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A review of problems encountered in Turkey mass housing applications for the low & middle income group

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Keywords

Mass housing; Housing problem; Application problems

Abstract

Turkey has undergone a rapid change with the urbanization processes, and accordingly, different forms of housing production have emerged in the cities. The establishment of the Mass Housing Administration and the granting of powers to local governments to build houses are the most significant steps taken to solve the housing problem for people in the lower-middle income group. This study presents research that focuses on mass housing implemented by TOKİ and local governments and includes especially user satisfaction, post-use evaluation and current situation analysis. In line with the established content, the problems in mass housing were determined by literature review and the problems caused by construction phase were also added to the study. At this point, problems related to physical space characteristics, environmental problems, aesthetic problems, and social problems caused by housing have been investigated. Subjects covered separately in many different studies have been transformed into a common data pool within the scope of this study. It is predicted that the data to be obtained from this data pool will be a valuable resource in terms of transforming the design parameters for further studies and being a base for the solution of existing problems.

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Highlights

- Literature research on mass housing was conducted.
- Problem determination was made within the scope of the research.
- Detected problems are explained in sub-headings and a repository was created.

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Alt ve orta gelir grubuna yönelik Türkiye toplu konut uygulamalarında karşılaşılan sorunlar üzerine bir inceleme

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Anahtar Sözcükler

Toplu konut; Konut sorunu; Uygulama problemleri

Öz

Türkiye, kentleşme süreçleriyle birlikte hızlı bir değişim geçirmiş ve buna bağlı olarak kentlerde farklı konut üretim biçimleri ortaya çıkmıştır. Özellikle Toplu Konut İdaresi'nin kurulması ve yerel yönetimlere konut yapma yetkisi verilmesi alt-orta gelir grubundaki insanların barınma sorununun çözümü için atılan en önemli adımlardır. Bu çalışma, TOKİ ve yerel yönetimler tarafından gerçekleştirilen toplu konutlara odaklanan ve özellikle kullanıcı memnuniyeti, kullanım sonrası değerlendirme ve mevcut durum analizini içeren araştırmaları sunmaktadır. Belirlenen içerik doğrultusunda literatür taraması yapılarak toplu konutlarda yaşanan sorunlar belirlenmiş ve ayrıca inşaat aşamasından kaynaklanan sorunlar da çalışmaya eklenmiştir. Bu noktada fiziksel mekan özelliklerine ilişkin sorunlar, çevre sorunları, estetik sorunlar ve konuttan kaynaklanan sosyal sorunlar incelenmiştir. Birçok farklı çalışmada ayrı ayrı ele alınan konular, bu çalışma kapsamında ortak bir veri havuzuna dönüştürülmüştür. Bu veri havuzundan elde edilecek verilerin, ilerleyen çalışmalar için tasarım parametrelerine dönüştürülmesi ve mevcut problemlerin çözümüne altlık olması açısından değerli bir kaynak olacağı öngörülmektedir.

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Derleme Makalesi

Öne Çıkanlar

- Toplu konutlarla ilgili literatür araştırması yapılmıştır.
- Araştırma kapsamında problem tespiti yapılmıştır.
- Tespit edilen problemler alt başlıklar halinde açıklanarak bir veri havuzu oluşturulmuştur.

İletişim

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INTRODUCTION

Along with the proclamation of the Republic in Turkey, a new period had begun, and with this new period, changes had occurred in every field. Since then, the "housing" issue in cities, which is significant in terms of both the area it covers and the population it contains, has been considered as one of the priority areas of development. The urban population, which increased rapidly in the 1950s, caused the differentiation of the social structure and many changes in the cities. The continuous increase in urbanization in Turkey, not being parallel to industrialization, and an uneven distribution among regions (faster in metropolitan and western cities) have caused this process to be experienced in an unhealthy and irregular way (Kas, 2015). At this point, housing has become a problem for people living in cities because the need for shelter is not met. In big cities, individuals have generally put forward different forms of housing production with personal efforts to solve the housing problem. In this context, the emergence of the phenomenon of "slum" is inevitable. As seen in Figure 1, the number of slums in Turkey, which was 50,000 in 1955, reached 240,000 in 1960, 430,000 in 1965, 600,000 in 1970, and 1,150,000 at the end of 1980. (Keles, 2015). At this point, many different housing policies have been produced to be a solution to the slum problem. An effective solution could not be developed since many different institutions and organizations have the right to speak in housing production and this causes confusion of authority. While it was 1.750.000 in 1990, it reached 2,200,000 slums in 2002. In addition, the population of slums is approximately 11 million and the share of this population in the urban population is 27% (Keles, 2015).

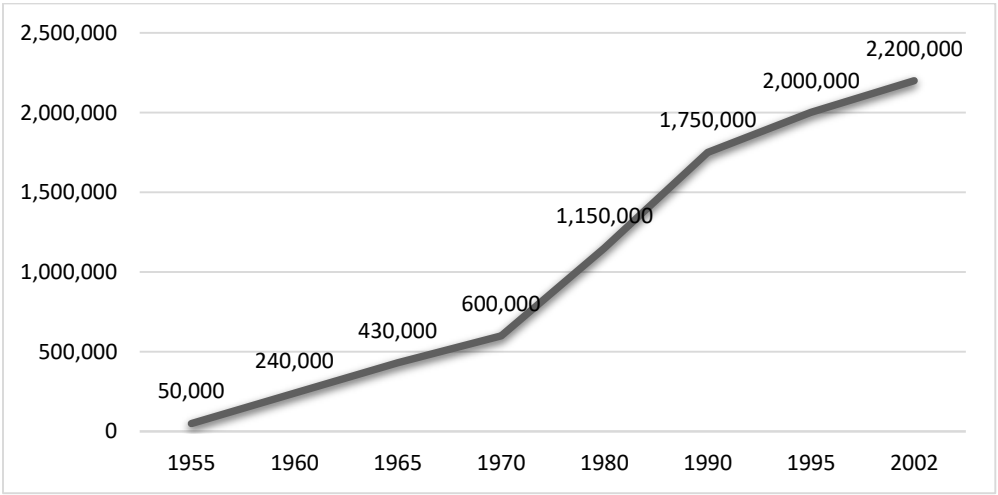

Figure 1 - The number of slums in Turkey by years (Keles, 2015).

Different forms of production were tried to solve the housing problem in the 1980s, which is described by Tekeli as "the increase in the weight given to mass housing in the solution of the housing problem" (Tekeli, 2009). In the 1982 Constitution, the statement "the government supports mass housing enterprises" under the title of "right to housing" made the state an important policy tool in mass housing production (Coban, 2012). The enactment of the Mass Housing Law No. 2487 in 1981 and the establishment of the Mass Housing and Public Partnership Administration with the Law No. 2985 in 1985 are the most important developments regarding mass housing. At this point, approximately 43 thousand houses were built between 1985 and 2002. With the implementation of the Emergency Action Plan in 2002, TOKİ gained power and has become the leading actor in housing production. Approximately one million houses have been produced by TOKİ until today, and 85% of these houses are social housing. The proportional distribution of housing production by TOKI is shown in Fig. 2.

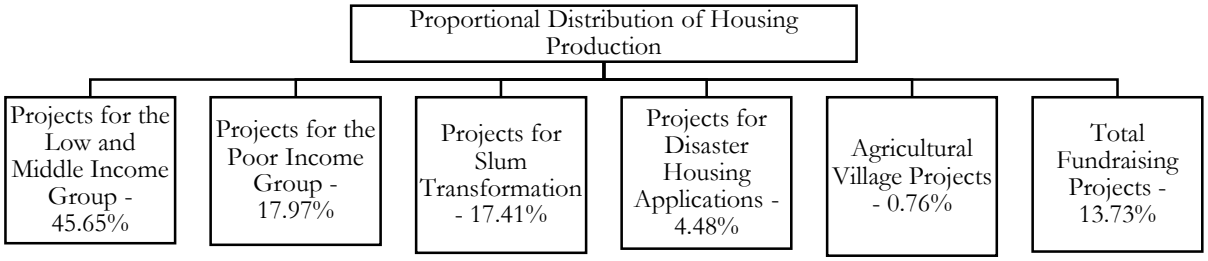

Figure 2 - The Proportional Distribution of Housing Production (TOKI, 2019).

Housing applications are carried out with monthly amounts determined by TOKI in accordance with the solvency of low- and middle-income groups. These housing practices have spread to the Eastern and Southeastern Anatolia regions and rural areas where private sector investments have decreased as well as in metropolitan areas. TOKİ's housing production model for low- and middle-income groups is specified in Fig 3. TOKİ firstly prepares the project development plan and tender processes on the lands under its own ownership. The contract is signed with the contractor who won the tender, and the construction process is started. Then, the housing purchase process starts by paying the down payment determined for the low- and middle-income groups with the loans provided by the banks. At this point, as seen from the model, TOKİ is the main actor in the planning, production, and sales stages. In addition, it develops land by utilizing idle public lands for low- and middle-income groups.

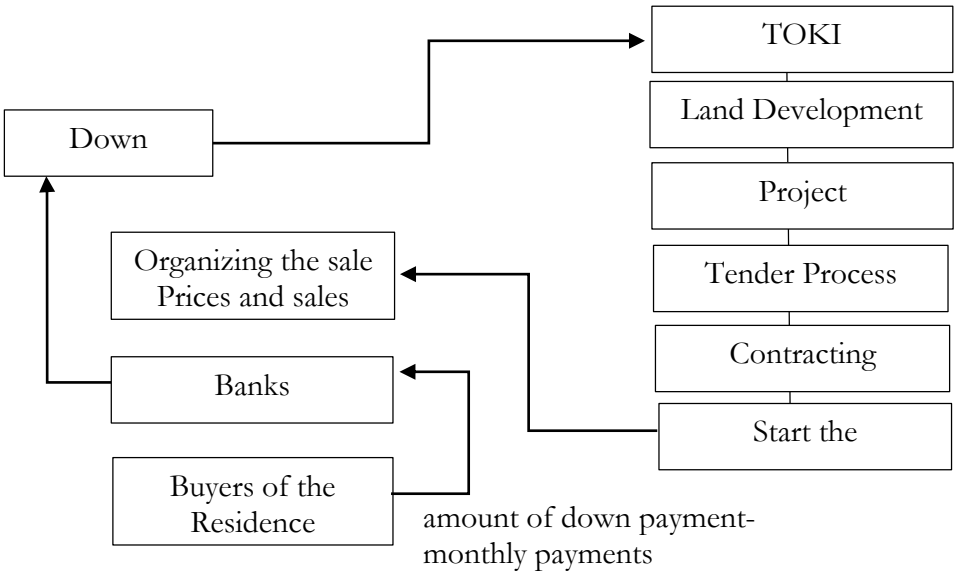

Figure 3 - TOKİ's housing production model for low- and middle-income groups (TOKI, 2019).

These houses, which have a very fast production style, have an extremely important place in terms of the size of the areas they cover in the cities and the effect they have made on the city. These residences are frequently considered in the country's agenda within the scope of issues such as spatial setup, site selection, project quality, aesthetics, and contribution to urban identity. In particular, the fact that there are repetitive housing typologies in each region and the lack of regional differences and site-specific housing production is the subject of discussions.

In the Institutional Publicity Document by TOKİ in 2019, by including the concept of neighborhood, based on the sustainability of social solidarity, among its basic production approaches, it is and aims to realize the housing production in a way that will respond to social needs. In addition, there are expressions in the document of "constructing high-quality and qualified residences and neighborhoods that have a unique identity in our cities with the transition from vertical architecture to horizontal architecture". In addition, in the 11th Development Plan (2018-2023), under the sub-title of housing, it is stated that "Access to adequate, livable, durable, safe, inclusive, economically affordable, sustainable, climate change-resistant, basic infrastructure services will be ensured for everyone, especially those with low incomes, and quality, durability, accessibility, energy efficiency, disaster resilience standards will be developed, provided and observed at every stage in housing production." (Strategy and Budget Presidency 2019). With the "Social Housing Move" made in 2022, the target of 250 thousand residences in two years and 500 thousand in five years has been placed. In the production of these houses, "local and horizontal architecture will be preferred in the houses, the houses will not exceed five floors, the houses where environmentally friendly building materials will be used and built in harmony with zero waste, energy efficiency and renewable energy systems." criteria were determined as (URL-1). In addition,

with the earthquake that took place on February 6, 2023, especially about the houses to be built in that region; It was emphasized that it should be built according to its own unique architecture, the settlements should be shifted from the lowlands to the mountains, avoiding liquefaction, and the shaping of the designs by collaborating with expert technical teams (URL-2). In this context, all these developments show that TOKİ pay attention to the criticisms made compared to the first applications. The experiences of the users and the problems they have faced are considered extremely valuable, especially in applications that allow many users to acquire housing, while most of them are large-scale projects. Determining the existing problems will provide more emphasis on these issues in new productions. For this reason, within the scope of the study, a problem was determined by considering the user-oriented studies in the houses produced by TOKİ and local governments that make similar productions.

METHOD

Nearly one hundred resources (master's-doctoral theses and articles) were scanned, in which especially user satisfaction and post-use evaluation studies were at the forefront. At this point, the sources used in the data pool created within the scope of the study and the detailed examination of these sources are given in Appendices 1. The table presents the type of the studies, the year of publication, the areas of the research, the method of analysis and the scope of the study. At this point, detailed analyzed data was not obtained from all of the researched sources. An elimination has been made for some research because the information is given only in the form of numerical data and there is no context. Among the sources, which were examined with a detailed examination, those that were considered to be a substantial source of information for the data pool formed the scope of the study. The research subject in these sources were determined according to reference on the area and the weights of these subjects were evaluated. At this point, the prominent subjects are given in Figure 4.

Figure 4 - The weights of the research subjects (Created by the authors).

Within the scope of this evaluation, the main research topics were determined and a map was created between the researches carried out on these topics. The literature map of the research topics is presented in Figure5. In addition, as seen in Figure 6, the references of the sources to each other

were mapped and their importance levels were punctuated in the determination of the main sources.

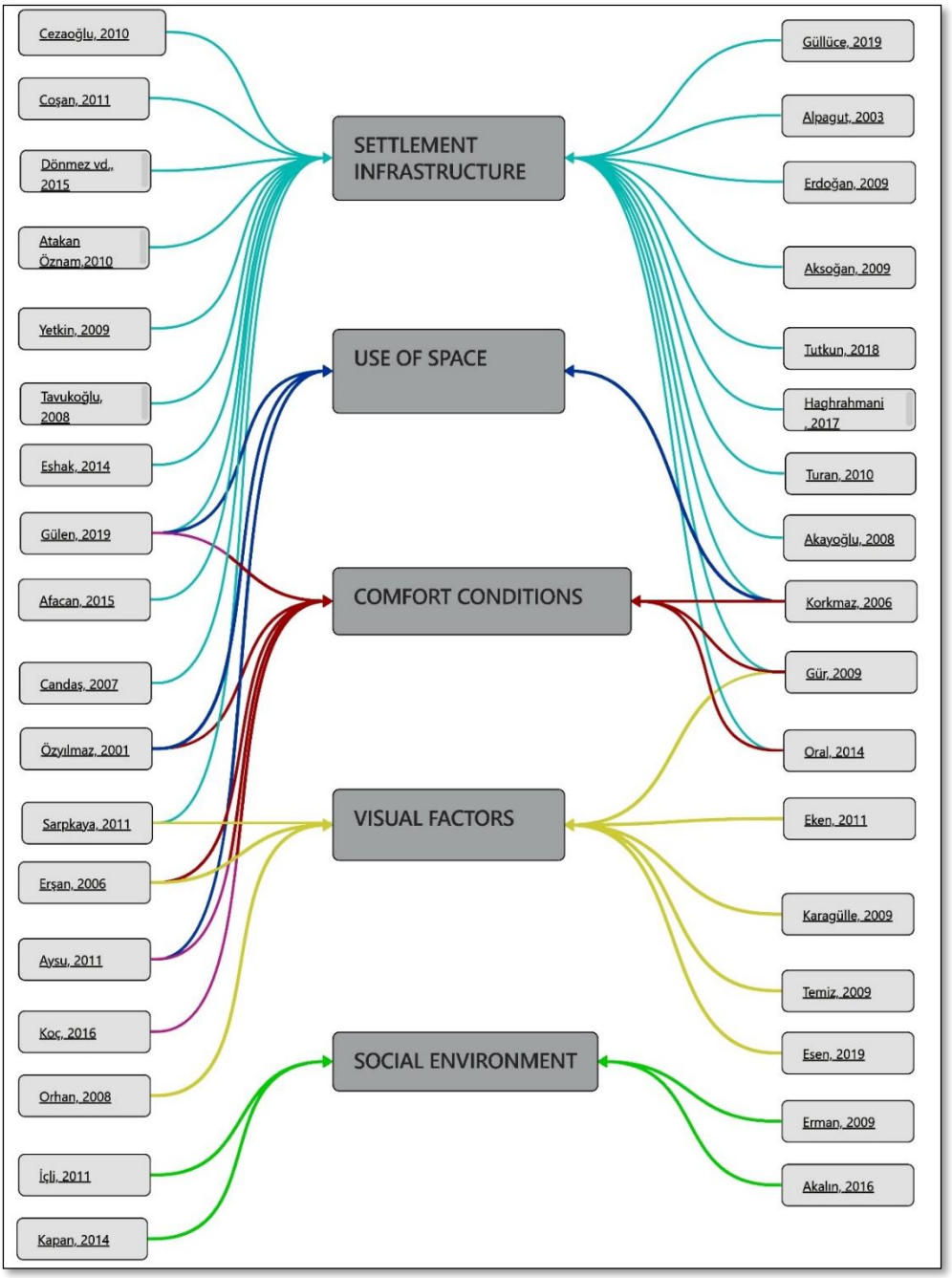

Figure 5 - The literature map of the research topics (Created by the authors).

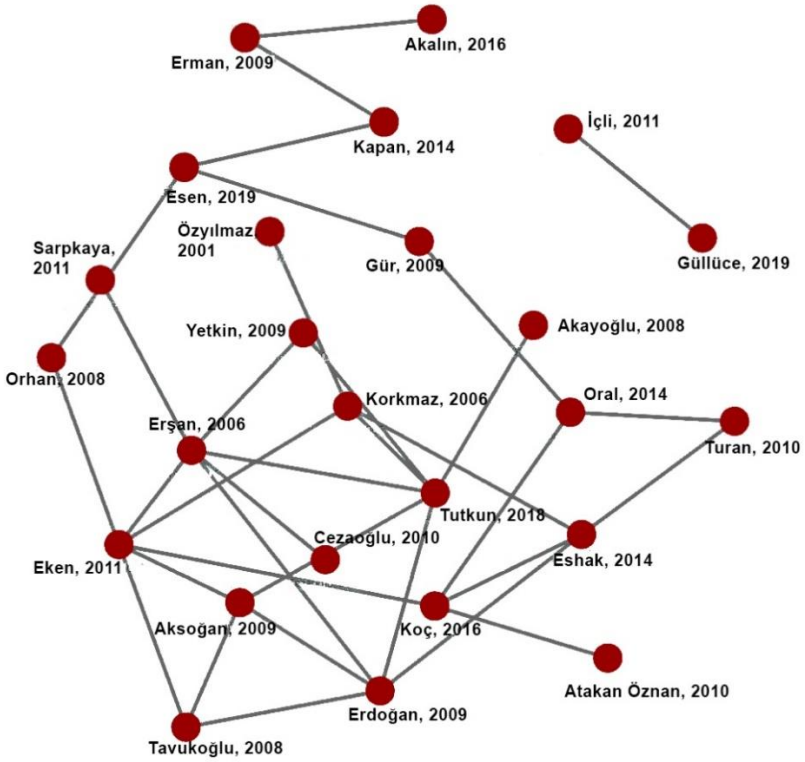

Figure 6 - The relationship map between resources (Created by the authors).

Physical, environmental, and social problems revealed in many masters and doctoral theses were brought together and the problems that are based on the individual experiences of the users and common in many studies have been converted into a data pool. It is predicted that the data to be obtained from this data pool will be an important resource in terms of transforming the design parameters for further studies and being a base for the solution of existing problems.

The main problems in the mass housing projects built by the Mass Housing Administration and local governments were determined by literature review. Sub-headings that emerged after this scan can be listed as a location, parking lots, green areas, children's playgrounds, measures for the disabled people, security, existence of social facilities, heating, ventilation, odor, noise, water-wind infiltration, material quality, workmanship, size of the house, physical appearance, existence of balcony, existence of storage area, and social issues. The grouping of these headings is considered important in terms of systematizing the data. For this reason, many grouping systems in the literature were examined and the most appropriate grouping system was chosen. The grouping in the housing satisfaction model made by Je et al. for high-rise houses in 2007 was adapted to the study, even if not exactly. In the study of Je et al., settlement infrastructure (equipment, fitness for life, health, well-being, safety), visual factors (landscape, form, visual balance), use of space (circulation, space functions, space efficiency), social environment (environment, social relations), management (management, security, economic value) were determined (Je et al., 2007). Within the scope of this study, the adapted grouping style is seen in Table1.

Table 1 - Housing satisfaction model.

SETTLEMENT INFRASTRUCTURE	VISUAL FACTORS	USE OF SPACE	COMFORT CONDITIONS	SOCIAL ENVIRONMENT
Location -Relationship with the city center - building layout	Material quality-Workmanship	Space sizes-Number of rooms	Climate control Noise control Indoor air quality	Living in an apartment- Life in the neighborhood- Neighborhood relationships
Parking area	Physical appearance			
Green area				
Children's play area				
Measures for the disabled				
Security				
Presence of social equipment				

RESULTS-FINDINGS

The contents of the problems gathered under "the settlement infrastructure, visual factors, use of space, comfort conditions and social environment" headings are expressed in the subheadings given below.

Settlement Infrastructure
Location – relation with the city center – building layout

In the literature, this subject has been evaluated concerning the location of the houses in the city, their connection with the city center and transportation. Especially the location in the city gains importance in terms of the services required for the area. Moreover, issues such as shopping opportunities, access to education and health facilities, distance from religious buildings and walkability to the setting are essential to meet user requirements.

Korkmaz emphasized that the distance from the city center in Diyarbakır and Sanlıurfa TOKİ houses is negatively perceived by the users, and that the social equipment within the mass housing areas should be enhanced (Korkmaz, 2006). In the same manner, Erdogan, in the study on Adana, concluded that being far from the city center causes deficiencies in meeting the needs, and for this reason some equipment for social needs are more necessary than other projects. (Erdogan, 2009). Aksogan, another researcher on this subject, developed a scoring system in his research in Istanbul. It is stated in the scoring system that the mass housing areas around the city center obtain more points due to interaction and easy accessibility with the city center compared to other settlements. It was also found that there are problems such as an isolated lifestyle and the inability to meet social needs as it was moved from the city center. (Aksogan, 2009).

It has found by Gur in the comparison study of three different housing areas in Bursa that the level of satisfaction in the public housing, which does not have a shopping unit, school and similar social equipment within its field, has been low compared to other areas. This is due to the fact that the social equipment units are not close to the area, although the housing area is located in the city. In another mass housing area, it has been determined that many transportation problems have come with it since the area is located outside the city, even if the social equipment units are located near the area. Public transportation for this area is extremely limited, so it has been found to have serious

problems about transportability. In addition, Gur evaluated the settlement factor issue, which is the subtitle of environmental factors, under the title of "Discomfort caused by the close and high blocks in the housing area". Comparing the opinions of users living in single and multi-story houses with those living in slums before, it is concluded that the satisfaction level of the first group was high. This situation is explained by saying that the users who used to live in slums now live in houses with better standards and make their evaluations with the logic of "I have a house to put my head in" (Gur, 2009).

The scoring system made by Aksogan regarding the building layout is remarkable. He scored the settlement systems according to various parameters such as patterned towards the road, patterned perpendicular to the road, patterned with courtyards and group patterned. As a result of this scoring, he concluded that the most successful settlement system is the patterned systems with courtyards. Respectively, the patterned perpendicular to the road, the road-oriented patterned and the group patterned systems are coming. Patterned systems with courtyards provide common areas for settlement and more advantageous in terms of the distribution of social-green areas. It was also stated that there are significant advantages in terms of vehicle transportation and pedestrian use. In another scoring system, the building groupings of the settlement types were evaluated. In this scoring, the fact that group-type structuring stands out compared to single buildings is related to the fact that the number of houses is suitable for mass settlement. (Aksogan, 2009).

Gulen conducted a comprehensive study in the nine housing areas produced by TOKİ in Van. Within the scope of this study, he interviewed users with both survey and interview methods and evaluated the fields from many different perspectives. First of all, he stated that the blocks were designed in the classical urban planning logic, they were independent from the environment and a symmetrical approach was adopted in the planning decisions. In addition, it was stated that there is a lake view in some mass housing areas, but no approach towards the lake has been developed in the direction of the blocks (Gulen 2019).

Tutkun, regarding the building layout, in the study evaluating four different housing estates in Trabzon, determined that the blocks in Bahçecik TOKİ are positioned parallel to the wind blowing from the south, therefore there are problems in natural ventilation. He also stated that in Vadikent and Pelitli TOKİ, the blocks at the back could not be adequately ventilated because the high-rise blocks were in the direction of the prevailing wind. (Tutkun, 2018).

Gulluce, in her research in Kutahya, concluded that approximately half of the participants were not satisfied with public transportation due to the distance of İnköy mass housing area from the city center. In addition, it was stated that there are many problems in the mass housing area which are due to the distance to the city center related with the lack of social equipment (Gulluce, 2019).

Parking area

According to the regulation issued in February 2018, parking lot in mass housing areas has been arranged as one car park for one flat. However, the issue of parking includes not only the quantity of parking spaces, but also many sub-headings such as the adequacy of maneuvering areas, parking arrangements for disabled individuals, and mixing of pedestrian-vehicle traffic.

Alpagut, in the search on the mass housing area in Istanbul-Umraniye, stated that only one of 140 parking lots was arranged as a disabled parking lot (Alpagut, 2003). Cosan, in the research in Kocaeli, determined that the number of parking lots in the area is insufficient and therefore vehicles are parked on the roadsides and on vacant lots (Cosan, 2011). Haghrahmanı, in the study in Ankara-Mamak, concluded that about half of the users were not satisfied with the location selection of the parking areas, and emphasized the importance of car parking area for LPG vehicles (Haghrahmanı, 2017). Turan concluded that 66.7% of the users were dissatisfied with the parking areas due to both the insufficient number of parking lots and the visual pollution caused by the car park areas being lined up right in front of the residential blocks in Istanbul-Bezirganbahçe (Turan, 2010). Cezaoglu in the work in Kayseri described parking area as an important problem in terms of security that the car park entrances are given from first-degree roads and positioned very close to the intersections. (Cezaoglu, 2010). Tutkun stated that the old parking lot regulation was valid at the construction date of the mass housing he examined in the study in Trabzon. Accordingly, it has been determined that one parking lot is required for every three residences, but this number is insufficient in all areas with the new regulation. It is also stated that the indoor parking lot and separate parking areas for the disabled, guests, bicycles and motorcycles are not planned (Tutkun, 2018).

Green area

Green areas are one of the most discussed issues in mass housing. Especially, many problems such as the quality and method of application arise in mass housing areas, due to the latest implementation of green space applications. At this point, the continuity of the green areas and the fair distribution will be ensured that every user can benefit equally. In the research conducted in Ankara, Aktan stated that green areas in high-rise blocks remain as "small, undefined and unusable residual parts" in the spaces between blocks (Aktan, 2008), Cezaoglu (2010). In the projects examined in Kayseri, Erdogan stated that “the existence of green areas is below the standards and consists of simple pedestrian solutions and unqualified urban furniture, away from the concern of creating common spaces” (Cezaoglu, 2010). Erdogan, on the other hand, stated that, in accordance with the standards brought by the regulation in the practices in Adana, the amount of green space that should be is well below or not at all (Erdogan, 2009). In the research in Izmit, Cosan determined that green areas cover 18% of the total area, this rate is not an adequate amount, and because of this situation, problems such as noise and environmental pollution occured (Cosan, 2011). In the research conducted in 51 sites in Safranbolu, Donmez et al. (2014) stated that the grass areas which are green areas of the sites lost their properties, the planting was insufficient aesthetically and functionally, and the parking lot planting was not done (Donmez et al., 2014). Atakan Öznam, on the other hand, emphasized that in the study conducted in three different mass housing areas, the green areas were arranged randomly, and the green area had an important share in the general satisfaction levels of the users (Atakan Oznam, 2010). In a study conducted in three different housing estates in Konya, Yetkin drew attention to the neglect of the areas even though there is sufficient green space per capita in general and mentioned the visual disadvantages of this situation (Yetkin, 2009).

Children's Playgrounds

Children's playgrounds have various design and application problems like green areas. Cezaoglu, in the study for 11 mass housing areas in Kayseri; making a general assessment and concluded that these are located in extremely small areas and most of them are close to vehicle roads and parking lots (Cezaoglu, 2010). Cosan, on the other hand, stated in the research in Izmit that the use of plastic and steel materials in children's playgrounds is harmful for children's health (Cosan, 2011). In the study in Istanbul, Tavukoglu emphasized the importance of designing the equipment elements to serve different age groups. At the same time, children's playgrounds are not located far from vehicle roads and parking areas (Tavukoglu, 2008). Eshak, on the other hand, stated in the study in Ankara that children spend time at the site entrances and parking lots due to the inadequacy of children's playgrounds (Eshak, 2014). In Tutkun's study in Trabzon, the lack of shading in children's playgrounds and the use of old-style play elements were found to be negative. In addition, it has been determined that there are broken and neglected equipment in children's playgroups and that there are problems due to the sand on the ground in the playgrounds (Tutkun, 2018).

Measures for the disabled

According to the Planned Areas Zoning Regulation (2017), it is obligatory to produce in accordance with the standards for the disabled at the buildings and entrances (URL-3). At this point, inputs such as the use of suitable materials, ramp solutions, disabled elevators gain importance. It is seen that the obligations arising from the regulations regarding the disabled in mass housing are fulfilled in general. However, in some studies, negativities arising from problems such as application deficiencies and workmanship problems have been identified. Afacan, in the study in Çukurambar Urban Transformation Zone, stated that "high sidewalks, lack of ramps, tiring distances between pedestrian crossings, density of vehicles parked on the side of the road and still ongoing construction activities" in the area are not suitable in terms of accessibility, and that the lack of ramps in high-rise residential areas causes significant problems (Afacan, 2015). Alpagut, in the work in Istanbul, stated that the signs and symbols are missing, the level differences at the entrance to the sports fields cause problems, and unsuitable flooring materials are used on some pedestrian roads (Alpagut, 2003).

Security

The issue of security is seen as an extremely important parameter, especially in choosing housing. Since the concept of security is deep and multi-parameter, it has a complex structure that cannot be measured with single parameters. At this point, Candas's work in the literature review is research that touches on important points. In his study for residential users, he defines the concept of security as a phenomenon obtained as a result of providing many inputs that shape the design. At this point, he defined security with nine main parameters and many sub-parameters. In the study, the importance of parameters in creating safe environments and areas defined as settlement, entrances and exits, roads, green area, location of housing, structure in the settlement housing,, management and use of facilities in the site. (Candas, 2007). In the literature survey, it is seen that questions such as "do you feel safe in your home" are generally asked about security. In the research

in Bursa, Gur concluded that people from other neighborhoods can easily enter the housing areas surrounded by unlicensed construction and this is a factor that threatens the safety of life and property (Gur, 2009). In addition, in Turan's study in Bezirganbahçe, it was concluded that nearly 80% of the users complained about security due to the high crime rate in the areas of theft, drug dealing/use and prostitution around the residential area (Turan, 2010). Tutkun, in the research in Trabzon,found that there is an uncontrolled passage to the areas since there are no restrictive elements in all three mass housing areas and that there are security problems due to the absence of cameras, alarms, etc. (Tutkun, 2018).

Presence of social equipment

According to TOKİ's own expression, "it has the goal of establishing a living center by producing buildings that are among the primary needs of people, such as a nursery, health center, trade center, sports fields, mosque and cultural facility next to the house". (TOKİ, 2019). At this point, as a result of the studies analyzed, important problems have been identified especially regarding sports fields, mosques and cultural facilities. These applications have especially diversity and material quality/workmanship problems. In addition, in many applications, it is seen that it remains only in the design phase, or it is not designed at all. In the evaluation of sports fields in Istanbul, Tavukoglu stated that these areas were designed with a very classical understanding and that there were no equipment elements to encourage different sports branches (Tavukoglu, 2008). Cosan, on the other hand, stated that the sports fields do not have standard dimensions in the research in Izmit and stated that the basketball court is not in the right dimensions (Cosan, 2011). Another researcher, Erdogan, who deals with sports fields, mentioned the lack of suitable places for recreational activities according to age groups, and determined that the sports fields in the area are only in the school gardens next to the mass housing applications. He stated that this situation caused the sports fields not to be used especially outside of school hours and this situation was a problem for the users. In addition, the absence of walking and cycling paths in the area was determined as an important problem in the study (Erdogan, 2009). Akayoglu, on the other hand, stated in his study in İzmir that no sports field was constructed (Akayoglu, 2008). Oral, in the research in Gölcük, stated that although there are commercial and religious facilities in the project, it has not been put into practice because there was no tender (Oral, 2014). Likewise, Sarpkaya, in the study in Osmaniye, determined that the social facilities remained only in the design phase (Sarpkaya, 2011). Eshak drew attention to the fact that the seating elements designed for residential users are located only in the playground and the result of this situation is that there is no spatial arrangement that can improve the relations of the users (Eshak, 2014). In the study in Trabzon, Tutkun stated that sports fields are not of sufficient quality, there is no special walking track and sidewalks next to vehicle roads are used for it. (Tutkun, 2018).

Comfort Conditions

Climate control- Noise control- Indoor air quality

In general, heating, ventilation, humidity, and odor problems come to the fore in relation to physical environment control and quality. The main reason for these problems is faulty practices related to material quality and workmanship. Korkmaz, in the study in Şanlıurfa and Diyarbakır, stated that users complained about heating costs (Korkmaz, 2006). Gur, on the other hand, in the work in Bursa, determined that there is a difference in the houses produced for the lower- and middle-income groups, and this situation arises especially from the materials used in the insulation application (Gur, 2009). In addition, Sarpkaya, in the study in Osmaniye, stated that there is a serious odor problem originating from the municipal garbage and poultry farm in the surrounding area (Sarpkaya, 2011). This situation reveals the importance of land selection in mass housing areas. In addition, Ersan drew attention to the odor and water infiltration problems caused by sanitary installations, especially in wet areas in Kahramanmaraş. He stated that defective productions caused by materials and workmanship cause difficult and costly repairs. In addition, in the same study, a serious water leakage problem was observed due to poor workmanship in the application of insulation material in the top floors. Air leaks have also been detected in the windows due to the mistakes made in materials and installations (Ersan, 2006). In the studies on the noise issue, it has been seen that there are problems especially in the selection of the place. In particular, Aysu, in the study in Adana, underlined that noise is an important problem in the mass housing area, which is located very close to the highway (Aysu, 2011). In the studies of Sarpkaya and Oral, the noise problem between apartments within the block was determined (Sarpkaya, 2011; Oral, 2014). Özyılmaz, on the other hand, drew attention to the mistakes made in the positioning of the blocks, stating that the children's sounds in the playgrounds and sports areas, which are located very close to the residential areas, cause noise (Özyılmaz, 2001). Ko, in the study for the Istanbul Kayasehir mass housing area, stated that the use of tunnel formwork system creates problems in wet areas and the necessary isolation measures were not taken. In addition, he emphasized that necessary measures should be taken regarding sound insulation in suspended ceiling applications (Koc, 2016).

Visual Factors

Material quality – workmanship

In the literature review, the most frequently complained and dissatisfied issue, especially regarding the physical space features, is the material quality and workmanship-related problems. Especially in many studies, it is seen that users make constant modifications due to incorrect assembly and problems in control mechanisms. This means an extra financial burden for the lower-middle income group, who already has a limited budget. In the study conducted in Ankara, Orhan identified many problems such as swelling, paint loss, rusting on interior doors, deformation in shower trays caused by incorrect workmanship, and problems related workmanships in faucet-sink-wall joints. It was also stated that improper practices in insulation materials in wall-window joints also cause serious problems. It was also determined that the insulation problems in the rain pipe-ceiling junctions cause damage to the house (Orhan, 2008). Eken, Turan, and Sarpkaya found in their studies that more than half of the users complained about the quality of the material (Eken, 2011; Turan, 2010; Sarpkaya, 2011). Salgın et al., in the study to evaluate the roofs of mass housing

in Kayseri, stated that the biggest problem is heat and water insulation. Although there are commonly used materials and details related to the roof, it has been determined that there is a leaking problem in the roofs. Researchers explain this situation with the lack of technical development related to insulation. In addition, they stated that there are important problems in the application of the materials used in roofing, and that the tiles fly away in harsh climatic conditions. In the study, the necessity of informing the practitioners about labor and the importance of ensuring that the control mechanisms work properly were emphasized (Salgın et al., 2007).

Gulen, concluded that 68% of users were not satisfied with their housing in Van. When this situation is examined, it is revealed that the biggest problem is based on the material quality and workmanship. The increase in technical problems, especially due to the fact that the materials and workmanship are below the standards, even led the users to migrate from their residences (Gulen, 2019). Esen, in her study in Balıkesir, stated that 88% of the users were not satisfied with the workmanship, and 68% stated that the materials used deteriorated very quickly. Within the scope of the study, it was stated that many changes were made, such as kitchen cabinets, the exterior and interior doors, sanitary elements (Esen, 2019).

In the Gur's study in Bursa, it has been determined that some applications have been made specially to reduce the cost in the houses built for the lower income group. This situation has brought many problems related to less quality materials and workmanship (Gur, 2009). Kara et al. conducted research using the quality function deployment model to measure user satisfaction in mass housing and to develop the scale. A detailed survey of 35 questions was conducted with the users. It is stated that the quality of kitchen cabinets and countertops is of high importance for users and that extreme care should be taken in the production of these materials. It was emphasized that the workmanship quality of systems such as electricity, telephone, satellite installation, toilet-bathroom ventilation, faucets, batteries, sinks, toilet bowls, flooring and wall tile mosaic coating of wet areas should be increased (Kara et al., 2017).

Physical appearance

Physical appearance is one of the most discussed issues in mass housing, as is the criticism about housing size in the previous section. The subject of physical appearance has been examined under the general heading of aesthetics, and there are evaluations in line with different parameters. While it includes many different parameters such as dimensional proportions, color, texture, material, facade character and material harmony, it also has a complex structure because it is versatile and based on personal taste. At this point, it is seen that the subject is evaluated in different dimensions in the studies carried out. In the aesthetics study of Karagulle in Mardin, a comparative analysis of mass housing produced by TOKİ and traditional houses was made. While 73% of the users find the traditional residence satisfactory in terms of aesthetics, 27% find new residences aesthetically pleasing. In the evaluation made with the sub-headings of ceiling form, balcony-terrace railing, room interior door, courtyard door and window form, the level of appreciation for traditional housing was found to be very high. In this context, Karagulle said, "There is no difference from other housing structures that can be found in every corner of the country with the same proportion, form, and similar lines. Local data such as climate, topography and culture were not effective in

shaping the new housing structure in Mardin. The new residence, which has a similar form all over the country, does not evoke any sense of identity."(Karagulle, 2009). Another remarkable study about aesthetics is the work done by Temiz in mass housing areas with three different types of production in İzmir. In this study, a sample group of thirty architects was formed. Many sub-parameters related to the concept of aesthetics were compared. Firstly, architects were asked to identify the elements that caught their attention when they first looked at a building. Facade features (filling-space, ratio-proportion, scale), the relationship between the materials used and the colors, its mass form, aesthetic elements or ugliness, environmental arrangement, whether it is copy-paste and its adequacy for user needs were the most frequently discussed topics. Another issue is about the criteria considered when it comes to aesthetic evaluation in architecture. Parameters such as form, mass, balance of mass ratios, color, façade features (filling-space, color, texture, ratio), integrity and harmony in the use of materials, material and form relationship came to the fore (Temiz , 2009). This study reveals the necessity of considering many parameters in the formation of the concept of aesthetics. Especially in TOKİ applications, the uniform mass production style of project applications made in all cities are always in the focus of criticism. At this point, designs should be shaped by focusing more on the architectural character of the region, contribution to urban identity, exhibiting an original structure, being compatible with its environment and within itself.

Use of Space

Space sizes- Number of rooms

When the studies on the size of the house and the number of rooms are examined, it has been determined that the standard type of houses are seen as an important problem, especially for crowded families. In the research that Aysu conducted in Adana, it was determined that satisfaction was low for users with large family type, especially in spaces designed with minimum size. At this point, it has been stated that users have a desire to live in large spaces due to continue their traditions (Aysu, 2011). In his research, Korkmaz observed that users living in two different types of houses of 100 m^2 and 128 m^2 found the houses of 128 m^2 ideal but found the house of 100 m^2 extremely small (Korkmaz, 2006). In another study, the subject was examined in terms of gender. Özyılmaz, in the research in Diyarbakır, concluded that female users are less satisfied with the size of the house than male users, and this is due to the fact that they spend most of their time at home, and that the large house makes female users more satisfied (Özyılmaz, 2001). Gulen, from the residences of 68% of the users stated that there are repeated elements on the facades due to the tunnel formwork, far from diversity in the context of plan typologies in the study in Van. According to the opinions of the users, he also states that this situation brings with space problems such as long and dark corridors, small rooms, and insufficient balconies (Gulen, 2019). When we look at both current discourses and studies in general, the source of the most basic problem on this subject is the production of one type of housing. The production of the houses built in the form of repetitions of some house typologies in each city brings with it many problems. Preliminary research is important especially to be able to produce suitable forms for different family types in different regions. Doing research on the user profile, having information about the general characteristics of the region, and putting forward a variety of applications suitable for user needs will be an important step to minimize the problems by avoiding the production of uniform housing.

Social Environment

Living in an apartment-Life in the neighborhood-Neighborhood relationships

One of the most discussed issues is social problems. In the literature review, the sub-titles of the social problems are displacement, declining neighborhood relations, weakening of social relations arising from the lack of public space, social segregation, problems experienced due to the desire to continue rural habits and problems caused by the extra financial burden brought by apartment life.

Tahire Erman's research within the scope of the Northern Ankara Entrance Urban Transformation Project is extremely remarkable on this subject. Different building groups were proposed for this project, which was tendered in 2010, and the existing 7000 slums were demolished for the residential area. At this point, it is stated that the slum owners are forced to migrate due to the displacement with the urban transformation. In the interviews with the slum owners, although two or three years have passed, the high rate of people who miss their slums, such as 92.6%, shows how deep the sociological dimension of the issue is. In addition, their constant emphasis on the effort and struggle for their slums is an indication of the bond they have established with the slums. Expressions stating that they were expelled from the slum against their will and that they were not sufficiently informed are among the problems. Erman described this situation as "compulsive and sometimes traumatic factors". In the research, it was determined that the social relations, solidarity, emotional bonds, and sincere dialogues that the slum life brought could not be found in the apartment life. One of the most important indicators of this situation is the result of 82.5% of the population preferring the neighborhood relations in the slums. Furthermore, the inability to establish a connection with the soil and, accordingly, the inability to realize domestic production has been identified as an important problem. Another important problem is the financial burden of apartment life such as expenses such as natural gas, dues, landscaping in the apartment (Erman, 2009).

In Mehmet Akalın's research titled "Social Dimension of Urban Transformation", the sub-titles of gentrification, displacement and spatial exclusion were discussed. The case of Kuzguncuk, Cihangir, Tophane, Karaköy and Galataport was examined in the context of gentrification and Dikmen Valley and Portakal Çiçegi Valley projects was evaluated related to displacement issue. In these projects, it was observed that there was a situation of displacement of the slum owners who did not have a certificate of ownership or an allocation document. At this point, Akalın stated that these people were not happy in their new residences, just like in Erman's study. He explains the reason for this situation as "the sense of belonging to the place, their neighborly relations, the feeling of freedom given by the shantytowns with gardens and the longings of the displaced people for their old settlements". Another sub-title in Akalın's study is the displacement experienced in the inner city ruined areas with the example of Tarlabası where various ethnic groups and low incomers generally lived in. In general, the area where the tenants are located has been declared a protected area and it is stated that urban transformation will be carried out without gentrification, but the value increases that will occur at the end of the project have caused a financial burden that the people of that region cannot afford. For this reason, forced migration seems inevitable. Likewise, Sulukule is another example. Protocols were signed with the people of the region in order

to reduce the effect of displacement and support was provided through practices such as rental assistance. However, this situation loses its meaning, as Akalın puts it, "considering the fact that an established culture has been destroyed." It has been determined that it is difficult for the Romany, who are an important ethnic identity in this region, to be taken from the regions where they maintain their own life habits and to adapt to other environments. Finally, Akalın discussed the social dimension of urban transformation with the sub-title of spatial exclusion emerges as a result of displacement. Individuals living in communication with each other in slums feel excluded by other people as they migrate to other areas (Akalın, 2016)

In the study, which was carried out in the form of one-to-one interviews in mass housing implemented within the scope of Denizli Bagırsak Deresi Urban Transformation Project, Icli conducted interviews with 100 participants to question the views on the application related to social networks, cultural practices, and spatial patterns. For the participants, who use the streets in their old neighborhoods as a socializing place, the new life brought by apartment building seems quite different, then they yearn for single-story detached houses and the life in those houses. It has been determined that with the decrease in social interaction and activities done together, and as a result social relations and neighborly relations are weaken. The fact that 90% of the participants stated that they had locked themself in their own homes due to the lack of common public space is an indicator of the weakening of social relations. Another problem encountered in this area is that home production cannot be achieved due to the fact that the apartment blocks are not designed to allow domestic production and there are no areas such as courtyards, gardens, coal pits, and tandoori. Another issue within the scope of the research is that due to the lack of social equipment, the participants cannot meet the needs of daily life from the area and their surroundings. As a result, İçli's research is extremely important in terms of revealing that daily life is also significantly affected in terms of social dimensions (İçli, 2011).

In the Istanbul Kayabası mass housing area, TOKİ has put forward a different practice, selling some of the area to IETT drivers and municipal employees, and distributing the other part to the lower income group by drawing lots. In Kapan's research, this situation is summarized as "municipal employees who receive at least 3,000 liras per month on the one hand, and people who cannot even pay their monthly installments of 200 liras, an organized life" on the other. The project aiming at harmonization has brought social segregation due to income inequality. In the "compulsory adaptation" section of the research, during the learning period of the "communal living rules" for the low-income group in the mass housing, the prohibitions such as not shaking rugs and carpets from the balcony, not washing the carpets, not putting items on the fire escape show that the users experience adaptation difficulties. In addition, it was stated that almost all of the families settled in this area from Sulukule slum area moved because of adaptation problems (Kapan, 2014).

CONCLUSION

By way of rapid urbanization and increasing population, the housing problem of low- and middle-income people in cities is one of the significant challenges that have been struggling to be solved by the government since the 1980s. Although the houses produced by TOKI and municipality institutions, which have the largest share in mass housing production in Turkey, prove their adequacy in terms of structural strength, issues relating to other elements of the housing units have been on the table for a long time and the subject of many research studies. This study reviewed for research after 2000 on mass housing in Turkey and compiled the problems experienced in mass under the headings. The relationship of the residential area with the city, the arrangements and the facilities offered in the housing area to the residents and the problems related to the planning of the housing unit are especially the top topics discussed.

This study is considerable from presenting the problems collectively and in terms of creating a starting point for the institutions that aim at obtaining high-quality mass housing. The expectation in residential areas is necessary to evaluate from many perspectives without considering them only as technical or artistic solutions. In particular, the structured social life in mass housing areas must consider all its elements together with culture, history, traditions, and habits. On the other hand, it is thought that if the design processes are supported by the research in which the opinions of the users about the living spaces are taken into consideration at the preliminary stage of the design, the satisfaction levels from these spaces will increase. The items determined as the top headings, "settlement infrastructure, visual factors, use of space, comfort conditions, social environment" should be considered as the general design performance criteria of all mass housing areas. These titles and the problems in their sub-titles should be considered as key themes that should be addressed during the preliminary design phase. Problems encountered in the mass housing areas should be handled especially during the design phase, and arrangements should be made to increase the satisfaction of the users in these areas in line with the determined targets. The changes made after the design phase does not provide sufficient input in terms of both cost and overall performance, and unfortunately, some of changes are not possible after the design phase.

In addition, the data obtained here enabled the questions of the comprehensive research to determine the quality of life in mass housing areas. In this context, the priority order of the titles obtained was determined, and the sub-titles of a systematic study aimed at increasing the quality for users were created. The special scopes focusing the application area increase the satisfaction, on the other hand, the determination of the mistakes made by the practitioners is decisive in increasing the whole quality. Although these identified problems include problems specific to Turkey, it is thought that similar titles should be emphasized and attention should be paid to these titles in mass housing practices throughout the world.

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A. Idea, Concept	B. Study Design, Methodology	C. Literature Review
D. Supervision	E. Material, Resource Supply	F. Data Collection, Processing
G. Analyses, Interpretation	H. Writing Text	I. Critical Review

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APPENDICES

1 - Detailed literature review analysis.

AUTHOR	TYPE	YEAR	CITY	METHOD	NUMBER OF INTERVIEWS	SCOPE OF RESEARCH
Afacan	Article	2015	Ankara	Comprehensive analysis and evaluation	-	Measures for the disabled
Akalın	Article	2016	İstanbul	Comprehensive analysis and evaluation	-	Living in an apartment-Life in the neighborhood-Neighborhood relationships
Aktan	Master's thesis	2008	Ankara	Comprehensive analysis and evaluation	-	-
Akayoglu	Master's thesis	2008	İzmir	Comprehensive analysis and evaluation	-	Presence of social equipment
Aksogan	Master's thesis	2009	İstanbul	Scoring system created by calculation of layout plan values	-	Location -Relationship with the city center - building layout
Aktas	Master's thesis	2020	Kutahya	User satisfaction survey	310	-
Alpagut	Master's thesis	2003	İstanbul	Comprehensive analysis and evaluation	-	Parking area
						Measures for the disabled
Altınkaynak	Master's thesis	2010	Kayseri	Comprehensive analysis and evaluation	30	-
				User satisfaction survey		
Arıcan	Master's thesis	2010	Eskisehir	Comprehensive analysis and evaluation	-	-
Atabay	Master's thesis	2010	İstanbul	Survey	232	-
Atakan Öznam	PhD thesis	2010	İstanbul	Comprehensive analysis and evaluation	1180	Green area
				Post-use evaluation-survey		
Aykanat	Master's thesis	2011	İstanbul	User satisfaction survey	36	-
Aysu	Master's thesis	2011	Adana	Post-use evaluation-survey	350	Climate control-Noise control-Indoor air quality
						Space sizes- Number of rooms
Bahadır	Master's thesis	1998	-	Survey	30	-
Candas	Master's thesis	2007	İstanbul	Comprehensive analysis and evaluation	-	Security
Cezaoglu	Master's thesis	2010	Kayseri	Comprehensive analysis and evaluation	-	Parking area
						Green area
						Children's play area

Cosan	Master's thesis	2011	Kocaeli	Comprehensive analysis and evaluation	-	Parking area Children's play area Green area Presence of social equipment
Çaglayan	Master's thesis	2011	İstanbul-Lizbon	Comprehensive analysis and evaluation	-	-
Çardak	Master's thesis	2011	Adana	Comprehensive analysis and evaluation	-	-
Çelen	Master's thesis	2016	İstanbul	Comprehensive analysis and evaluation	-	-
Dönmez vd.	Article	2015	Karabuk	Comprehensive analysis and evaluation	-	Green area
Dur	Master's thesis	2015	Konya	0	20	-
Eken	Master's thesis	2011	Sakarya	User satisfaction survey	150	Material quality- Workmanship
Erdogan	Master's thesis	2009	Adana	Comprehensive analysis and evaluation	-	Location -Relationship with the city center - building layout Green area Presence of social equipment
Erman	Article	2009	Ankara	In-depth interview Survey	96 160	Living in an apartment-Life in the neighborhood-Neighborhood relationships
Ersan	Master's thesis	2006	Kahraman maras	Comprehensive analysis and evaluation Post-use evaluation-survey	93	Climate control-Noise control-Indoor air quality
Esen	Master's thesis	2019	Balıkesir	User satisfaction survey	142	Material quality- Workmanship
Esen, Çivici	Article	2022	Balıkesir	User satisfaction survey	142	-
Eshak	Master's thesis	2014	Ankara	Comprehensive analysis and evaluation User satisfaction survey	136	Children's play area Presence of social equipment
Gulen	PhD thesis	2019	Van	Comprehensive analysis and evaluation Survey	50	Location -Relationship with the city center - building layout Material quality- Workmanship Space sizes- Number of rooms
Gulluce	Master's thesis	2019	Kutahya	In-depth interview	30	Location -Relationship with the city center - building layout
Gur	Master's thesis	2009	Bursa	User satisfaction survey	343	Location -Relationship with the city center - building layout Security Climate control-Noise control-Indoor air quality Material quality- Workmanship
Haghrahmanı	Master's thesis	2017	Ankara	User satisfaction survey	161	Parking area

Hançer	Master's thesis	2019	Gaziantep	Comprehensive analysis and evaluation	-	-
Harman	Master's thesis	2012	Konya	User satisfaction survey	80	-
Hatipoglu	Master's thesis	2015	Konya	User satisfaction survey	280	-
Hesapçıoglu	Master's thesis	2010	İstanbul-Edirne	Comprehensive analysis and evaluation	-	-
İçli	Article	2011	Denizli	Questionnaire for a sociological evaluation	100	Living in an apartment-Life in the neighborhood-Neighborhood relationships
Kapan	Master's thesis	2014	İstanbul	Interview	28	Living in an apartment-Life in the neighborhood-Neighborhood relationships
Karagulle	PhD thesis	2009	Mardin	Comprehensive analysis and evaluation	33	Physical appearance
				User satisfaction survey		
Kardes	Master's thesis	2022	Burdur	User satisfaction survey	258	-
Kaytazoglu	Master's thesis	2018	İzmir	Comprehensive analysis and evaluation	--	-
Kellekci	Master's thesis	1998	İstanbul	User satisfaction survey	393	-
Koç	Master's thesis	2016	İstanbul	User satisfaction survey	300	Climate control-Noise control-Indoor air quality
Korkmaz	Master's thesis	2006	Diyarbakır -Sanlıurfa	Post-use evaluation-survey	342	Location -Relationship with the city center - building layout
						Climate control-Noise control-Indoor air quality
						Space sizes- Number of rooms
Kuru	Master's thesis	2015	İstanbul	In-depth interview	40	-
Oral	Master's thesis	2014	Kocaeli	User satisfaction survey	281	Presence of social equipment
						Climate control-Noise control-Indoor air quality
Orhan	Master's thesis	2008	Ankara	Survey using the determined quality evaluation criteria	420	Material quality- Workmanship
Özbilen	PhD thesis	2014	Ankara	Comprehensive analysis and evaluation	-	-
Özdemir	Master's thesis	2006	Karabuk	Comprehensive analysis and evaluation	-	-
Özyılmaz	Master's thesis	2001	Diyarbakır	User satisfaction survey	287	Climate control-Noise control-Indoor air quality
						Space sizes- Number of rooms
Polat	Master's thesis	2010	İatanbul	Comprehensive analysis and evaluation	-	-
Sarpkaya	Master's thesis	2011	Osmaniye	Comprehensive analysis and evaluation	140	Presence of social equipment
				User satisfaction survey		Climate control-Noise control-Indoor air quality
						Material quality- Workmanship
Savran	Master's thesis	2014	Ankara	Survey	100	-
Tavukoglu	Master's thesis	2008	İstanbul	User satisfaction survey	100	Children's play area
						Presence of social equipment

Temiz	Master's thesis	2009	İzmir	Aesthetic quality focused survey study	30	Physical appearance
Tezcan	Master's thesis	2015	Antalya	In-depth interview	3	-
Turan	Master's thesis	2010	İstanbul	Comprehensive analysis and evaluation	68	Parking area
				User satisfaction survey		Security
						Material quality- Workmanship
Tutkun	Master's thesis	2018	Trabzon	Questionnaire created with urban quality of life parameters	339	Location -Relationship with the city center - building layout
						Parking area
						Children's play area
						Security
						Presence of social equipment
Tuter	Master's thesis	2016	İstanbul	Survey	100	-
Yetkin	Master's thesis	2009	Konya	Comprehensive analysis and evaluation		Green area
Yılmaz	Master's thesis	2019	İstanbul	User satisfaction survey	330	-
Yılmaz	Master's thesis	2019	Tokat	User satisfaction survey	276	-

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