribution of the problems in the whole city, determines the types of intervention needed by these areas and prioritizes the intervention need of these areas.

The most important achievement of this study is to provide a quantitative method for the determination of urban regeneration areas. However, as a result of the application of the method while including all the data needed, it is another achievement that is an x-ray study of the sample city, which deals with the city as a whole and reveals all its problems.

The biggest limiting factor encountered in the study process was the inability to obtain all of the needed data for the sample area. The fact that all required social, economic, physical and ecological data couldn't be provided by the relevant institutions due to the fact that these data were not produced caused the evaluation to be completed with a limited number of criteria.

6.3 Recommendations for the Next Studies

Solutions for physical dimensions of urban problems tried to be delivered in Turkey in last fifty years, but no sustainable solutions could be delivered for social, economic and environmental conditions. New approaches and implementations are needed for urban regeneration to bring the transformation in social dimension with itself. Transformation areas in city scale should be determined within this context. Producing reliable information carries primary importance for this. This information consists of necessary socio-economical change indicators that should be gathered in neighborhood scale in periods. In the socio-economic geography of the city, general information about how the population is displaced, how jobs and employment opportunities are transformed, how living standards and property change help us identify the areas that are transformed. Determining the transformation information

in the scale of the neighborhood is important in terms of determining and managing the intervention approach. Urban regeneration areas should be determined after evaluating it according to spatial and socio-economic transformation indicators, whether they are in residential area, industrial area or center [7].

Although there are no indicators produced by the public or local governments to identify urban regeneration areas as country policy, many different data can be used to identify suitable and priority areas for urban regeneration projects. Quality of life indicators (Table 6.2) prepared by the Environmental Studies Group of the Turkey Academy of Sciences (TAS) can be used in determining the urban regeneration area.

Table 6.2. Objective Quality of Life Evaluation Standards in Community Level” in TUBA [99].

Environmental Quality and Sustainability	Climate Suitability Air Pollution Indicators Quality of Rivers Water Quality of Sea Beaches How Much of Wastewater is Treated How Much Solid Waste is Collected and Recycled Electricity Usage Per Person in Residential Buildings Forestry Rate in Land Use
Human Resources, Population	Population density Population Growth Rate Immigrant Population Rate Net Migration Rate Social Diversity Disabled Population Rate Young Population Rate Elderly Population Rate
State of Health	Lifetime expectancy at birth Calories Consumed Per Person Infant Mortality Rate Perinatal Mortality Rate Fully Vaccinated Children Rate Rate of Population with Health Insurance Per Doctor 100 Thousand People Per nurse 100 Thousand People Per Bed 100 Thousand People
Educational Status	Adult Population Literacy Rate (Female - Male) Average Number of Education Years Rate of Kindergarten Education Rate of Basic Education in Age Groups Rate of High School and Equivalent Education in Age Groups Rate of Higher Education Students in Age Groups
Economic Performance	Gross National Product and Gross Domestic Product Per Capita GDP per capita, GDP growth Amount of Energy Used in Industry and Services Per Capita Unemployment rate Proportion of Unemployed Young People (Male - Female) Labor Force Participation Rate

	Female Ratio in Paid Employees in Non-Agricultural Activities Rate of Population Below Poverty Line Ratio of Food Expenditures in Total Consumption
Level of Social Integration	Social Inequality Indicator The Size of the Middle-classes in Society Existence of Vertical Mobility Divorce Rate in Society Property Based Crime (Theft, Grabber etc.), Crime Rate Prevalence of Drug Use Suicide Rate Frequency of Rape Incidents Frequency of Honour Killings
Quality of Political System	Democratization of Political System and Representation Gap of Society Renewal Rate of Political Cadres in Elections Voter Turnout Female Ratio Among Selected Development of Civil Society Number of Newspapers Per 1000 People How Many Hours T.V Watched Per Day
Habitation Quality	Green Area Per Person Sufficiency of Housing Supply at Affordable Prices Number of People Per Room in Houses Rate of Houses with Central Heating Rate of Houses without Legal Status Development Level of Public Transport Services Time Lost in Transportation in Daily Life Number of Deaths in Traffic Accident Degree of Arrangement of Infrastructures in Settlement to Facilitate the Life of Persons with Disabilities Sound Pollution Level Development Level of Recreational and Entertainment Services Rate of People That Can Access Healthy Drinking Water Rate of People That Have Secure Sewer Connection

For the successful implementation of sustainable urban regeneration plans, the issues of Environmental Quality and Sustainability, Human Resources and Population, Health and Education Status, Economic Performance, Social Integration Level, Quality of Political System and Habitation Quality, which are shown in Table 18, should be considered separately. and solutions for each issue of spatial problems in these areas should be produced basis of area. In addition to that, global environmental problems should not be neglected, to contribute to the functioning of the city ecosystem should be the main objective of each project to be implemented

REFERENCES

1. Görgülü Z. Tmmob İzmir Kent Sempozyumu; 2013
2. Genç FN. Türkiye’de Kentsel Dönüşüm: Mevzuat ve Uygulamaların Genel Görünümü: Yönetim ve Ekonomi; 2008
3. Özden PP. Kentsel Yenileme Uygulamalarında Yerel Yönetimlerin Rolü Üzerine Düşünceler ve İstanbul Örneği: İstanbul Üniversitesi, Siyasal Bilgiler Fakültesi Dergisi, Prof. Dr. Nazif Kuyucuklu’ya Armağan; 2000.
4. Tram L. An Interactive Method to Select a Set of Sustainable Urban Development Indicators. Ecological Indicators; 2015. <http://www.sciencedirect.com/science/article/pii/S1470160X15005294> , accessed December, 2015.
5. Tallon A. Urban Regeneration in the UK: 2013. doi:10.4324/9780203802847.
6. Gümüşboğa B. Urban regeneration in the framework of participation: Altındağ Aktaş Neighbourhood: M.Sc. Thesis; 2009. Accessed YÖK Tez Merkezi, Thesis Number: 249285.
7. Ataöv A. Osmay S. Türkiye’de Kentsel Dönüşüme Yöntemsel Bir Yaklaşım: METU JFA; 2007
8. Kalaycı Önaç A. Kentsel Dönüşüm Sürecinde Kentsel Peyzaj Değerleri Analizi; İzmir-Bayraklı Kentsel Dönüşüm Alanı Örneği: Doctorate Thesis; 2017. Accessed YÖK Tez Merkezi, Thesis Number: 479754.
9. Karadağ A. Mirioğlu, G. Bayraklı Kentsel Dönüşüm Projesi Üzerine Coğrafi Değerlendirmeler: Türk Coğrafya Dergisi; 2012. Elektronik ISSN 1308-9773
10. İzmir Büyükşehir Belediyesi İmar ve Şehircilik Dairesi Başkanlığı, 2019.
11. Akalın M. Kentsel Dönüşümün Karanlık Yüzü: Soyulaştırma, Yerinden Edilme ve Mekânsal Dışlanma: Bartın Üniversitesi İ.İ.B.F. Dergisi; 2016
12. Keleş R. Kentsel Dönüşümün Tüzel Altyapısı, Dosya: Kentsel Dönüşüm ve Katılım: Mimarist Dergisi; 2004
13. Akkar ZM. Kentsel Dönüşüm Üzerine, Batıdaki Kavramlar, Tanımlar, Süreçler ve Türkiye: Planlama Dergisi; 2016.
14. Özden PP. Kentsel Yenileme: İstanbul, İmge Kitabevi; 2008.
15. Roberts P. The Evolution, Definition and Purpose of Urban Regeneration: Urban Regeneration. A Handbook, London, Thousand Oaks, New Delhi: Sage Publications; 2000.
16. Thomas S. A Glossary of Regeneration and Local Economic Development. Manchester: Local Economic Strategy Center; 2003.
17. State of the Art on Sustainable Regeneration In Urban Areas. Urbact II Capitalisation. France; 2014.
18. Jeffrey P, Pounder J. Physical and Environmental Aspects” Urban Regeneration: A Handbook; 2000. doi: 10.4135/9781446219980.n5
19. Düzgün Ş. Suç Olgusuna Teorik Yaklaşımlar Ve Disiplinlerarasılık: Tmmob Mimarlar Odası Ankara Şubesi; 2007.
20. Iveynat N. Urban regeneration Projects in Squatter Settlements: The Case of Ankara, Şentepe Urban regeneration Project: METU, The Graduate School of Natural and Applied Sciences, Master Thesis; 2008. <http://etd.lib.metu.edu.tr/upload/3/12610278/index.pdf>, accessed September, 2019

21. Jacobs B, Dutton C. Social and Community Issues in Roberts, P. and Sykes, H. (ed.) Urban Regeneration: A Handbook, London; Thousand Oaks, Calif.: SAGE; 2000.
22. Hart T, Johnston I. Employment, Education and Training in Roberts, P. and Sykes, H. (ed.) Urban Regeneration: A Handbook, London; Thousand Oaks, Calif.: SAGE; 2000.
23. Das D. Urban Quality of Life: A Case Study of Guwahati: Soc Indic Res; 2007. doi 10.1007/s11205-007-9191-6
24. Noon D, Smith-Canham J, Eagland M. Economic Regeneration and Funding in Roberts, P. and Sykes, H. (ed.). Urban Regeneration: A Handbook, London; Thousand Oaks, Calif.: SAGE; 2000.
25. Nobre E. Towards a Better Approach to Urban Regeneration: Defining Strategies for Intervention in the Central Area of Sao Paulo: Oxford Brookes 132 University School of Architecture & Planning. Master Thesis. Oxford; 2007. http://www.usp.br/fau/docentes/deprojeto/e_nobre/dissertacao_sem_figuras.pdf , accessed January, 2019.
26. LeGates RT, Stout F. Modernism and Early Urban Planning: The City Reader, Second Edition, London, New York: Routledge; 1998.
27. Kayasü S, Uzun N. Kentsel Dönüşüm/Yenileme – Kentsel Yeniden Canlandırma/Yenileş(tir)me: Kavramlara Yeni Bir Bakış: Orta Doğu Teknik Üniversitesi. Mimarlık Fakültesi. Ankara; 2009
28. Couch C, Fraser C. Urban Regeneration in Europe: Oxford, Malden, Iowa, Victoria, Berlin: Blackwell; 2003.
29. Paddison R. City Marketing, Image Reconstruction and Urban Regeneration: Urban Studies; 1993. <http://usj.sagepub.com/content/30/2/339.short> , accessed September, 2019
30. Balaban O. The Use of Indicators to Assess Urban Regeneration Performance for Climate- Friendly Urban Development: The Case of Yokohama Minato Mirai 21. In: Kawakami M. Spatial Planning and Sustainable Development: Approaches for Achieving Sustainable Urban Form in Asian Cities, Strategies for Sustainability. Springer Netherlands; 2013.
31. Tallon A. Urban Regeneration in The UK: Second Edition, Publisher: Routledge; 2 edition; 2010. http://www.townplan.gov.my/download/Urban_Regeneration_in_UK_Final_Oct2013.pdf , accessed September 2015
32. Şişman, A. Kentsel Dönüşüm Uygulamaları: TMMOB Samsun Kent Sempozyumu, 27-29 Kasım, Samsun, Türkiye; 2008.
33. Sekmen S. Kentsel Dönüşüm Üzerine Bir Model Önerisi: İzmir Ferahlı Mahallesi Örneği: Dokuz Eylül Üniversitesi Fen Bilimleri Enstitüsü, Yüksek Lisans Tezi, İzmir; 2007.
34. Tüfekçi Y. Urban transformation: Institutional structuring and capacity creating of local governments for urban transformation legislation: M.Sc. Thesis; 2017. Accessed YÖK Tez Merkezi, Thesis Number: 467109
35. Yazar KH. Sürdürülebilir Kentsel Gelişme Çerçevesinde Orta Ölçekli Kentlere Dönük Kent Planlama Yöntem Önerisi: Ankara Üniversitesi, Sosyal Bilimler Enstitüsü, Doctorate Thesis; 2006.
36. Keleş R. Kentbilim Terimleri Sözlüğü: 2. Baskı, İmge Kitabevi Yayınları, Ankara; 1998.

37. Freyman M. An Exploration of Sustainability and Its Application to Corporate Reporting: Harvard University; 2012
38. Yenice MS. Türkiye'nin Kentsel Dönüşüm Deneyiminin Tarihsel Analizi: BAÜ Fen Bilimleri Enstitüsü Dergisi; 2014
39. Tang H, Yuh-Ming L. The Making of Sustainable Urban Development: A Synthesis Framework: Sustainability; 2016. doi:10.3390/su8050492.
40. Ertürk H. Sürdürülebilir Kentler: Yeni Türkiye Habitat II Özel Sayısı, Yeni Türkiye Medya Hizmetleri, Ankara; 1996
41. Nijkamp P, Pepping, G. A Meta-analytical Evaluation of Sustainable City Initiatives: Urban Studies; 1998. doi: 10.1080/0042098984240
42. Okumuş G, Türkoğlu H. A Geographical Information System Based Urban Sustainability Evaluation Model Proposal In Neighbourhood Scale: Planlama; 2017. doi: 10.14744/planlama.2017.62207
43. European Environment Agency 1995, http://www1.wspgroup.fi/lt/propolis/PROPOLIS_Final_100204.pdf, Accessed: November 2019
44. Bristol Accord 2005; <http://www.mimarlarodasi.org.tr/UIKDocs%5Cbristolmutabakati.pdf> Accessed: November 2019
45. Kentleşme Alanında Sürdürülebilirlik Çözümlemesi: Yaklaşımlar, Modeller, Temel Alanlar, Göstergeler, Uygulama Örnekleri: Sürdürülebilir Kalkınmanın Sektörel Politikalara Entegrasyonu Projesi Kentleşme Tematik Grubu 2. Raporu; 2007.
46. Korkmaz C. Evaluation Of Sustainability Performance Of Urban Regeneration Projects: The Case Of The North Entrance Of Ankara Urban Regeneration Project: M.Sc. Thesis; 2015 Accessed YÖK Tez Merkezi, Thesis Number: 416493
47. Czischke D, Moloney C, Turcu C. Raising the Game in Environmentally Sustainable Urban Regeneration, Sustainable Regeneration in Urban Areas: Urbact II capitalisation, France; 2015. http://urbact.eu/sites/default/files/04_sustreg-web.pdf, accessed September, 2015.
48. <http://www.ilkercolak.com.tr/kentsel-donusum-mevzuatinin-hukuksal-degerlendirmesi/>, Accessed: 03.11.2019.
49. <https://www.resmigazete.gov.tr/eskiler/2019/06/20190621-1.htm>, Accessed: October 2019.
50. <https://www.mevzuat.gov.tr/MevzuatMetin/1.5.3194.pdf>, Accessed: October 2019.
51. <https://www.resmigazete.gov.tr/eskiler/2014/06/20140614-2.htm>, Accessed: October 2019.
52. <https://www.mevzuat.gov.tr/Metin.Asp?MevzuatKod=7.5.23722&MevzuatIliski=0&sourceXmlSearch>, Accessed: October 2019.
53. <https://www.mevzuat.gov.tr/MevzuatMetin/1.5.5393.pdf>, Accessed: October 2019.
54. Kaplan O. 5366 Sayılı Kanun Kapsamında Yenileme Alanlarında Gerçekleştirilen Kentsel Dönüşüm Süreci Üzerine Bir Deneme: Hacettepe HFD; 2017.
55. <https://www.mevzuat.gov.tr/MevzuatMetin/1.5.2985.pdf>, Accessed: October 2019.

56. <https://www.mevzuat.gov.tr/MevzuatMetin/1.5.5366.pdf>, Accessed: October 2019.
57. Kılıç EM, Göksu AE. Bir Kentsel Dönüşüm Deneyimi: Kadifekale-Uzundere İkiileminde Bireysel Öyküler Üzerine Düşünmek: Planlama; 2018. doi: 10.14744/planlama.2018.76476
58. Alpopi C, Manole C. Integrated Urban Regeneration – Solution for Cities Revitalize: Procedia Economics and Finance; 2013. doi:10.1016/s2212-5671(13)00130-5.
59. Çelikkilek A, Öztürk ŞMÇ. 6306 Sayılı Kanun Kapsamında Yürütülen Kentsel Dönüşüm Çalışmaları ve İzmir Uygulamaları: İMÜ Sanat, Tasarım ve Mimarlık Fakültesi Dergisi. 2017; 187-213 ISSN 2587-1684.
60. Çatalbaş F. Spatial and socio-economic implications of the urban transformation projects: A case of Suriçi region of Diyarbakir province: M.Sc. Thesis, 2011. Accessed YÖK Tez Merkezi, Thesis Number: 312021
61. Şişman A, Kibaroğlu D. Türkiye’de ve Dünyada Kentsel Dönüşüm Uygulamaları: TMMOB Harita ve Kadastro Mühendisleri Odası 12.Türkiye Harita Bilimsel ve Teknik Kurultayı, Ankara; 2009.
62. Yu J, Hae-Rim K. Critical Success Factors for Urban Regeneration Projects in Korea: International Journal of Project Management; 2011. doi:10.1016/j.ijproman.2010.09.001.
63. Taşan-Kok T. Entrepreneurial Governance: Challenges Of Large-Scale Property-Led Urban Regeneration Projects: Tijdschrift Voor Economische En Sociale Geografie; 2010. doi:10.1111/j.1467-9663.2009.00521.x.
64. McDonald S, Malys N, Maliene, V. Urban Regeneration For Sustainable Communities: A Case Study: Technological and Economic Development of Economy; 2009. doi:10.3846/1392-8619.2009.15.49-59.
65. Ho D, Yau, Y, Poon S, Liusman E. Achieving Sustainable Urban Renewal in Hong Kong: Strategy for Dilapidation Assessment of High Rises: Journal of Urban Planning and Development; 2012. doi:10.1061/(asce)up.1943-5444.0000104.
66. Ng M, Cook A, Chui E. The Road Not Travelled: A Sustainable Urban Regeneration Strategy for Hong Kong: Planning Practice and Research; 2001. doi:10.1080/02697450120077370.
67. Lehmann S. Towards a Sustainable City Centre: Integrating Ecologically Sustainable Development (ESD) Principles into Urban Renewal: Journal of Green Building; 2006. doi:10.3992/jgb.1.3.83.
68. Ersin GÖ. Quality of life indicators for urban: examination of Büyükçekmece: M.Sc. Thesis; 2012. Accessed YÖK Tez Merkezi, Thesis Number: 330480
69. Pérez MGR, Rey E. A Multi-Criteria Approach to Compare Urban Renewal Scenarios for an Existing Neighborhood. Case Study in Lausanne (Switzerland): Building and Environment; 2013. doi:10.1016/j.buildenv.2013.03.017.
70. Hemphill L, Mcgreal S, Berry J. An Aggregated Weighting System for Evaluating Sustainable Urban Regeneration: Journal of Property Research; 2002. doi:10.1080/09599910210155491.
71. Mayer I, Bueren E, Bots P, Voort H, Seijdel R. Collaborative Decisionmaking for Sustainable Urban Renewal Projects: A Simulation – Gaming Approach: Environment and Planning B, Planning and Design, 2005. doi:10.1068/b31149.

72. Gorsevski P, Donevska K, Jovanovski M, Pesevski I. Regional Non-Hazardous Landfill Site Selection by Integrating Fuzzy Logic, AHP and Geographic Information Systems: Environmental Earth Sciences; 2011. doi:10.1007/s12665-011-1485-y.
73. Bunruamkaew K, Yuji M. Site Suitability Evaluation for Ecotourism Using GIS & AHP: A Case Study of Surat Thani Province, Thailand: Procedia - Social and Behavioral Sciences; 2011. doi:10.1016/j.sbspro.2011.07.024.
74. Wang G, Qin L, Li G, Chen L. Landfill Site Selection Using Spatial Information Technologies and AHP: A Case Study in Beijing, China: Journal of Environmental Management; 2009. doi:10.1016/j.jenvman.2008.12.008.
75. Kazemi H, Akinci H. A Land Use Suitability Model for Rainfed Farming by Multi-Criteria Decision-Making Analysis (MCDA) and Geographic Information System (GIS): Ecological Engineering; 2018. doi:10.1016/j.ecoleng.2018.02.021.
76. Şener Ş, Şener E, Karagüzel R. Solid Waste Disposal Site Selection with GIS and AHP Methodology: a Case Study in Senirkent–Uluborlu (Isparta) Basin, Turkey: Environmental Monitoring and Assessment; 2010. doi:10.1007/s10661-010-1403-x.
77. Tosun EK. Sürdürülebilirlik Olgusu Ve Kentsel Yapıya Etkileri, Paradoks: Ekonomi, Sosyoloji ve Politika Dergisi; 2009. <http://www.paradoks.org>, ISSN 1305-7979, Yıl:5 Sayı:2, Accessed: November 2019
78. <https://izmir.ktb.gov.tr/tr-77456/karsiyaka.html>, Accessed: November 2019
79. <https://en.climate-data.org/>, Accessed: November, 2019
80. TÜİK, 2019
81. <https://www.izmir.bel.tr/tr/buyuksehirsininharitasi/125/212>, Accessed October, 2019
82. Karşıyaka, <https://izmir.ktb.gov.tr/TR-77456/karsiyaka.html>, accessed: October, 2019
83. Sevgi C. Kentleşme Sürecinde İzmir ve Gecekondu: İzmir Konak Belediyesi Kültür Hizmetleri Yay., İzmir; 1988.
84. Kaygalak İ. The urbanization process of Karşıyaka-Çiğli fringe and the factors that effect this process in İzmir: M.Sc. Thesis; 2006. Accessed YÖK Tez Merkezi, Thesis Number: 155548
85. Karadağ A. Kentsel Gelişim Süreci, Çevresel Etkileri ve Sorunları ile İzmir: Ege Koop. Yayınları, İzmir; 2000.
86. Karşıyaka Belediyesi İmar ve Şehircilik Müdürlüğü, 2019
87. Karşıyaka Police Department, 2019
88. <https://www.ism.gov.tr/>, Accessed: October, 2019
89. <https://www.karsiyaka.bel.tr/tr>, Accessed: October 2019
90. www.izmir.bel.tr, Accessed: October, 2019
91. İzmir-Manisa 1/100.000 Ölçekli Çevre Düzeni Planı, <https://mpgm.csb.gov.tr/izmir-manisa-planlama-bolgesi-1-100.000-olcekli-cevre-duzeni-plani-i-82265>, Accessed: October, 2019
92. Karşıyaka 2. Etap Nazım İmar Planı Plan Açıklama Raporu; 2019.
93. Towards an Urban Renaissance: Urban Task Force, E&FN Spon, London; 1999.
94. Oktay D. Kentsel Tasarımın Kuramsal Çerçevesine Güncel Bir Bakış: Kentlerimiz, Yaşam Kalitesi ve Sürdürülebilirlik: Mimarlık; 2001.
95. GoogleEarth, Accessed: October, 2019

96. Saaty T L. The analytic hierarchy process-what it is and how it is used, Mathl Modelling: Pergamon Journals Ltd; 1987.
97. Sağır MÖ. Bir işletmede analitik hiyerarşi süreci kullanılarak performans değerlendirme sistemi tasarımı: Endüstri Mühendisliği Dergisi; 2002.
98. Saaty TL. Decision making-the analytic hierarchy and network processes (ahp/anh): Journal Of Systems Science And Systems Engineering; 2004.
99. Saaty TL. Decision making with the analytic hierarchy process: Int. J. Services Sciences; 2008.
100. TUBA, Environmental Studies Group Report, 2004
101. Gürlü E. Kentsel Yeniden Üretim Süreci Üzerine Karşılaştırmalı Çalışma: İstanbul Örneği, Kentsel Dönüşüm Sempozyumu Bildiriler Kitabı: Yıldız Teknik Üniversitesi Basım-Yayın Merkezi, İstanbul; 2003.
102. Birleşmiş Milletler İnsan Çevresi Konferansı Stockholm Deklarasyonu, 1972. http://www.canaktan.org/hukuk/insan_haklari/yirminciyuzyilda/insan_cevresi.htm, accessed October, 2019
103. Çubuk M. 21. Yüzyılda Beşerileşmiş Ve Sürdürülebilir Şehircilik İçin Düşünceler: Kentsel Çevre ve Sürdürülebilirlik Paneli, Doğu Akdeniz Üniversitesi, Mimarlık Fakültesi, Kentsel Araştırma ve Geliştirme Merkezi; 2000.
104. Açıkgöz AT. Spatial, social, economic implications of urban transformation and the role of public sector: A case of Ankara Gültepe (Çinçin): M.Sc. Thesis; 2014. Accessed YÖK Tez Merkezi, Thesis Number: 371636
105. Hamurcu AU, Buldurur MA. Sürdürülebilir Kentsel Dönüşüm İçin Performans Göstergeleri: Planlama; 2017. doi: 10.14744/planlama.2017.30074
106. Teknomo K. Analytic Hierarchy Process (AHP) Tutorial: <http://people.revoledu.com/kardi/tutorial/AHP>, Accessed: November 2019

APPENDIX 1

BAYINDIRLIK VE İSKAN BAKANLIĞI
AFET İŞLERİ GENEL MÜDÜRLÜĞÜ
AFET ETÜD VE HASAR TESPİT DAİ.BŞK.
JEOLojİK ETÜD VE İZLEME ŞUBE MÜDÜRLÜĞÜ

AFETİN TÜRÜ : KAYA DÜŞMESİ
ETÜD TARİHİ : 15/11/1996
RAPOR TARİHİ : 19/12/1996
ETÜDÜ YAPAN : Ekrem DEMİRBAŞ
: Ayla KIZILTUĞ

T-3

İLİ : İZMİR
İLÇESİ : KARŞIYAKA
MAH : CUMHURİYET

İZMİR GENEL NÜFUS : 2694.700
KARŞIYAKA GENEL NÜFUS: 418724
MAH GENEL HANE : 5000
MAH GENEL NÜFUS : 30.000

JEOLojİK ETÜD RAPORU

AMAÇ:

İZMİR İli, KARŞIYAKA İlçesi CUMHURİYET mahallesinde meydana gelen kaya düşmesi olayının Valiliğin (Bayındırlık ve İskan Müdürlüğü) 12/12/1995 gün ve 13651 sayılı yazısı ekinde gönderilen 08/12/1995 tarihli 8n rapor gereği mahallinde incelenmesi.

İNCELENEN YERİN TANITILMASI:

CUMHURİYET mahallesi İZMİR Büyükşehir Belediyesi ve KARŞIYAKA İlçe Belediyesi sınırları içinde kalmaktadır. Yapılaşmasına kaçak yapı veya gecekondu tarzında tamamlanmıştır. Ayrıca mahallede imarlı binalarda mevcuttur. İmar affı yasası gereği imar ıslah planları yapılmış olup, yapılaşmasını bu plana göre tamamlamaktadır. İzmir Körfezinin kuzeyinde yer alan mahalle yaklaşık 15-100 kotları arasında kurulmuştur. Altyapı çalışmaları yer yer sürdürülmekle birlikte temel altyapılar mahallede mevcuttur. Çalışma alanları, ulaşım, eğitim, sağlık vb. açısından İZMİR Büyükşehir Belediyesinin hudutları içinde olup bu olanaklardan yararlanmaktadır.

JEOLojİK DURUM:

Yörede temel zemini Miyosen yaşlı volkanik kayalar oluşturmaktadır. Andezitik lavlar, tüfler, aglomeralar ile temsil edilen volkanik seriye yer yer 40-50 cm. kalınlığında bantlar şeklinde killi-marnlı sedimanter arakatlarda mevcuttur. Aglomeralar büyüklüğü çakıl boyutunda başlayıp 10 m³'e kadar ulaşabilen andezit parça ve blokların tüflerle bağlanması ile oluşmuştur. İnceleme alanında altta tüflerle başlayan volkanikler, sedimanter arakatkılar ve aglomeralar şeklinde Üste doğru bir istif sunmaktadır. Aglomera ve tüfler kırıklı ve çatlaklı olup yer yer çok ayrılmıştır.

AFET DURUMU

CUMHURİYET mahallesinde meydana gelen kaya düşmesi olayı 6617 sokakta imar planında park ve yol olarak ayrılan alandaki muhtelif ebatlardaki (araziye serpiştirilmiş vaziyetteki) toplam 60-70 m³ kadar aglomera bloğundan kaynaklanmaktadır. Bloklar 6617 sokak ile planda buna dik olarak geçen ve kaya düşen alanın 150 m doğusuna kadar inşaatı tamamlanmış olan (6638 sokak) sokağın kesistiği kısımda yer almaktadır. Bu kayalar rapor ekinde verilen 1/1000 ölçekli 26L-IIIId paftanolu imar planına işlenmiştir. Ulaşımın kolay olması blokları küçük (1-2 m³) ile orta boy (5-10 m³) arasında değişmesi falez teskil



cdk

etmeside gözönüne alınarak el aletleri veya iş makineleri yardımıyla kolaylıkla tehlikesiz hale getirilebilecek niteliktedir. Uygulanabilecek en iyi çözüm yolunun Belediyesince yarım bırakılan 6638 sokaktaki yol inşaatının tamamlanmasıdır. (Söz konusu yolun üzerinde kalan bloklar yol çalışması esnasında temizleneceğinden) Olaydan 4 konut ve bunların kömürlük, tuvalet veya oda şeklindeki eklentileri etkilemekte olup, olay genel hayata etkisizdir. Bu nedenle mahalli olanaklarla (Belediyesince) tedbir alınması uygun olacaktır. Bu konutların sahiplerinin isim listesi aşağıda verilmiştir.

Sıra no	Sokak no	Kapı No	ADI-SOYADI	BABA ADI
1	6615	20	Necmettin ÇAKMAK	Hamit
2	6615	19	Remzi KALAYCI	-
3	6616	19	Zeki TOLAN	Ahmet
4	6621	24	Naciye ARDIÇ	Ahmet

Önlem alınmadığı takdirde rapor eki krokide sınırları belirlenen kaya düş sine maruz alan için "afete maruz bölge (yapı ve ikamete yasaklanmış afet bölgesi) ve 4 konut için etkisizlik onayı alınmalıdır. 4 nolu konutun odaları bağımsız yapılar şeklinde olup 3 parça halinde inşa edilmiştir.

SONUÇ VE ÖNERİLER:

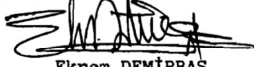
İZMİR İli, KARŞIYAKA İlçesi CUMHURİYET mahallesinde meydana gelen kaya düşmesi olayının mahallinde incelenmesi neticesinde aşağıdaki sonuçlara varılmıştır.

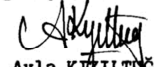
1- Mahallenin 6617 sokak ile Belediyesinin numaratayında 6638 sokak olarak geçen (ve kısmen açılan) sokağın keşiştiği yerdeki yeşil sahaya ayrılan alanda yer alan muhtelif ebatlardaki toplam 60-70 m3 kadar kayanın düşme riski taşıdığı ve altta yer alan 4 adet konutu etkilediği kanatine varılmıştır.

2- Olay bu haliyle genel hayata etkisiz olup, 4 konut için etkisizlik onayı alınmalıdır.

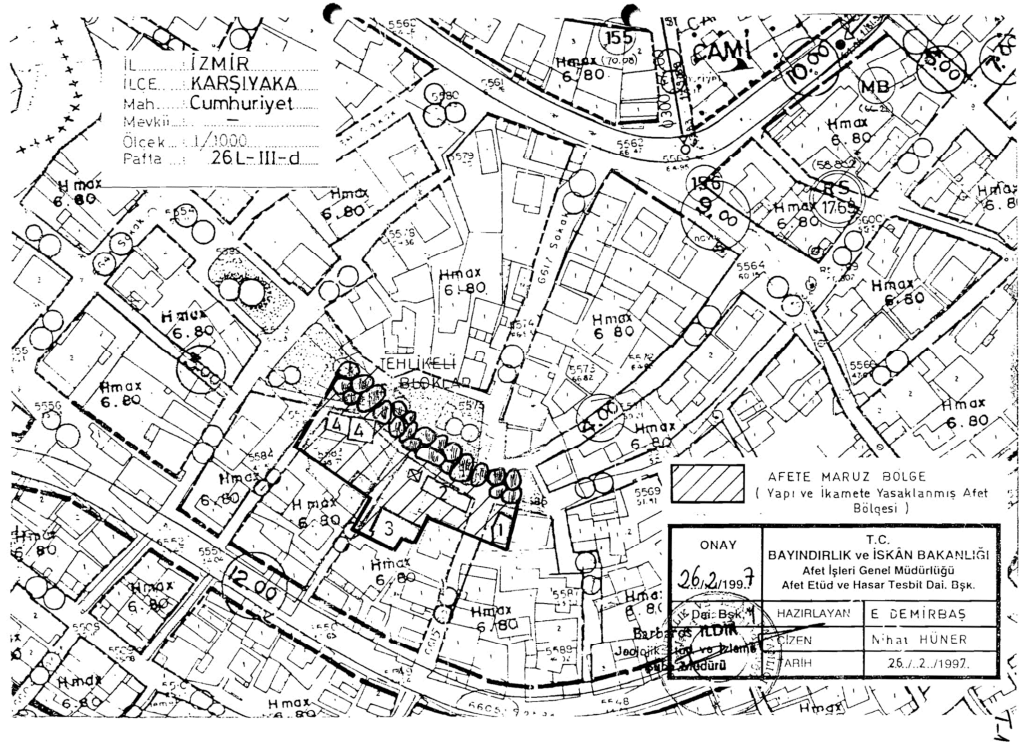
3- Konutları tehdit eden kaya blokları el aletleri veya iş makineleri yardımıyla küçük parçalara ayrılarak kolaylıkla tehlikesiz hale getirilebilir nitelikte olduğundan mahalli olanaklarla (Belediyesince) tedbir alınmalıdır. Tedbir alınıncaya kadar ekli imar planında gösterilen alan için "afete maruz bölge" (yapı ve ikamete yasaklanmış afet bölgesi) kararı alınmalıdır.

4- Belediyesince kısmen inşaa edilmiş bulunan 6638 sayılı sokağın kaya düşmesine neden olan kesimde kalan bölümünde inşa edilmesi ile bu yol üzerinde kalan tehlikeli bloklar kaldırılmış olacağından bu çalışmanın biran önce tamamlanması en uygun çözüm olacaktır.


Ekrem DEMİRBAŞ
Jeo.Yük.müh.


Ayla KIZILTOĞ
Jeo.Müh.

ŞY/11/01/1997



T.C.
BAYINDIRLIK VE ISKAN BAKANLIĞI
Afet İşleri Genel Müdürlüğü

T-4

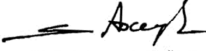
Sayı : B.09.0.411.0.12.00.06/ 35-22
Konu : CUMHURİYET Mah. 5514

? MAYIS/1997

BAKANLIK MAKAMINA

İZMİR İli KARSIYAKA İlçesinin CUMHURİYET mahallesinde inceleme yapan Bakanlığımız teknik elemanlarınca düzenlenen 19.12.1996 günlü jeolojik etüd raporunda 4 konutun kaya düşmesine maruz olduğu, nakli gerektiği ancak olayın genel havatı etkileyici nitelikte bulunmediği belirtilmiştir.

Bu sebeple, 19.12.1996 günlü rapora göre kaya düşmesinden etkilenen 4 konut için 419724 nüfuslu ilçe merkezinde 7269 sayılı vassanın 1'nci maddesi ile ilgili olarak hazırlanan 21.9.1968 gün ve 17007 sayılı Resmî Gazete'de yayınlanan yönetmelik esaslarına uygun olarak afetin anılan yerin genel hayatına etkisiz olduğu hususunu Olur'larınıza arz ederim.




Selçuk ASCIOĞLU
Genel Müdür a.
Afet Etüd ve Hasar Tesbit
Dairesi Başkanı

EKLER:

EK: 1- Rapor (1 takım)

OLUR
2/5/1997


Oktay ERGÜNAY
Bakan a.
Genel Müdür

10145

T-6

T.C.
BAŞBAKANLIK
KANUNLAR ve KARARLAR
GENEL MÜDÜRLÜĞÜ

BAKANLAR KURULU KARARI

97/ 9895

Eklî liste ve krokilerde belirtilen yerleşim yerlerinde bulunan alanların, çeşitli afetler sebebiyle "afete maruz bölge" olarak ilanı; Bayındırlık ve İskan Bakanlığı'nın 29/5/1997, 12/8/1997 tarihli ve 7107, 11317 sayılı yazıları üzerine, 7269 sayılı Kanunun değişik 2 nci maddesine göre, Bakanlar Kurulu'nca 20/ 8 /1997 tarihinde kararlaştırılmıştır.

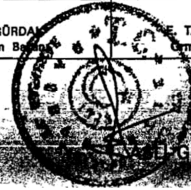
Ekl

SÜLEYMAN DEMİREL
CUMHURBAŞKANI

MESUT YILMAZ
BAŞBAKAN

B. ECEVİT Devlet Bak. ve Başb. Yrd.	İ. SEZGİN Millî Sav. Bak. ve Başb. Yrd.	G. TANER Devlet Bakanı	H. ÖZKAN Devlet Bakanı
Y. SEÇKİNER Devlet Bakanı	İ. SAYGIN Devlet Bakanı	Prof. Dr. H. S. TÜRK Devlet Bakanı	Prof. Dr. S. YILDIRIM Devlet Bakanı
R. SERDAROĞLU Devlet Bakanı	M. GÖRDERE Devlet Bakanı	Prof. Dr. Ş. GÜREL Devlet Bakanı	Prof. Dr. A. ANDIÇAN Devlet Bakanı
Dr. İ. ÇELEBİ Devlet Bakanı	M. YILMAZ Devlet Bakanı	R. ŞAHİN Devlet Bakanı	B. KARA Devlet Bakanı
C. KAVAK Devlet Bakanı	E. AŞIK Devlet Bakanı	R. K. YÜCELEN Devlet Bakanı	H. GEMİCİ Devlet Bakanı
M. BATALLI Devlet Bakanı	O. SUNGURLU Adalet Bakanı	M. BAŞESGİOĞLU İçişleri Bakanı	İ. CEM Dışişleri Bakanı
Z. TEMİZEL Maliye Bakanı	H. ULUĞBAY Millî Eğitim Bakanı	Y. TOPÇU Bayındırlık ve İskan Bakanı	H. İ. ÖZSOY Sağlık Bakanı
N. MENZİR Ulaştırma Bakanı	M. TAŞAR Tarım ve Köylüleri Bakanı	Prof. Dr. N. ÇAÇAN Çalışma ve Sos. GÜv. Bakanı	Y. EREZ Sanayi ve Ticaret Bakanı
M.C. ERSÖMER Enerji ve Tabii Kayn. Bakanı	İ. TALAY Kültür Bakanı	İ. GÖRDAĞ Turizm Bakanı	İ. TARANOĞLU Orman Bakanı
Dr. İ. AYKUT Çevre Bakanı			

Dosya No.



T-S

33-	HATAY	İSKENDERUN	DENİZCİLER KAS.	CAMLIK-TURGUTREİS	HEYELAN	24.1.1996
34-	ISPARTA	SÜTÇÜLER	-	BESKOZ	"	20.12.1996
35-	İÇEL	MERKEZ	ASLANKÖY BELDESİ	-	"	20.5.1996
36-	"	"	BOZÖN	-	"	24.10.1996
37-	"	ÇAMLIYAYLA	FAKILAR	-	"	7.11.1996
38-	KASTAMONU	SEMPAZAR	DEMİRCİ	-	"	29.12.1996
39-	KAYSERİ	KOCASINAN	HASANCI	-	"	9.1.1997
40-	KOCAELİ	İZMİT	KASIKCI	NEZİRLER	"	11.11.1996
41-	KONYA	MERAM	KAYADİBİ	-	KAYA DÜŞMESİ	24.3.1997
42-	"	ILGIN	BULCUK	-	"	1.4.1996
43-	"	"	CATAK	AŞAĞI	HEYELAN	17.1.1997
44-	"	HALKAPINAR	KARAYUSUFLU	-	KAYA DÜŞMESİ	3.4.1996
45-	MALATYA	DARFENDE	AKBABA	-	SU BASKINI	18.7.1996
46-	KAHRAMANMARAS	MERKEZ	DERERÖĞAZI	YENİOBA	HEYELAN	18.10.1996
47-	"	"	ÇINARPINAR	MERKEZ-DEDFEROBASI	HFY.+KAYA DÜŞMESİ	11.12.1996
48-	"	"	BEŞEN	DEMİRKAPI OBASI	HEYELAN	30.9.1996
49-	İZMİR	<u>KARSIYAKA</u>	-	CUMHURİYET	KAYA DÜŞMESİ	19.12.1996
50-	MANİSA	SELENDİ	YENİCEKÖY	-	"	28.8.1996
51-	MUĞLA	FETHİYE	ÇATAK	-	HEYELAN	4.12.1996
52-	MUS	VARTO	DRÖERLİ	-	KAYA DÜŞMESİ	26.9.1996
53-	ORDU	İKİZCE	KOCAMAN	HALKABÜKÜ	HEYELAN	14.10.1996
54-	"	GÖLKÖY	AYDOĞAN BELDESİ	KUMDİBİ	"	17.2.1997
55-	"	ÜNYE	ERENYURT	KOCAHİSAR	"	12.9.1996
56-	"	"	MEYDAN	AFLU	"	16.9.1996
57-	RİZE	MERKEZ	GÖLGELİ	-	"	3.12.1996
58-	"	"	KENDİRLİ	SIRT-MERKEZ	"	11.12.1996
59-	"	"	TAŞPINAR	-	"	20.11.1996
60-	"	"	ALİPAŞA	-	HEY.	10.12.1996
61-	"	"	ÇİFTKAVAK	YALI	HEYELAN	13.12.1996
62-	"	"	DEREBAŞI	-	"	20.11.1996
63-	"	ÇAYELİ	KACKAR	-	"	21.5.1996
64-	"	"	ÇESMELİ	HONRA	"	20.6.1996
65-	"	"	ZAFERLİ	BAKOĞLU	"	17.6.1996

Mehmet AIGÜL
Mehmet Aigül

Barbaros İLLİR
Jeolojik Etüt ve İnceleme
Kurumu
15.3.1997

...



T.C
BAYINDIRLIK VE İSKAN BAKANLIĞI
Afet İşleri Genel Müdürlüğü

T-12

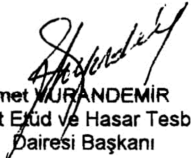
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KONU : KARŞIYAKA İlçesi

03 HAZİRAN 2002
...../...../2002

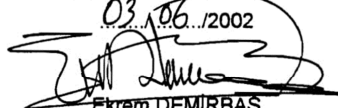
BAKANLIK MAKAMINA

İZMİR ili, KARŞIYAKA ilçesinin ALPARSLAN, ÇİÇEK, ALİFUAT BAKSI mahallelerinde inceleme yapan Bakanlığımız teknik elemanlarınca düzenlenen 27.02.2002 günlü jeolojik etüd raporunda 27 konutun kaya düşmesi afetine maruz olduğu, nakli gerektiği, ancak olayın genel hayatı etkileyici nitelikte bulunmadığı belirtilmiştir.

Bu sebeple, 27.02.2002 günlü rapora göre, kaya düşmesinden etkilenen 27 konut için 430.000 nüfustan oluşan ilçede, 7269 sayılı yasanın 1'nci maddesi ile ilgili olarak hazırlanan 21.09.1968 gün ve 13007 sayılı Resmi Gazetede de yayınlanan yönetmelik esaslarına uygun olarak afetin anılan yerin genel hayatına etkisiz olduğu hususunu Olur'larınıza arz ederim.


Ahmet URANDEMİR
Afet Etüd ve Hasar Tesbit
Dairesi Başkanı


Uygun Görüşle Arz Ederim

03.06.2002

Ekrem DEMİRBAŞ

Genel Müdür a.
Genel Müdür Yardımcısı

EK : Rapor (1 takım)

OLUR
03/06/2002


Mustafa TAYMAZ
Bakan a.
Genel Müdür

T-20

BAYINDIRLIK VE İSKAN BAKANLIĞI
AFET İŞLERİ GENEL MÜDÜRLÜĞÜ
AFET ETÜT VE HASAR TESPİT DAİ. BŞK.
JEOLOJİK ETÜT VE İZLEME ŞUBE MÜDÜRLÜĞÜ

AFETİN TÜRÜ : Kaya Düşmesi
ETÜT TARİHİ : 12.02.2002
RAPOR TARİHİ : 27.02.2002
ETÜDÜ YAPAN: H.Nazım İLERİ
Hişam ALACAHAN

İLİ : İZMİR
İLÇESİ : KARŞIYAKA
MAHALLE : Alparslan, Çiçek, Ali Fuat Baksı

Karşıyaka GN: 430.000
Alparslan Mh GH: 4500 GN:7500
Çiçek Mh.GH: 5600 GN:51.000
A.Fuat Baksı GH:3279 GN:10762

JEOLOJİK ETÜT RAPORU

AMAC:

İZMİR İli, KARŞIYAKA İlçesi, Alparslan, Çiçek ve Ali Fuat Baksı Mahallelerinde meydana gelen kaya düşmesi olayının, Valiliğinin (Bayındırlık ve İskan Müdürlüğü) 27.12.2001 gün ve 11669 sayılı yazısı ekinde yer alan ön rapor gereği yerinde incelenmesi.

ÖNCEKİ ÇALIŞMALAR:

KARŞIYAKA İlçesinde ilk etüt kaya düşmesi nedeni ile 15.11.1996 tarihinde yapılmış ve 19.12.1996 günlü jeolojik etüt raporu düzenlenmiştir. Cumhuriyet Mahallesinde yapılan etüt sonucu düzenlenen raporda, meydana gelen kaya düşmesi olayının 6617 sokakta, imar planında park ve yol olarak ayrılan alandaki muhtelif ebatlardaki kaya bloklarından kaynaklandığı belirtilmiştir. Söz konusu kaya bloklarının el aletleri veya iş makinalarıyla tehlikesiz hale getirilebileceği ifade edilmiş olup, olaydan 4 konutun etkilendiği ve olayın genel hayata etkisiz olduğu belirtilmiştir.

Bölgede, mahalli olanaklarla (Belediyesince) tedbir alınmasının uygun olacağı, alınmaması durumunda rapor eki paftada sınırları belirtilen alan için afete maruz bölge (yapı ve ikamete yasaklanmış afet bölgesi) kararı ve 4 konut için etkisizlik onayı alınması gerektiği ifade edilmiştir.

JEOLOJİK DURUM:

Bölgenin jeolojik özellikleri 19.12.1996 günlü jeolojik etüt raporunda ayrıntılı olarak anlatılmıştır.

AFET DURUMU:

Kaya düşmesi olayı ile ilgili olarak, Alparslan Mahallesinde yapılan incelemede Ümit Boz spor tesislerinin hemen üzerinden başlayan ve yüksekliği 20-30m.'yi bulan volkanik kayaların oluşturduğu dik falezden 1-3 m³ lük blokların düştüğü belirlenmiştir. Kaya bloklarının yüzeyinin tümünün atmosferik koşulların etkisinde kalması ayrıca mevcut konutlardan bir kısmının atık sularının söz konusu alanda serbestçe akışına izin verilmesi kayaç bünyesinde bozunmalara ve çatlaklanmalara neden olmuştur. Bu durum kayaların bloklar halinde ayrılmasına sebep olmuştur. Kayalar boyunca meydana gelen süreksizliklerin doğrultusu büyük oranda yamaca diktir. Söz konusu kırık ve çatlaklanmalar sebebiyle, falez teşkil eden kayaların büyük kısmının masif yapıda olmasına karşın, yer yer düşebilecek nitelikte blokların varlığı gözlenmiştir. Falezin üst kısmında inşaa edilen konutların bir kısmının hemen yamacın ucunda yer alması, kırıklı ve çatlaklı blokların eğim boyunca

T-19

hareket etmesi sonucunda mevcut konutlardan bir kısmının temellerinin açığa çıkarak tehlike oluşturduğu gözlenmiştir. Ekli paftada, 3 numara ile gösterilen apartman binasının önünde yer alan ulaşım yolunun hemen alt kısmında kaya bloklarının yuvarlanarak bu kesimde boşluk oluşturduğu, 2 numara ile gösterilen konutun ise balkon kısmının altındaki kayaların bir kısmının düşmesi sonucu balkonun bir kısmının asılı kaldığı gözlenmiştir. 1 numara ile gösterilen konutunda yamacın hemen üzerinde yer alması sebebi ile tehlike oluşturabileceği belirlenmiştir. Bu oluşumun uzun vadede mevcut yapılar için risk oluşturması söz konusu olduğundan ivedilikle mahallince önlem alınması uygun olacaktır. Spor tesisinin çevresinde, yamacın hemen başlangıcından itibaren inşaa edilen ve yüksekliği 1-1,5 m olan istinat duvarının düşebilecek nitelikteki kayaç bloklarının hareketini engellemesi mümkün görünmemektedir. Bu nedenle kaya bloklarının mahalli imkanlarca (Belediyesince) iş makineleri yardımıyla ıslah edilmesi gerekmektedir. Ekli imar paftasında, sınırları belirtilen alanda düşebilecek nitelikteki kaya blokları işaretlenmiştir. İmar paftasında sınırları belirtilmiş olan falez boyunca can ve mal güvenliği açısından taş duvar yada beton örülmesi, söz konusu bölge için kalıcı çözüm olacaktır. Spor tesisinde de gerekli tedbirlerin alınması sonrası hizmet verilmesi uygun olacaktır.

Belirtilen iyileştirme işlemlerinin yapılmaması durumunda, rapor eki 25N 1b no'lu imar paftasında 3 numara (No:4/14, 4 dairesi apartman) ile gösterilen apartman dairesi ve 2 numara ile gösterilen Osman ÇELİK'e ait konut ile 1 numara ile gösterilen Recep TÜRK'e ait konutların şahısların kendi imkanlarıncaya nakil edilmesi gerekmektedir. Rapor eki paftada sınırları belirtilen alan için gerekli önlemler tamamlanuncaya kadar afete maruz bölge (yapı ve ikamete yasaklanmış afet bölgesi) kararı ve söz konusu konutlar için genel hayata etkisizlik onayı alınmalıdır.

Çiçek Mahallesi'nde yapılan incelemede, Alparslan Mahallesi'nde olduğu gibi, eskiden taş ocağı olarak kullanılan alanın çevresinde plansız bir yerleşim yapıldığı gözlenmiştir. Mevcut yapıların bir kısmında alt yapı yetersizliği sebebiyle kullanım suyu ve yağış sularının dik falez boyunca akmasına izin verildiği ve bu durum sebebi ile mostrada yer alan kayaçlarda bozunmaların meydana geldiği gözlenmiştir. Falezin hemen altında yer alan konutların arkasına 0,9-1m³ lük blokların düştüğü ve yamaç boyunca yaklaşık aynı ebatlarda düşebilecek nitelikte blokların varlığı tespit edilmiştir. Kaya bloklarında mevcut çatlaklanmalar dik ve dike yakındır. Söz konusu alanda düşebilecek nitelikteki kaya bloklarının mahalli imkanlarca (Belediyesince) iş makineleri yardımıyla ıslah edilmesi gerekmektedir. Ekli imar paftasında, sınırları belirtilen alanda düşebilecek nitelikteki kaya blokları işaretlenmiştir. İmar paftasında sınırları belirtilmiş olan falez boyunca can ve mal güvenliği açısından taş duvar yada beton duvar yapılması uygun olacaktır.

Çiçek mahallesinde 25N 2d/1 imar paftasında kaya düşmesi olayından etkilenebilecek konut sahipleri aşağıda belirtilmiştir.

<u>S.NO</u>	<u>ADI SOYADI</u>
1	Bahattin YÜCEL
2	Fazlı YEŞİLYURT
3	Hayrettin BARİT
4	Remzi MACİT
5	Nuri YILDIZHAN
6	Rıfat ASUTAY
7	Hüseyin ASUTAY
8	Cemal MALAK
9	Tahsin MALAK
10	İbrahim POLAT

Yine, Çiçek mahallesinde 25N 2d/2 No'lu ekli imar paftasında gösterilen alanda yapılan incelemede de kaya düşmesi olayı sonucunda kaçak yapı niteliğindeki Ayşe Ayhan ŞENSÖZ'e ait ekli paftada 2 numara ile belirtilen konutun tamamen yıkıldığı, 1 numara ile gösterilen İsmail Hakkı

ŞEN'e ait olan konutun ise hasar gördüğü belirlenmiştir. Söz konusu bölgede belirtilen konutlar dışında kaya düşmesi olayından etkilenebilecek konut sahipleri aşağıda belirtilmiştir. Bunlar;

<u>S.NO</u>	<u>ADI SOYADI</u>
1.	İsmail Hakkı ŞEN
2.	Ayşe Ayhan ŞENSÖZ
3.	Seyfettin SAĞLAM
4.	Asiye AYDOĞAN
5.	Halil PALA
6.	Mehmet GÜLAY
7.	Tevfik EMRE
8.	Ünal EMRE
9.	Adem SARICA
10.	Kamile KÜÇÜKSAYIN

Çiçek mahallesinde 20 konutun kaya düşmesi olayından etkilenebileceği belirlenmiş olup, gerekli önlemlerin alınmaması durumunda, 20 konutun şahısların kendi imkanlarıncı nakil edilmesi gerekmektedir. Ayrıca, rapor eki imar paftalarında sınırları gösterilen alan için ıslah çalışmalarının sonuna kadar afete maruz bölge (yapı ve ikamete yasaklanmış afet bölgesi) kararı ve söz konusu 20 konut için genel hayata etkisizlik onayı alınmalıdır.

Karşıyaka İlçesi, Ali Fuat Baksı Mahallesinde yapılan incelemede kaya düşmesi olayından etkilenebilecek 4 konutun varlığı tesbit edilmiştir. 25N 1d No'lu paftada 2 numara ile gösterilen Süleyman EROL'a ait konutun temelinde yer alan kaya kütlelerinin bir bölümünün kırıklar boyunca ayrılarak asılı kaldığı, bir kısmının ise bulunduğu alanda devrildiği gözlenmiştir. Söz konusu alanda eğim azalmakla birlikte, düşebilecek nitelikteki blokların varlığı daha aşağı kesimde yer alan, ekli paftada 3 numara ile gösterilen M.Ali KESER'e ait konut için tehlike arz etmektedir. Söz konusu alanda düşebilecek nitelikteki kaya bloklarının mahalli imkanlarca (Belediyesince) iş makineleri yardımıyla ıslah edilmesi gerekmektedir. Ekli imar paftasında, sınırları belirtilen alanda düşebilecek nitelikteki kaya blokları işaretlenmiştir. İmar paftasında sınırları belirtilmiş olan ve çevresindeki falez boyunca can ve mal güvenliği açısından taş duvar yada beton duvar yapılması uygun olacaktır.

Ali Fuat Baksı mahallesinde kaya düşmesi olayından etkilenebilecek konut sahipleri aşağıda belirtilmiştir. Bunlar:

<u>S.NO</u>	<u>ADI SOYADI</u>
1.	Sacide YOLUDOĞRU
2.	Süleyman EROL
3.	M. Ali KESER
4.	Asım USLU

Belirtilen iyileştirme işlemlerinin yapılmaması durumunda, söz konusu konutların şahısların kendi imkanlarıncı nakil edilmesi gerekmektedir. Ayrıca, rapor eki imar paftasında sınırları gösterilen alan için, gerekli iyileştirme çalışmaları sonuçlanıncaya kadar afete maruz bölge (yapı ve ikamete yasaklanmış afet bölgesi) kararı ve belirtilen 4 konut için genel hayata etkisizlik onayı alınmalıdır.

SONUC VE ÖNERİLER:


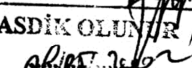
İZMİR İli, KARŞIYAKA İlçesi, Alparslan, Çiçek, Ali Fuat Baksı Mahallelerinde kaya düşmesi sebebi ile 12.02.2002 tarihinde yapılan inceleme sonucunda;

T-17

1. Yukarıda belirtilen mahallelerin eski taş ocağı olarak işletilen kesimlerinde volkanik kayalar bloklarının yer yer ayrışmaları sonucunda kaya bloklarının düştüğü belirlenmiştir.
2. Söz konusu kaya bloklarının tehlike oluşturabileceği alanlar ekli paftalarda belirtilmiş olup mahalli imkanlarca (Belediyesince) söz konusu kaya bloklarının temizlenerek alanlardaki dik kayalık bölgeler boyunca ıslah çalışması yapılması uygun olacaktır. Bu şekilde bölgede kalıcı çözüm sağlanmış olacaktır.
3. Alanda gerekli önlemlerin alınmaması durumunda; Alparslan Mahallesi'nde biri 4 dairesel apartman ve 2 ayrı konut olmak üzere 3 yapı, Çiçek Mahallesi'nde; 20 konut, Ali Fuat Baksı Mahallesi'nde ise 4 konut olmak üzere Karşıyaka ilçesinde toplam 27 yapının kaya düşmesi olayından etkilenebileceği belirlenmiştir.
4. Söz konusu 27 yapı için genel hayata etkisizlik onayı ve rapor eki paftalarda sınırları belirtilen alanlar için ıslah çalışmaları sona erinceye kadar afete maruz bölge (yapı ve ikamete yasaklanmış afet bölgesi) kararı alınmalıdır.


H. Nazım İLERİ
Jeo. Müh.


Hısam ALACAHAN
Jeo. Müh.

AFET İŞLERİ GENEL MÜDÜRLÜĞÜ	
TASVİP  Seyhan AYÇİÇEK Jeolojik Etüd. ve İzleme Şb. Md. V.	TASDİK OLUNUR  Ahmet VURANKEMİR Afet Etüd. ve Hasar Tespit Daire Şefk.

T-32

azaltıcı (püskürtme betonla kaplamak vb) önlemlerin alınması yoluyla kaya düşmesi riskinin ortadan kaldırılması mümkündür.

Raporumuz eki paftada sınırları belirtilen alandaki kaya düşmesi olayı ile ilgili olarak yukarıda önerilen önlemlerin İzmir Bayındırlık ve İskan Müdürlüğü teknik elemanlarınca düzenlenen 10.03.2005 tarihli raporda da belirtildiği gibi Belediyesince alınması uygun olacaktır.

DEPREM DURUMU :

İnceleme alanı, Türkiye Deprem Bölgeleri Haritasına göre, I. Derece deprem bölgesi sınırları içindedir.

SONUÇ VE ÖNERİLER :

İZMİR İli, KARŞIYAKA İlçesi, EMEK Mahallesi 7290 sokak 140, 142 ve 144 Kapı Nolu konutların yer aldığı sahada meydana gelen kaya düşmesi olayı İZMİR Valiliğinin (Bayındırlık ve İskan Müdürlüğü) 13/09/2005 gün ve 10692 sayılı yazısı ve ekindeki teknik rapor çerçevesinde 22.09.2005 tarihinde ekibimizce etüt edilmiş ve sonuçlar aşağıda sunulmuştur:

1- 7290 Sokak civarında taş ocağı olarak işletilmiş olan andezitler içinde, meteorolojik koşullar, fiziksel ve kimyasal etkenler vb sonucunda gelişen ayrışmaya bağlı olarak süreksizlikleri boyunca plaka ve blok olarak kopmalar meydana gelmiştir.

2- Taş ocağı işletmesinin terk edilmesinden sonra 7290 Sokak civarındaki saha kontrolsüz olarak yapılaşma amaçlı kullanılmıştır.

3- Ekibimizce yapılan etütte, taş ocağı ayna şevinden ayrışma sonucu kavlayan plakaların ve kamalanmış ufak blokların koptuğu ve konutlar ile ayna şevi arasındaki dar boşluğa düşüp yığılma oluşturduğu belirlenmiştir.

4- Olay bu haliyle, etkin bir kaya düşmesi olayı olmayıp düşen blokların temizlenmesi, yüzey ve atık suların drenajını sağlayıcı ve aynadaki ayrışma süreçlerinin etkisini azaltıcı (püskürtme betonla kaplamak vb) önlemlerin Belediyesince (İzmir Bayındırlık ve İskan Müdürlüğü teknik elemanlarınca düzenlenen 10.03.2005 tarihli raporda da belirtildiği gibi) alınması uygun olacaktır.

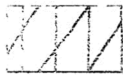
Bahadır DEMİR
Geo.Müh.

Nurhan MÜFTÜOĞLU
Geo.Müh.

AFET İŞLERİ GENEL MÜDÜRLÜĞÜ			
	ADI SOYADI - ÜNVANI	TARİH	İMZA
İNCELEME	Güven BOZ Jeolojik Etüd ve İzleme Şb. Md.V.	9./11./2005	
TASVİP	Ayhan ÇİFTÇİ Afet Etüd ve Hasar Tespit Dai. Bşk.	10./11./2005	
<p>TASDİK OLUNUR 10/11/2005  GENEL MÜDÜR YARDIMCISI</p>			

İLİ :İZMİR
İLÇE :KARŞIYAKA
MAH :EMEK
PAFTA :25 M 1 a-b
ÖLÇEK :1 / 1000

KAYA DÜŞMESİNE MARUZ SAHA



KAYA DÜŞMESİNE KARŞI
ÖNLEM ALINACAK BÖLGE

ONAY
9/11/2005

Dai. Bek. Y.
Güven BOZ
SB Md. V.

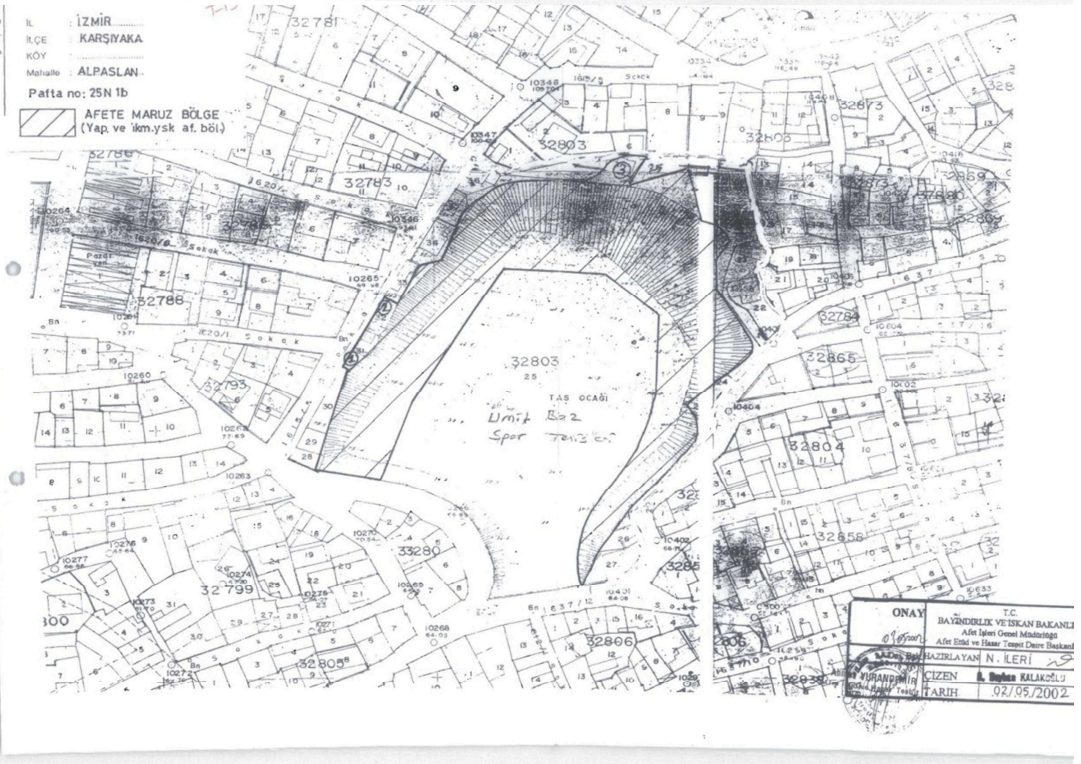
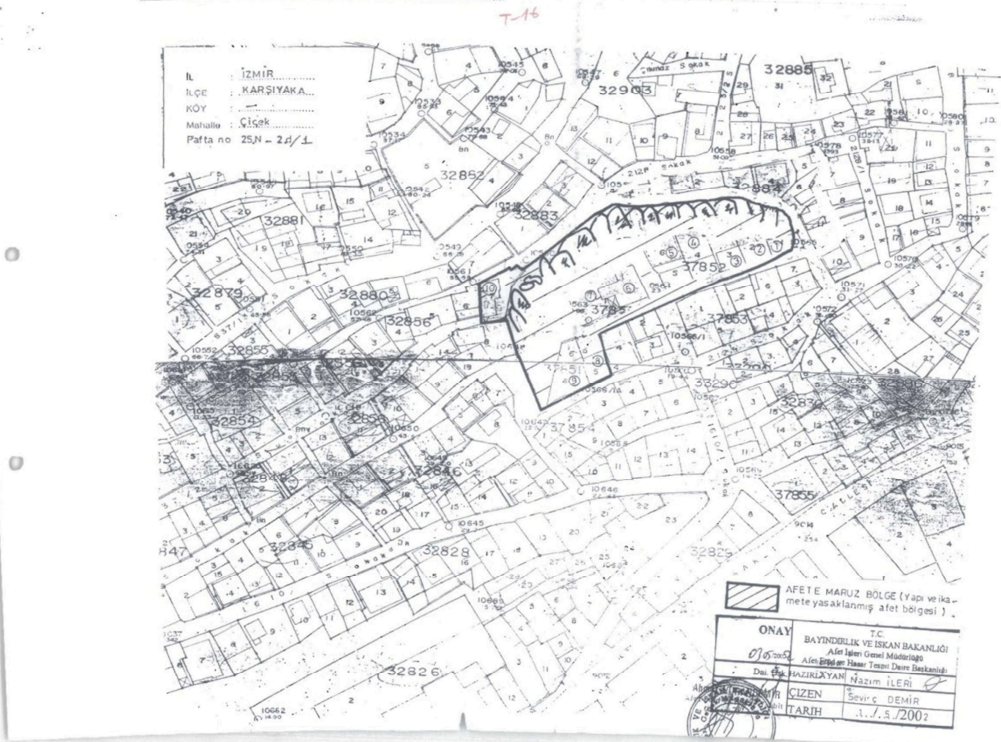
T.C.
BAYINDIRLIK VE İSKAN BAKANLIĞI
Afet İşleri Genel Müdürlüğü
Afet Etüt ve Hasar Tespit Daire
Başkanlığı

HAZIRLAYAN Bahattin DEMİR

ÇİZEN

TARİH

...../2005



KARŞIYAKA

ile ALİFUAT BASKI

ta no:25N 1d

AFETE MARUZ BÖLGE
(Yap.ve İkm.yşk.af.böl)

T-14

BAYRAKLI
(İZMİR)



2002/ 5104

Ekli liste ve krokilerde belirtilen yerleşim yerlerinde bulunan alanların çeşitli afetler sebebiyle "afete maruz bölge" olarak ilanı; Bayındırlık ve İskan Bakanlığı'nın 26/12/2002 tarihli ve 20843 sayılı yazısı üzerine, 7269 sayılı Kanunun değişik 2 nci maddesine göre, Bakanlar Kurulu'nca 27 / 12 /2002 tarihinde kararlaştırılmıştır.

Eki

AHMET NECDET SEZER
CUMHURBAŞKANI

ABDULLAH GÜL
BAŞBAKAN

A. ŞENER Devlet Bak. ve Başb. Yrd.	M.A. ŞAHİN Devlet Bak. ve Başb. Yrd.	E.YALÇINBAYIR Devlet Bak. ve Başb. Yrd.	M.MAYDIN Devlet Bakanı
B.ATALAY Devlet Bakanı	A.BABAÇAN Devlet Bakanı	K.TÜZMEN Devlet Bakanı	C.ÇİÇEK Adalet Bakanı
V.GÖNÜL Milli Savunma Bakanı	A.AKSU İçişleri Bakanı	Y.YAKIŞ Dışişleri Bakanı	K.UNAKITAN Maliye Bakanı
E.MUMCU Milli Eğitim Bakanı	Z.ERGEZEN Bayındırlık ve İskan Bakanı	H. GELİK KARDAĞ Sağlık Bakanı V.	B.YILDIRIM Ulaştırma Bakanı
S.GÜÇLÜ Tarım ve Köylere Bakanı	M.BAŞEŞGİOĞLU Çalışma ve Sos.Güv.Bakanı	A.COŞKUN Sanayi ve Ticaret Bakanı	M.H.GÜLER En.ve Tab.Kay.Bakanı
H.ÇELİK Kültür Bakanı	G.AKŞİT Turizm Bakanı	O.PEPE Orman Bakanı	İ.SÜTLÜOĞLU Çevre Bakanı

Şi.
Dosya No.

27.11.2002 Tarihli ve 2002/5104... Sayılı
Karamamenin Eki
LISTE

S.NO	İL	İLÇE	KÖYÜ/BELDESİ	MAHALLE/MEVKİ	AFETİN TÜRÜ	RAPOR TARİHİ
1	ADYAMAN	GERGER	BURÇAKLI	KEVIRSOR	Kaya Düşmesi	01.05.2002
2	ADYAMAN	GERGER	ÇAMIÇI		Heyelan	01.05.2002
3	AFYON	MERKEZ	ÇAVDARLI		Kaya Düşmesi	18.03.2002
4	ANKARA	ALTINDAĞ	BARAJ	75.SOKAK	Kaya Düşmesi	07.05.2002
5	ARTVIN	ARHAVİ		YEMIŞLİK,MUSAZADE,YUKARIHACILAR	Heyelan	12.04.2002
6	ARTVIN	BORÇKA	DEMİRCİLER		Heyelan	10.05.2002
7	ARTVIN	HOPA	HENDEK		Heyelan	12.04.2002
8	ARTVIN	HOPA	MERKEZ	KULEDİBİ,YUKARIKULEDİBİ,SUNDURA	Heyelan	10.05.2002
9	AYDIN	NAZILLI	HASKÖY		Heyelan	30.04.2002
10	BOLU	GÖYNÜK	DEĞİRMENÖZÜ	YENİ MAHALLE	Kaya Düşmesi	03.06.2002
11	ÇANAKKALE	AYVACIK	ARIKLI		Kaya Düşmesi	25.03.2002
12	ÇANKIRI	ILGAZ	KAZANCI	KISSENER	Kaya Düşmesi	10.02.2002
13	ÇANKIRI	ŞABANÖZÜ	KARAKOÇAŞ	AŞAĞI	Heyelan	30.03.2002
14	ÇORUM	DODURGA	YENİKÖY	TIRIKLAR	Heyelan	15.04.2002
15	ÇORUM	UĞURLUDAĞ	KUÇUK ERIKLI		Kaya Düşmesi	15.04.2002
16	DIYARBAKIR	ERGANI		PINARKAYA	Kaya Düşmesi	30.04.2002
17	EDİRNE	KEŞAN		ERIKLI	Heyelan	11.09.2002
18	ERZİNCAN	KEMAH	MERMERLİ		Kaya Düşmesi	03.04.2002
19	İÇEL	ANAMUR	KARAÇUKUR	YİVİL	Heyelan	28.02.2002
20	İÇEL	ÇAMLIYAYLA	SEBİL	BOZALI,AKKUYU	Heyelan	26.05.2002
21	İÇEL	ÇAMLIYAYLA		KALE	Heyelan	26.05.2002
22	İÇEL	TARSUS	ÇUKURBAĞ	SARIŞIK	Heyelan	26.06.2002
23	İZMİR	KARŞIYAKA		ALPARSLAN ÇİÇEK ALIFUAT BAKSI	Kaya Düşmesi	27.02.2002
24	KARAMAN	MERKEZ	TAŞKALE	ORTACAMI	Kaya Düşmesi	28.04.2002
25	KARŞ	SARIKAMIŞ	AKKOZ		Kaya Düşmesi	29.04.2002
26	RİZE	ARDEŞEN		YAYLA,BAŞMAHALLE,KAHVECİLER,KUZEY,MUFTU, ŞENTEPE,YENİMAHALLE	Heyelan	06.05.2002
27	RİZE	ARDEŞEN	AKDERE	AKPINAR	Heyelan	29.04.2002
28	RİZE	ARDEŞEN	AKKAYA		Heyelan	02.05.2002
29	RİZE	ARDEŞEN	ARMAĞAN		Heyelan	01.05.2002
30	RİZE	ARDEŞEN	DOĞANAY	YEŞİLTEPE,AŞAĞI	Heyelan	01.05.2002
31	RİZE	ARDEŞEN	GUNDOĞAN	MERKEZ,KANOĞLU	Heyelan	27.04.2002
32	RİZE	ARDEŞEN	İŞIKLI	ÇİÇEKLI,ÇIRAKLI	Heyelan	27.04.2002
33	RİZE	ARDEŞEN	KURTULUŞ	MERKEZ,ARKA	Heyelan	26.04.2002
34	RİZE	ARDEŞEN	KUÇÜKKÖY	MERKEZ,GÜNELİ	Heyelan	28.04.2002

1-23

BAYINDIRLIK VE İSKAN BAKANLIĞI
AFET İŞLERİ GENEL MÜDÜRLÜĞÜ
AFET ETÜT VE HASAR TESPİT DAİ.BŞK.
JEOLOJİK ETÜT VE İZLEME ŞUBE MÜDÜRLÜĞÜ

7-33
AFETİN TÜRÜ : KAYA DÜŞMESİ
ETÜT TARİHİ : 22 / 09 / 2005
RAPOR TARİHİ : 19 / 10 / 2005
ETÜDÜ YAPAN : Bahattin DEMİR
Nilgün MÜFTÜOĞLU

İLİ : İZMİR
İLÇESİ : KARŞIYAKA
MAH : EMEK

GENEL NÜFUS : 435000

JEOLOJİK ETÜT RAPORU

AMAC :

İZMİR İli, KARŞIYAKA İlçesi, EMEK Mahallesindeki kaya düşmesi olayının İZMİR Valiliğinin (Bayındırlık ve İskan Müdürlüğü) 13/09/2005 gün ve 10692 sayılı yazısı ve ekindeki teknik rapor çerçevesinde etüt edilmesi.

ÖNCEKİ ÇALIŞMALAR :

İzmir-Karşıyaka İlçesi CUMHURİYET Mahallesindeki kaya düşmesi olayı 15.11.1996 tarihinde etüt edilmiş ve 19.12.1996 tarihli Jeolojik Etüt Raporu düzenlenmiştir. Raporunda, 6617 ve 6638 nolu Sokakların kesiştiği bölgede meydana gelen kaya düşmesinden 4 konutun etkilendiği belirtilerek olayla ilgili Genel Hayata Etkisizlik Oluru alınması önerilmiştir. Olayla ilgili 02.05.1997 gün ve 5514 sayılı Genel Hayata Etkisizlik Oluru ile 20.08.21997 gün ve 97/9895 sayılı Afete Maruz Bölge Kararı alınmıştır.

ALPARSLAN, ÇİÇEK, ALİ FUAT BASKI Mahallerindeki kaya düşmesi olayları ise 12.02.2002 tarihinde etüt edilmiş ve düzenlenen 27.02.2002 tarihli Jeolojik Etüt Raporunda olaydan etkilenen 27 konut için Genel Hayata Etkisizlik Oluru ile rapor eki paftalar üzerinde sınırları işlenmiş olan alanlar için Afete Maruz Bölge Kararı alınması önerilmiştir. Kaya düşmesinden etkilenen alanlar için Bakanlar Kurulunca 27.12.2002 gün ve 2002/5104 sayılı Afete Maruz Bölge kararı alınmıştır.

JEOLOJİK DURUM :

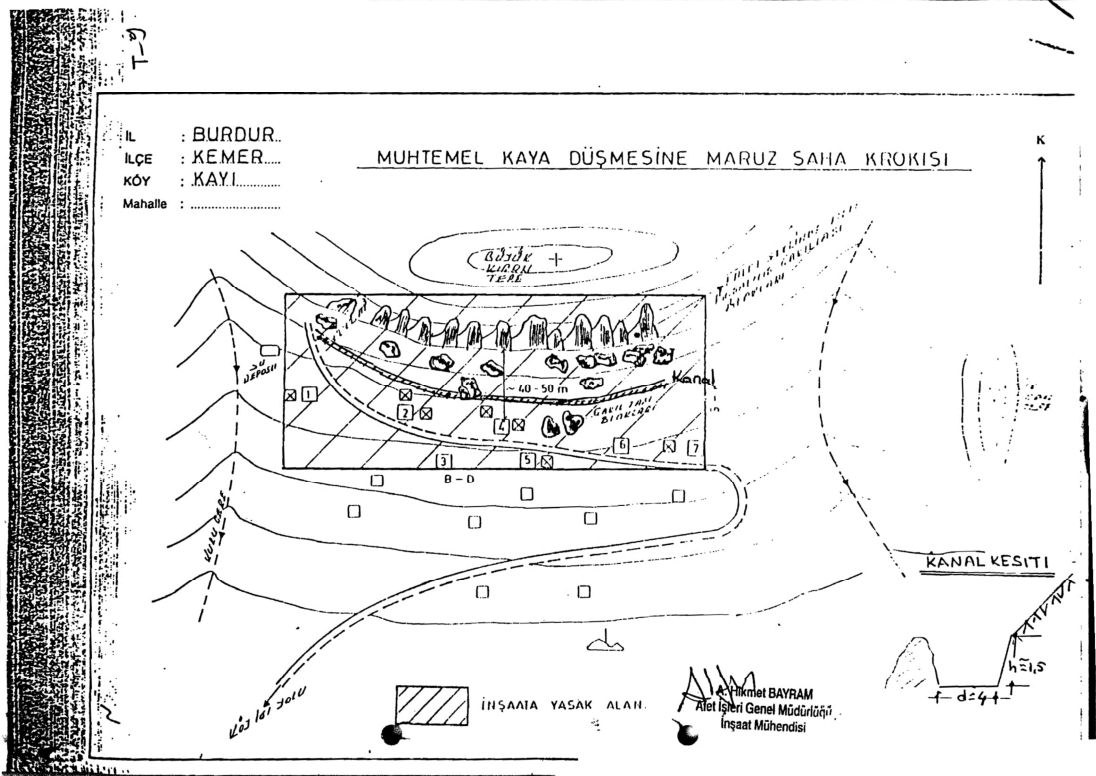
İnceleme alanı ve çevresinde Miyosen dönemine ait geniş ölçekte etkili volkanik aktiviteye ait birimler mostra verir. Yaygın olarak andezit, bazalt ile piroklastik karakterdeki tüf, aglomera birimleri yer alır.

AFET DURUMU :

İZMİR İli, KARŞIYAKA İlçesi, EMEK Mahallesi 7290 sokak 140, 142 ve 144 Kapı Nolu konutların yer aldığı sahada meydana gelen kaya düşmesi olayı İZMİR Valiliğinin (Bayındırlık ve İskan Müdürlüğü) 13/09/2005 gün ve 10692 sayılı yazısı ve ekindeki teknik rapor çerçevesinde 22.09.2005 tarihinde ekibimizce etüt edilmiştir.

7290 Sokak civarında zemin andezitlerden oluşmakta olup meteorolojik koşullar, fiziksel ve kimyasal etkenler vb sonucunda birim kolayca ayrışmaya uğrayabilmektedir. Süreksizliklerin (çatlaklar) ve bu süreksizliklere sızan suyun varlığı ayrışma etkisini daha da arttırmaktadır. Diğer yandan, bölgede yer alan andezitler taş ocağı olarak işletilmiş ve işletmenin terk edilmesinden sonra bu saha kontrolsüz olarak yapılaşma amaçlı kullanılmıştır. Kontrolsüz yapılaşma sürecinde konutlar Taş ocağı aynasına bitişik inşa edilmiştir.

Ekibimizce yapılan etütte, taş ocağı ayna şevinden ayrışma sonucu kavlayan plakaların ve kamalanmış ufak blokların koştığı ve konutlar ile ayna şevi arasındaki dar boşluğa düşüp yığılım oluşturduğu belirlenmiştir. Olay bu haliyle, etkin bir kaya düşmesi olayı olmayıp Belediyesince düşen blokların temizlenmesi, yüzey ve atık suların drenajını sağlayıcı ve aynadaki ayrışma süreçlerinin etkisini



CURRICULUM VITAE

Gökçe GÖNÜLLÜ SÜTÇÜOĞLU

E-mail : gokcegonullu@gmail.com

PROFESSIONAL EXPERIENCE:

MANİSA METROPOLITAN MUNICIPALITY (2015 Jan. – ...)
Urban Planning Department- Chief / Urban Planner

TÜREV ARCHITECTURE AND PLANNING CO. (İzmir) (2010 June – 2015 Jan.)
Owner

AKTİF INVESTMENT BANK (İstanbul) (2009 May - 2010 Jan)
Assistant Director

İKİNOKTA INFORMATICS CO. (İstanbul) (2008 Feb - 2009 May.)
GIS Project Manager – Database Manager

SAMPAŞ INFORMATICS VE COMMUNICATION SYSTEMS CO. (2006 Nov - 2008 Feb)
GIS Specialist

İSTANBUL METROPOLITAN MUNICIPALITY (2005 Jan - 2006 Nov)
Urban Planner

DEVİNGEN PLANLAMA, İNŞ. TUR. LTD. ŞTİ. (Bursa) (2004 Jun – 2004 Nov)
Urban Planner

EDUCATION:

Urban Regeneration Master Programme (2018 - ...)
KATİP ÇELEBİ UNIVERSITY (İzmir)

City and Regional Planning (1999 - 2004)
YILDIZ TECHNICAL UNIVERSITY (İstanbul)

High School (1996 - 1999)
SÜLEYMAN DEMİREL SCIENCE SCHOOL (Çankırı)

SEMINARS CERTIFICATES

- E-Plan Automation System Seminar (Ministry of Env. And Urb. Plan.) 2015
- Public Procurement Legislation Seminar (Manisa Met. Mun.) 2015
- LEED Green Buildings Certification Programme (Yeşil Rapido) 2015
- C Class Occupational Health and Safety Speciality (DETAM) 2014
- Project Management (FABE, PMP Faruk BUDAK) 2010
- Basic Principles Of Project Management (PMP Ahmet Taşpınar) 2010
- ArcGIS 9.1 User (işlem) 2010
- Oracle Pl/Sql Developer (Bilginç) 2007
- Oracle Sql Developer (Oracle) 2007
- Esri-ArcGIS User (işlem) 2005

**SOFTWARE
SKILLS:**

- Netcad User (Netcad) 2005
- Microsoft Office (Word, Excel, Powerpoint, Access, Visio)
- Microsoft Office Frontpage
- Microsoft CRM
- ArcGIS (ArcCatalog, ArcMap, ArcScene, ArcGlobe)
- AutoCad , AutoCad Map
- Microstation V7-V8
- Netcad
- Cadcorp SIS
- SISWorld
- Adobe Photoshop
- Oracle sql
- Oracle pl/sql
- Oracle map builder
- Database tools (TOAD, Golden..vb..)

