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TOKI AND REITS: DOMINATING HOUSING ACTORS IN TURKIYE AND THEIR DESIGN APPROACHES

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Abstract

In Turkiye, after 1950's accessible housing started to emerge as a problem, and in years, slum areas created a necessity for urban transformation. Global wars and other natural disasters have been playing an important role in Turkiye's housing market. In the context of Turkey's dynamic urbanization and population growth, the housing sector plays a pivotal role in shaping the nation's built environment and social fabric. As a diverse and complex industry, housing development involves multiple actors, including government agencies, private developers, non-profit organizations, and architects, each contributing distinct design approaches to address the evolving needs of the population. There are two big parties working on mass housing production in Turkiye; TOKI (The housing development administration of Turkiye) and REITs (real estate investment trusts). As a governmental agency, TOKI is responsible for large-scale housing projects to provide affordable housing, and its design approach prioritizes functionality with an emphasis on meeting basic needs. On the other hand, REITs' aim in the housing market is to generate income for investors, and their design approach focuses on enhancing the value of the property by prioritizing aesthetics and amenities that appeal to buyers. The design approaches in housing production of TOKI and REITs will be examined and discussed under three main headings: site planning, design aspects, and engineering aspects, accordingly, suggestions will be made for improvements.

Keywords: Architectural Design, Mass Housing Production, TOKI, REITs, Turkiye

Introduction

Housing is a fundamental and essential aspect of human life, serving as a critical foundation for individuals and plays a pivotal role in shaping various aspects of human existence, including physical, mental, emotional, and social dimensions. As the world's population continues to surge and urban centers expand, the significance of housing as a fundamental need has become increasingly pronounced. Ensuring access to adequate and affordable housing is as a pivotal challenge in achieving sustainable and inclusive development worldwide. Turkiye is a developing country that also faces rapid urbanization and population growth. This situation increases the demand for housing and creates a housing need that exceeds the housing supply, especially in big cities. In high-population and fast-growing cities, it is difficult to find affordable and high-end housing, especially in low and middle-income areas. While TOKI aims to provide accessible housing for low and middle-income citizens with social housing policies and government support, REITs implement various housing projects by using the innovation and investment potential of the private sector, which plays a critical role in addressing the country's housing problems.

The housing problem in Turkiye makes it difficult for people to meet their higher-level needs. A robust housing market that addresses affordability, safety, community, quality, and personal growth aligns with the broader goal of fostering a thriving society where citizens can fulfill their potential and contribute positively to their communities. As humans progressed and their needs changed, so did the design and construction of their dwellings. Over time, advances in technology, materials, and building techniques have enabled the construction of larger, more elaborate, and more comfortable houses. Today, modern architecture has evolved to include various styles and designs. To understand the human need for shelter, first the psychological aspect must be understood.

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Examining the housing problems in Turkiye through Maslow's Hierarchy of Needs can help us understand the impact of the housing problem on people's basic needs. Recognizing this relationship can guide policy decisions and interventions to create a more inclusive and equitable housing landscape in Turkiye. Maslow explains human needs in a hierarchical perspective that must be satisfied in order for them to achieve their full potential. In his point of view, physiological and survival needs are placed at the bottom of the pyramid, and more creative and intellectually oriented 'self-actualization' needs are placed at the top of the section (**Figure 1**). The five levels of need are explained as physiological needs (biological requirements, safety needs, love and belonging, esteem, and self-actualization needs). In this scheme, shelter falls under the category of physiological needs, which is the most basic and fundamental level of human needs (Mcleod, 2023). Essential requirements for human survival are physiological needs, including air, water, food, and shelter. Shelter refers to the need for a safe and secure place to live and sleep, which can protect individuals from harsh environmental conditions and provide a sense of safety and security. Architectural shelter-housing as we know it today is essential for not only physiological needs but also essential for our safety, love, and belonging needs. This means, that considering there are five levels of needs, the most basic and necessary three are related to shelters.

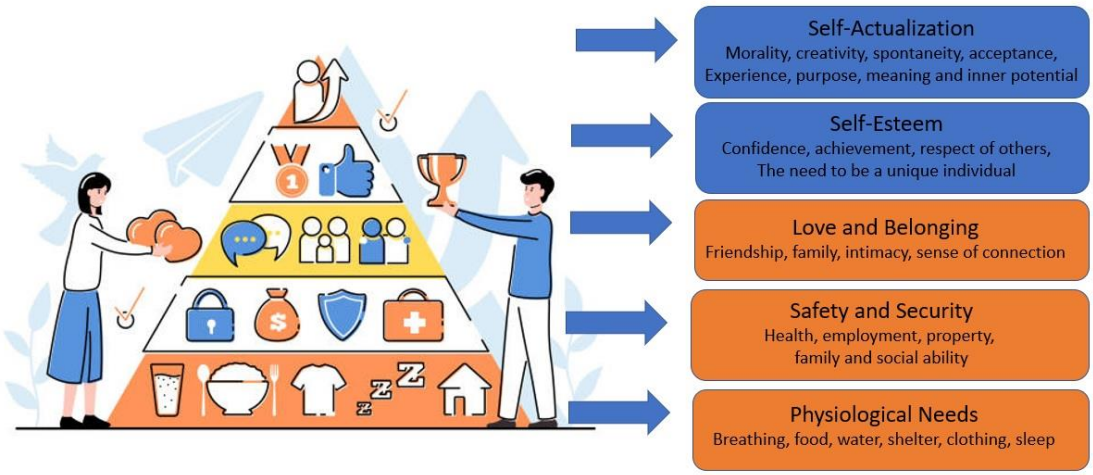

Figure 1. Maslow's Hierarchy of Needs (Retrieved from istock photo and marked by the Author).

The need for belonging, also known as the third level of Maslow's hierarchy, is a fundamental human need that refers to the desire for social interaction, connections, and relationships with others. Maslow emphasized the importance of belonging in human development, stating, "Human beings have an inherent tendency to seek out relationships and to belong to groups. Belongingness is the desire for interpersonal attachments and is considered a fundamental human motivation" (Maslow, 1943). The need for belonging is so strong that individuals will often prioritize it over other needs, and fulfilling this need is essential for achieving self-actualization. Feeling a sense of belonging, people more likely to be happier, healthier, and more productive. It can also help reduce feelings of loneliness, isolation, and anxiety. It gives us the feeling of being a part of a place, group, community, or society. When we enter a building, we experience the space through our senses, and the design of the space can either enhance or detract from our sense of connection to the place. So, the meaning of belonging can be summed up as feeling at home. Low & Altman point out that, even though early studies did not emphasize concepts of emotional or cultural attachments to the physical environment, over time studies by social psychologists, sociologists, and others started to focus on issues like personal spacing, territoriality, how families and groups use space, crowding, environmental significance, and other issues (Low & Altman, 1992). Walker suggests that man's image of place, particularly of home, is instinctually and explicitly sensual, and the demand to satisfy this image is a normal expectation. It can vary from feeling belonging to a city to a house. (Walker, 1977) In the context of housing and

urban planning, the sense of belonging can be fostered through the creation of livable, inclusive, and vibrant communities. This includes affordable housing options that meet the needs of diverse populations, public spaces that facilitate social interaction in communal areas, and the development of infrastructure and services that support the well-being and quality of life of residents.

As architectural historian Nikolaus Pevsner notes, "The history of architecture is primarily a history of man shaping space" (Pevsner, 1948). By studying the design and function of houses throughout history, we can gain a deeper understanding of the societies and cultures that created them. Li defines the birth of architecture as providing an artificial environment different from nature; not only a space with three dimensions but also an important aspect influencing our physiology, psychology and social consciousness. (Li, 2019) Architectural space can also be defined by its function and meaning. The use of space in a building or outdoor environment can greatly affect its intended purpose and the experience of its occupants. Architecture plays a key role in the provision of shelter, which is a fundamental human need. A shelter is more than just a physical structure that provides protection from the elements; it is a space that provides a sense of security and belonging. Throughout the history of architecture, housing has been the primary occupation for every society. It is a type of building that has emerged to protect people from the negativities of the external environment, to meet their living needs, and to create environments that will create a sense of home. (Usta, 2020) However, in certain situations, individuals may face challenges in fulfilling these basic needs due to factors such as poverty, conflict, displacement, or discrimination. In such circumstances, people may resort to various coping strategies to meet their immediate needs or adapt to their environment. Migration is one of the coping strategies for many reasons; including economic, social, political, and environmental considerations (Krishnakumar & Indumanthi, 2014). According to Lee; migration can be expained by push (a factor that forces people to leave a certain area) and pull (cause people to move to a certain area) factors (Everett, 1966) (**Figure 2**).

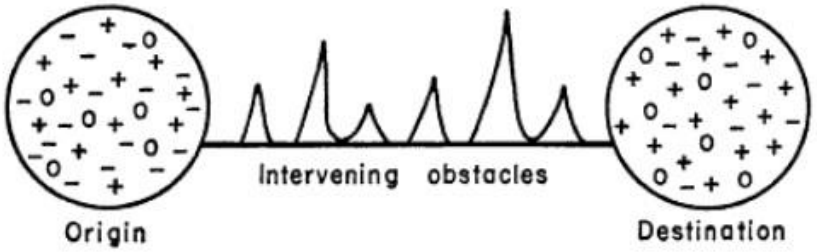

Figure 2. Pull and Push Factors of Migration (Retrieved from Everett S. Lee's A Theory of Migration article).

If we look at today's migration phenomenon from this point of view, we will find it noteworthy that economic reasons are at the forefront. So much so that large-scale migrations from rural to urban regions were sparked by the industrialization movements of the 19th century, which moved the center of production from the home to the factory. In this respect, it would be a correct approach to say that it started with the industrial revolution for modern migration movements. Political considerations can compel people to leave their homeland in pursuit of safety and security, such as violence, persecution, or a lack of freedom. As people try to flee the effects of these events, environmental variables like natural catastrophes or climate change can also influence migration. People frequently migrate in quest of greater salaries, better living conditions, and more stable economic conditions due to economic factors, such as the need to find better employment possibilities. Housing is a need and therefore a basic human right by international organizations such as the United Nations, which states that everyone has the right to "a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing, and medical care and necessary social services" (Universal Declaration of Human Rights, 2023). Access to affordable housing is critical for reducing poverty and homelessness, promoting social inclusion and equality, and supporting economic growth and stability.

The rise of industrialization and urbanization in the 19th century led to the development of tenement housing, which was often overcrowded and unsanitary. Today, houses come in a wide variety of styles and designs, reflecting the diversity of contemporary society. From minimalist, eco-friendly designs to grand, sprawling mansions, the design of houses continues to reflect the values, needs, and aspirations of their inhabitants. Urbanization can be considered a concept that describes the increase in the number of cities and the population living in cities. Industrialization was caused by changes in the economic and social structure of a society and resulted in the rapid growth of cities. In this sense, urbanization is a population accumulation process that creates an increasing degree of organization, division of labor, and specialization in the social structure, which ensures the increase in the number of cities and the emergence of today's cities in parallel with industrialization and economic development and causes urban-specific changes in human behavior and relations (Keles, 2022). In some countries experiencing rapid urbanization caused by the Second World War, it necessary to apply social housing projects to prevent slum areas and meet the housing need. The disproportionate and rapid growth in the cities made it impossible to meet the housing need not only in terms of the number of housing units but also in terms of physical structure and infrastructure. However, the problem of affordable housing caused problems not only because of physical space but also because of problems related to meeting the psychological needs of individuals as well. However, over time, some disadvantages were faced in some countries, such as excessive government intervention and skyrocketing house prices. As a result, many countries moved away from this approach in favor of a more liberal housing approach.

Urbanization and Housing Need in Turkiye

Turkiye's population, which was about 20 million in 1945, increased to 70 million in 2007. While in 1945, an average of 5 million people lived in city-like settlements, today more than 40 million people live in cities. In this process, Turkiye has transformed from an agriculture-dominated country with 25% of its population living in cities to a country with 70% of its population living in cities. In Turkiye, 1980 and after are characterized as a period of change and transformation in many ways. Especially in the 1990s, there were three important developments. First, the establishment of the Mass Housing Administration; second; the abolition of the Ministry of Reconstruction and Settlement; and third, significantly increasing the resources of the municipalities with the laws enacted in 1983-1984, reducing the central government's control to a certain extent, and transferring the authorities regarding the preparation and approval of the zoning plan to the municipalities. Again, in this period, cities such as Istanbul, Izmir, and Ankara gained the status of "Metropolitan City" in accordance with the Law 3030 (Tekeli, 1998). These cities have faced many problems with migration because of their underdeveloped socio-economic structure, such as a lack of services and insufficient infrastructure. The population coming to the city had no knowledge about the city or urban life, so the unplanned settlement of the immigrant population in the city has lowered the standards of cities that are already unequipped. The lack of cheap and adequate housing has led to the establishment of slums in cities. In the 2000s, a solution to the slum problem began to be sought with the urban transformation approach. Especially with the sensitivity of the Marmara and Düzce earthquakes, the urban transformation has come to the forefront as one of the risk reduction tools in the face of disasters. While defining the "urban transformation action plans" in the Legislation Commission Report of the Earthquake Council organized by the Ministry of Public Works and Settlement in 2004 (Genç, 2008). In 2004, it was recommended to develop tools for evacuation, renewal, and strengthening in urban transformation areas of local governments within the scope of avoidance plans (State Planning Organization, 2004). Apartments have emerged to meet the need for housing as household numbers shrink because of the westernization movement. The systematic construction of multi-story houses resulted in cities growing vertically instead of horizontally. Since the 1990s, commercial banks in Turkiye have started to provide housing loans. With a series of legislative changes made in 2007, important regulations were made regarding the long-term housing and financing systems.

For analytical purposes, the World Bank divides economies into four income groups: low, lower-middle, upper-middle, and high income. Based on the classification that has been made, the Gross National Income, or GNI, formerly known as the Gross National Product (GNP), measures all domestic and foreign value added that residents claim to have contributed over a specific time period, typically a year, and is expressed in international dollars using purchasing power parity rates. (World Health Organization, n.d.) Low-income economies are those

that had a GNI per capita of $1,085 or less in 2021; lower middle-income economies are those that had a GNI between $1,086 and $4,255; upper middle-income economies are those that had a GNI between $4,256 and $13,205; and high-income economies are those that had a GNI of $13,205 or more. These definitions are used for the current fiscal year of 2023. (World Bank Country and Lending Groups, n.d.) The World Bank includes Turkiye in the Upper Middle-Income Group as of 2021. (WDI, n.d.). The most recent study indicates that the yearly average equivalent household disposable income in Turkey was 48 000 642 TL in 2022, or over 2060 dollars a year as of June 2023. (TUIK, n.d.). The analysis of percentage shares is one study that demonstrates Turkiye's income distribution. According to this analysis, when the households are classified from small to large according to their disposable income and divided into 5 groups, "the top 20 percent group" identifies the group with the lowest income, and the "last 20 percent group" defines the group with the highest income.

In recent years, the construction of mass housing has become an important issue for many governments around the world, particularly in developing countries, and Turkiye is no exception in this regard. In Turkiye, one of the main actors in the mass housing market is TOKI, a government agency established in 1984 with the mission of providing affordable housing to low- and middle-income citizens who cannot own a house under market conditions. TOKI's housing projects typically consist of multi-story apartment buildings or single-family homes. The designs prioritize functionality, safety, and accessibility for residents that meet the needs of the target population while also contributing to the overall development of the region. After the regulatory change in 2004, public immovables were transferred to TOKI for rapid housing production, and TOKI began establishing projects targeted at low-income groups to overcome the housing need in Turkiye (Türkiye Habitat III Ulusal Raporu, 2014). Following the authorization of municipalities in urban transformation practices in 2005, a major urban transformation movement was initiated with the Urban Transformation Law of 2012, and the Ministry of Environment and Urbanization was commissioned with making the necessary arrangements in this regard. The duty of the Ministry of Urban Transformation is to organize urban transformation and create an appropriate environment. Urban transformation applications are mostly carried out by municipalities, citizens, and TOKI (Türkiye Habitat III Ulusal Raporu, 2014). To have a better grasp on how big of an actor TOKI is in mass housing projects, 554 housing complexes (320 projects completed and 234 projects still under construction) were addressed on TOKI's website. In these documents, it is stated that TOKI built 1 million 170 thousand houses in 20 years covering the period 2003-2022, which means TOKI produced approximately 58.500 houses per year (Toplu Konut Dairesi Başkanlığı, nd.). TOKI is planning to develop 683 new mass housing projects (266.708 housing units) in cities including Istanbul, Ankara, and Izmir (Toplu Konut Idaresi Başkanlığı, nd.). In addition to these, it was announced by the President that after the earthquakes of 7.7 and 7.6 that took place in Turkey and affected 11 provinces, approximately 450 thousand houses will be built with 3-4 floors. (Euronews, 2023)

Other important actors in the mass housing market in Turkiye are REITs, (Real Estate Investment Trusts), publicly traded companies that raise funds from investors and invest them in real estate properties. REITs (Real Estate Investment Trusts) are investment vehicles that allow individuals and institutions to invest in real estate properties through the purchase of publicly traded shares. REITs are typically managed by a team of professionals and develop real estate projects. The development process includes planning, execution, and management to ensure the successful delivery of a high-quality project that meets the needs of the market processes. REITs often invest in properties that have been designed and constructed by experienced developers, and their primary focus is on generating returns for their investors, so their decisions are ultimately driven by financial considerations. Although REITs date back to the 1800s in Europe, the modern version of REITs as we know them today originated in the Massachusetts USA in 1880's. But until the REITs' statutory base changed with the Internal Revenue Code in 1960, the legislation didn't allow the creation of publicly traded real estate companies. The first regulation of Turkiye regarding REITs was dated 1995 and was put into force based on 1992 Law. In Turkiye, an investment trust is a type of financial institution that pools money from individual investors and invests that money in a variety of assets, such as real estate, and other financial instruments. These trusts are regulated by the Capital Markets Board of Turkiye. As of May 2023, there are 36 REITs in commission. The main difference between TOKI and REITs is that while TOKI is a government agency that develops and sells affordable housing properties to eligible individuals, REITs are investment vehicles that enable investors to invest in a diversified portfolio of real estate properties and earn returns on their investment through dividend income. Being a subsidiary of TOKI, Emlak Konut GYO (as of

April 2023, 49,37% of its shares are owned by TOKI, and the remaining 50,6% are publicly traded) is one of the biggest REITs in Turkiye's housing development market. While the establishment purpose of TOKI is to support low-income people (the last 20 percentage group) to become homeowners, Emlak Konut GYO wants to try to get maximum profit from its projects and appeals to the high-income group (the top 20 percentage group). The income groups in between these two usually prefer houses produced by constructors.

Method of the Study

The study begins with an extensive literature review to gather existing information, theories, and research. Academic papers, reports, government publications, and other relevant sources that discuss the role of housing parties in Turkiye are examined. Data collection focused on understanding the roles of government as well as the private sector in decision-making processes, design philosophies, and approaches to housing development in Turkiye. As the population grows rapidly, so does the need for housing. As mentioned previously, two leading actors in the housing market in Turkiye are TOKI and Emlak Konut GYO. In this study, two actors are being compared in terms of site planning, design aspects, and engineering aspects. Within the scope of this article, TOKI and Emlak Konut GYO projects will be examined comparatively in terms of the development and implementation of mass housing projects. The evaluation will be made on the criteria chosen, from the decisions of the site plans on the macro scale to the decisions of the interior space on the micro scale. The cases selected are from four examples of mass housing projects implemented by REITs and TOKI in Ankara, Turkiye. TOKI has many mass housing projects in Ankara, compared to Emlak Konut GYO, which has only three projects in the city, and the general market focus is in Istanbul, where the m^2 prices are relatively higher. Understanding their design approaches can be helpful for furthering housing challenges and fostering sustainable housing development in the country, in addition to shedding light on the broader dynamics of the housing sector and its impact on the built environment and society. The chosen criteria serve as the basis for evaluating and contrasting different projects to determine their suitability, effectiveness, and overall quality. Site planning criteria are selected to assess the appropriateness of a location for a mass housing project, while design aspects criteria focus on the aesthetic, functional, and livability aspects of the housing project and engineering aspects criteria focus on the technical feasibility, sustainability, and construction aspects of the housing project.

While the chosen examples are assessed according to predetermined criteria, aspects of the projects will be mentioned as positive, moderate, or open to development. These criteria are not only going to be examined through physical entities but also the psychological needs of residents in mass housing projects. Evaluation of selected projects, which is based on observation, shows that the first seven criteria are picked from environmental factors: living near the city center, density of settlement, accessibility, public space, social isolation and security, zoning and scale-ratio (human to building- building to building) macroscale. The second criteria include seven design factors: character, user-oriented design, recreation-nature contact, functionality, privacy, space size and proportions (microscale) and lighting-daylight. And the third criteria examined six engineering factors: quality-material, energy efficiency, indoor thermal environment-ventilation-air conditioning, structural design, and economy. To make comparison between the selected projects; if the criterion under consideration is well, completely, or mostly fulfilled in the projects, it is graded as good and given 3 points (***); if it is provided at a partial level, it is graded as moderately good and given 2 points (**); if the criteria is provided at a low or insufficient level, it is graded as not sufficient good and given 1 point (*). The evaluations were brought together and turned into a table. This method helps to reveal aspects that are both successful and open to development. Comparing these criteria has helped us reveal the areas where TOKI and Emlak Konut GYO have been successful in mass housing and are open to further development. This comparison is likely to give some insight into aspects of mass housing development and propose the implementation of design elements that can improve the standards of people living in chosen mass housing projects.

Discussion

The comparison between TOKI and REITs via selected projects, mainly considers various aspects of these entities' roles, functions, impacts, and effectiveness within the context of the housing sector and real estate market in Turkiye. The chosen criteria should provide insights into their differences, similarities, strengths, and limitations.

Four projects built by TOKI and Emlak Konut GYO in Ankara were examined in the scope of this study. From TOKI's mass housing projects; Yapracık and Turkuaz Settlements, and from Emlak Konut GYO's projects, Baskent Emlak Konutları and Koordinat Cayyolu Settlements, are selected to set examples of TOKI and Emlak Konut GYO's environmental, design, and engineering aspects.

Selected TOKI projects are; Yapracık Settlement (

Figure 3), which built in phases and phase 15 is under construction and Turkuaz Settlement (**Figure 4),** which 5th phase had already finished. Both projects were named after the villages they set up nearby.



Figure 3. Yapracık TOKI. (nd. Source)



Figure 4. Turkuaz TOKI. (nd. Source)

Settlements are located along the Ankara-Eskişehir Road axis; Yapracık Settlement is on the right-hand side marked in blue, and the Turkuaz Settlement is on the left-hand side marked in red (**Figure 5**)**.** Settlements are approximately 39 km away from the city center and, 19 km away from the nearest mall.

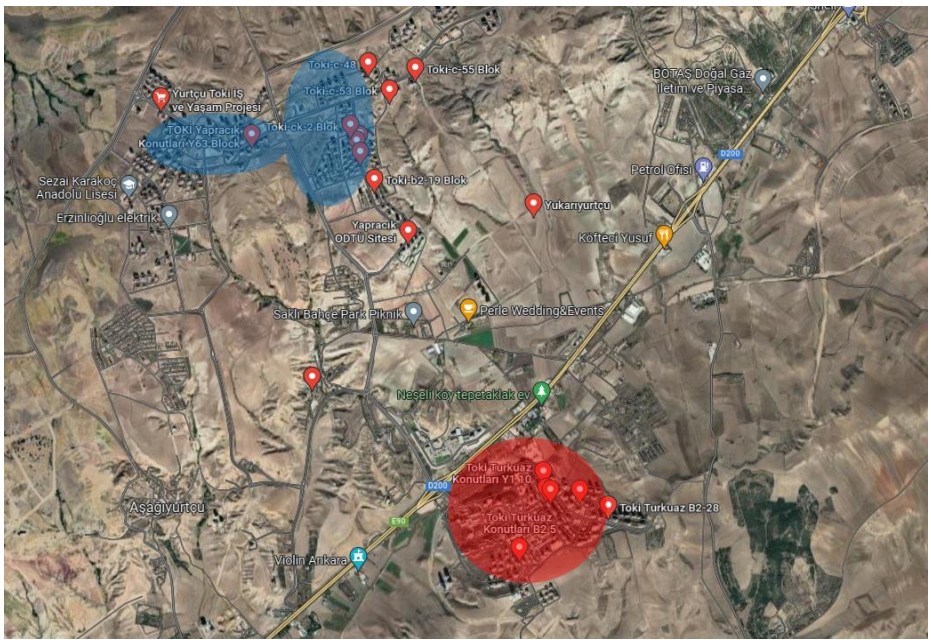

Figure 5. Yapracık and Turkuaz Settlements taken from google maps, 2023, marked by the Author.

Selected Emlak Konut GYO projects are Baskent Emlak Konutları Settlement (**Figure 6**) and Koordinat Cayyolu Settlement (

Figure 7). Baskent Emlak Konutları Settlement is in Oran Cankaya, which is approximately 10 km away from the city center and 3 km away from the mall. Koordinat Cayyolu Settlement is in Umitköy Cankaya, which is approximately 20 km away from the city center and 3 km away from the mall. Baskent Emlak Konutları Settlement is marked in blue, and the Koordinat Cayyolu Settlement is marked in red (**Figure 8**).


Figure 6. Baskent Emlak Konutları- (retrieved from Emlak Konut GYO web site)

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Figure 7. Koordinat Cayyolu- (retrieved from Emlak Konut GYO web site)

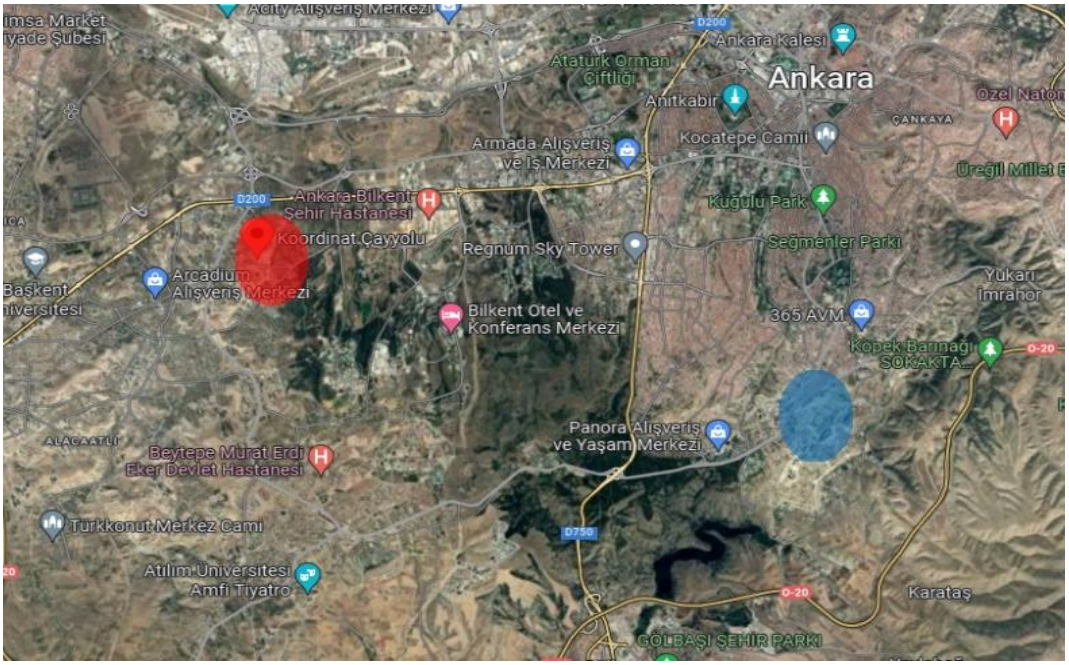

Figure 8. Emlak Konut GYO Baskent Emlak Konutları and Koordinat Cayyolu settlement taken from google maps, 2023, marked by the Author.

Comparison in Site Plan Aspects

Living near city center;

Living in the city center can make it easier and more convenient to access these services and activities, such as: shops, restaurants, entertainment venues, public transportation, and amenities such as schools and healthcare facilities. It is also convenient for those who work in central business districts to access employment opportunities. Another upside to living near the city center is the sense of community that comes with it. Due to the concentration of people and the shared experiences of living in a bustling city, a strong sense of community develops. There are also several negative aspects to consider living in or near the city center, such as high cost of living, increased levels of noise and pollution, constant traffic, and the lack of green space. TOKI has a long-standing tradition of building housing projects on the outskirts of the cities. The reason behind this approach is the availability of land and the low construction costs in those areas. Emlak Konut GYO, on the other hand, has focused on building housing projects in the city center. The cost of land is significantly higher than the outskirts, making it unaffordable for low to middle-income groups, but nevertheless, the targeted groups are mid to high-income groups. The comparison between TOKI and REITs via selected projects mainly considers various aspects of these entities' roles and functions.

Density of the settlement;

As the population of urban areas continues to increase, cities and towns are becoming more densely populated. The more densely populated an area is, the less space is available for building and development which results in higher construction costs. In dense urban environments, buildings are typically taller and closer together than in suburban or rural areas. One of the most significant drawbacks is the lack of personal space. High-density living often means smaller living spaces, less privacy, and less access to outdoor areas. While TOKI tends to build high-rise buildings and apartment blocks on smaller plots that can accommodate more people, the downside of these settlements are noise and pollution. Emlak Konut GYO prefers to develop larger plots with lower-density buildings, providing more open space, privacy, and a better quality of life for the residents.

Accessibility;

Accessibility determines the ease with which individuals can access and navigate built environments. The concept of accessibility goes beyond physical barriers and includes aspects such as transportation, communication, and social inclusivity. Buildings that are well-connected to surrounding areas with easy access to public transportation and infrastructure are more desirable and can have a higher value. Developed projects by TOKI are often criticized for their lack of accessibility, as they are located far from urban centers and public transportation hubs. This can make it difficult for residents to access jobs, education, and other amenities, leading to social and economic isolation. On the contrary, Emlak Konut GYO focuses on building housing projects in central locations with good access to transportation and urban amenities. This has made their developments more attractive to middle and high-income families who value convenience and proximity to the city center.

Public Space;

Parks, playgrounds, and other outdoor areas can provide opportunities for residents to connect with nature and engage in recreational activities. They can also serve as gathering spaces for community events and activities. Common spaces such as lobbies, corridors, and shared gardens can provide opportunities for residents to meet, socialize, and build relationships with one another. Community centers and other shared facilities can also provide spaces for residents to engage in activities such as exercise classes, art workshops, and community events. TOKI usually designs its mass housing projects with the aim of maximizing the number of units that can be built on a given piece of land and building codes. As a result, the public space in TOKI projects are often limited and tends to have small parks or playgrounds. On the other hand, Emlak Konut GYO often includes larger parks, public squares, and other open spaces that are designed to be used by residents.

Social isolation-security;
Gated communities, and other security measures can help deter crime and protect residents from outside threats. Creating secure and isolated housing complexes can be expensive and may result in higher maintenance requirements, and further increasing costs. It can also cause social isolation and disconnection from the broader community. TOKI projects are usually far away from urban centers and lack access to public transportation, leading to social isolation. Many of their projects are built on the outskirts of cities, with limited access to amenities and services. The security approach is to implement security measures such as CCTV cameras, 24/7 security personnel, and controlled access points to ensure the safety of residents. Emlak Konut GYO prioritizes building projects in central locations, which increases access to amenities and public transportation. Same security approach as TOKI using CCTV cameras, 24/7 security personnel, and controlled access points.

Zoning;
Zoning is an important tool for regulating land use and development in both the interior of a mass housing complex and in the broader city or municipality in which it is located. Zoning a mass housing complex involves dividing the land into different zones or areas, such as designated areas for residential use, commercial use, public spaces, and open spaces. To zone a mass housing complex, it is important to consider a range of factors, including the needs and preferences of residents, the availability of infrastructure and services, and the environmental and social impact of development. TOKI focuses more on providing basic amenities and essential infrastructure, while Emlak Konut GYO provides high-end amenities and access to cultural and commercial centers.

Scale-ratio (human to building-building to building/macro scale);
The human-to-building ratio refers to the number of people living or working in a given building, while the scale refers to the size of the building relative to its surroundings. Buildings with a high human-to-building ratio and a large scale can create a sense of confinement, while buildings with a low human-to-building ratio and a smaller scale can create a sense of openness and freedom. Smaller-scale buildings can help foster a sense of community and social connection with their surroundings among residents. Living in a high-density environment can be stressful and may lead to feelings of anxiety and social isolation. TOKI is being criticized for building large-scale projects that overpower the surrounding areas. The buildings are often too tall and too close together, which makes the projects appear monolithic. On the other hand, Emlak Konut GYO has been praised for its more modest approach to scale. The buildings in its mass housing projects are designed to be in proportion to their surroundings.

Comparison in Design Aspects
Identification-character;
Each city has distinctive features that contribute to its culture and can be constituted as its identity. Kevin Lynch, in his work The Image of the City, talks about images and elements whose names are identified with the names of the cities in which they are located. The Eiffel Tower is identified with Paris, Topkapı Palace and Sinan's mosques with Istanbul, and the Empire State with New York (Keles, Kent ve Kültür Üzerine, 2005). The identification of a building is also important for people to locate and navigate the building and create a visual and aesthetic impact. The character of a building refers to its unique identity, which is shaped by its architectural style, materials, history, and surrounding context. Buildings that are well-identified can become landmarks and symbols of a company or organization, making them more recognizable and memorable to the public. TOKI mass housing projects have been criticized for their architectural quality and design. TOKI mass housing projects may lack the necessary architectural diversity, contextual integration, and uniqueness in their design. On the other hand, Emlak Konut GYO mass housing projects are often praised for their iconic looks. Emlak Konut GYO mass housing projects tend to prioritize architectural diversity, contextual integration, and human-centric design. Emlak Konut GYO has collaborated with various famous architectural firms, including Zaha Hadid Architects and Tabanlıoğlu Architects, to create unique and identifiable housing projects.

Table 1. Comparison table on site planning aspects

COMPARISON IN SITE PLANNING	TOKI Turkuaz	TOKI Yapracık	EKGYO Baskent Emlak Konutları	EKGYO Koordinat Cayyolu
Living near city center	*	*	***	***
	32km away from Kızılay	35km away from Kızılay	11km away from Kızılay	16km away from Kızılay
Density of the settlement	*	*	***	***
	have several parcels, 129 apartment buildings and 4426 housing units in total, max 14 story buildings, unit types: 4+1,3+1,2+1	have several parcels, 9224 housing units, max 14 story buildings, unit types: 4+1,3+1,2+1	181728 m2 parcel, 20 apartment buildings, 1478 housing, 26 retail units, max 19 story, unit types 6+1,5+1,4+1,3+1,2+1, 1+1	50750m2 m2 parcel, 11 apartment buildings, 427 housing and 5 retail units, max 16 story buildings, unit types 5+1,4+1,3+1,2+1, 1+1
Accessibility	**	**	***	***
	located far from urban centers	located far from urban centers	in central locations with good access to transportation and urban amenities	in central locations with good access to transportation and urban amenities
Public space	**	**	***	***
	included limited public space and tend to have small parks or playgrounds	included limited public space and tend to have small parks or playgrounds	included parks, public squares, and other open spaces that are designed to be used by residents	included parks, public squares, and other open spaces that are designed to be used by residents
Social isolation-security	**	**	**	**
	security detail 24/7 +CCTV but public bus enters the settlement	security detail 24/7+CCTV but public bus enters the settlement	security detail 24/7 +CCTV, only residents can enter the area	security detail 24/7 +CCTV, only residents can enter the area
Zoning	**	**	***	***
	built in phases but zoning not done	built in phases but zoning not done	ground floor used as commercial purposes partially, blocks placed out lined of the lot and let social areas in between	zoned to let natural light and wind in
Scale-ratio (macro scale)	*	*	**	**
	not considered	not considered	proportionality tried to be considered by different height blocks	Corner blocks planned higher, middle area left for human circulation
Total in site planning aspect (* points)	11/21	11/21	19/21	19/21

User oriented design;

User-oriented design prioritizes the needs and preferences of the end-users in the design process, resulting in spaces that are functional, comfortable, and aesthetically pleasing. As stated by the American Institute of Architects, "User-centered design emphasizes the importance of empathy, observation, and iterative feedback to create environments that enhance the human experience" (AIA, nd.). This approach goes beyond just creating functional spaces but

rather focuses on creating environments that are tailored to the specific needs and preferences of the end-users. TOKI's projects are often designed with standardized unit types, while Emlak Konut GYO offers a variety of unit types and sizes to meet the diverse needs of its residents.

Recreation-nature contact;
Contact with nature has been shown to have a range of positive effects, including reducing stress, improving mood, and promoting physical health. Green spaces such as gardens, parks, and courtyards can provide opportunities for residents to connect with nature and engage in outdoor activities. These spaces can also provide aesthetic benefits, creating attractive and relaxing areas for residents to enjoy. TOKI has limited space and resources allocated for recreational areas due to its primary role of building affordable housing. In accordance with this role, they provide some contact with nature. On the contrary, Emlak Konut GYO prioritizes natural green spaces in their housing projects. Their design approach includes walking paths and sitting areas to encourage people to spend more time in nature.

Functionality;
The functionality of a building depends on various factors, including its layout, circulation, spatial organization, and the efficiency of its systems. A well-designed space should allow for ease of movement, comfort, and convenience, and it should be adaptable to different uses. The circulation system should be designed to minimize congestion, provide clear wayfinding, and ensure accessibility for all users, including individuals with disabilities. TOKI's design approach usually provides minimum space expectations to function, while Emlak Konut GYO offers spaces with aesthetics and functionality.

Privacy;
Privacy in architecture can be defined as the ability to control one's physical space, free from intrusion or observation by others. As much as it is a basic human right, it also has a crucial role in designing spaces that respect the needs and desires of individuals and communities. Privacy involves thoughtful consideration of how spaces are designed, arranged, and connected. Architectural design should foster a sense of privacy that allows individuals to feel secure, respected, and at ease in their environment. Private spaces provide individuals with the ability to retreat from the public realm, recharge, and then re-engage with others. In TOKI's settlement areas; buildings usually face each other, causing a lack of privacy within the units. Even though TOKI incorporates privacy features such as balconies and window designs that minimize the visual connection between the interior and exterior, site planning decisions make it hard to achieve this goal. On the other hand, Emlak Konut GYO provides spacious units with large balconies and floor-to-ceiling windows that offer panoramic views of the surroundings that don't see directly each other.

Space size and proportions (microscale);
The size and proportion of space determine how people perceive and interact with a building. The appropriate use of space size and proportion is crucial in achieving the intended functionality and aesthetics of a building. This statement highlights the importance of proportion in architectural design. Proportion involves the relationships between the sizes of different elements in a building, such as the height, width, and depth of a room. Proportion must be a well-thought-out aspect when designing the building's facade, the size of the rooms, and the placement of windows and doors. TOKI features compact living spaces that aim to accommodate more people in a smaller area. Proportions of the rooms are often standard, with limited variations, and are typically rectangular-shaped. Compared to TOKI, in Emlak Konut GYO projects, the proportions of the rooms are often flexible and diverse. Projects can be either square or rectangular-shaped, and they can be connected to the kitchen or separated from it.

Light-Daylight;
Natural light can create a sense of connection to the natural environment and enhance the perception of space. One of the key benefits of natural light is its ability to enhance the aesthetic appeal of buildings. According to Alexander,

"The quality of natural light entering a space can add depth and dimension, creating a sense of space beyond the walls" (Alexander, 1979).

Table 2. Comparison table on design aspects

COMPARISON IN DESIGN ASPECT	TOKI Turkuaz	TOKI Yapracık	EKGYO Baskent Emlak Konutları	EKGYO Koordinat Cayyolu
İdentification-character	*	*	***	***
	Building designs have been used in many other projects	Building designs have been used in many other projects	Unique design approach, residential blocks have 2 different alternatives	tried to differentiate by using some characteristic elements
User oriented design	**	**	***	***
	did not necessarily consider the diverse needs and preferences of residents	did not necessarily consider the diverse needs and preferences of residents	examines the region before design to meet the needs of the potential buyers	examines the region before design to meet the needs of the potential buyers
Recreation-nature contact	**	**	***	***
	prioritize efficient urban development without adequately considering connection to nature	prioritize efficient urban development without adequately considering connection to nature	green spaces, parks, ornamental pools and landscaped areas integrated to the project	green spaces, parks, ornamental pools and landscaped areas integrated to the project
Functionality	***	***	***	***
	project include necessary infrastructure and utilities to support the newly developed housing areas	project include necessary infrastructure and utilities to support the newly developed housing areas	functionality meticulously handled on the basis of residents needs	functionality meticulously handled on the basis of residents needs
Privacy	**	**	**	**
	orientation of buildings at angles or distances cause sightlines into neighboring units	orientation of buildings at angles or distances cause sightlines into neighboring units	strategically plan the placement of buildings to minimize direct sightlines between units	strategically plan the placement of buildings to minimize direct sightlines between units
Space Size and proportions	**	**	***	***
	features compact living spaces that aims at accommodating more people, proportions of the rooms are often standard	features compact living spaces that aims at accommodating more people, proportions of the rooms are often standard	proportions of the rooms are flexible and diverse	proportions of the rooms are flexible and diverse
Lighting-daylight	**	**	***	***
	buildings that are close to each other blocks sunlight from entering living spaces and small window openings cause reduced natural light	buildings that are close to each other blocks sunlight from entering living spaces and small window openings cause reduced natural light	aims at maximizing natural light and creating bright and vibrant living spaces	aims at maximizing natural light and creating bright and vibrant living spaces
Total in design aspects (* points)	14/21	14/21	21/21	21/21

By incorporating natural light into building design, architects can create a more inviting and comfortable atmosphere for occupants. Effective natural lighting design also has significant energy-saving benefits. Natural light can reduce the need for artificial lighting, resulting in lower energy consumption and cost savings. In TOKI's settlement areas, the shadows fall on each other because buildings approximate each other, causing less natural light to enter the rooms. In addition to that, due to their small window openings, rooms usually lack adequate natural light. On the other hand, the consideration of daylight in Emlak Konut GYO's projects maximizes natural light, creating bright and vibrant living spaces.

Comparison in Engineering Aspects

Quality-material;

Quality refers to the degree to which a building meets the intended purpose, is aesthetically pleasing, and is durable. The concept of quality in architecture dates back to the ancient Greeks. Vitruvius, noted that a building must have three attributes: firmitas (strength), utilitas (functionality), and venustas (beauty). (Vitruvius, 1914) This statement highlights the importance of quality in architectural design. A building must be durable, functional, and aesthetically pleasing to be of high quality. TOKI had been the object of criticism because of low-quality finishing materials in some projects. In recent years, they have taken steps to improve the quality of the materials used. Emlak Konut GYO usually uses high-quality materials and implements measures to reduce its environmental impact.

Energy efficiency;

As buildings account for a significant portion of global energy consumption, architects must consider energy efficiency when designing buildings. Energy-efficient buildings not only reduce energy consumption but also have economic and environmental benefits. The appropriate use of materials is crucial to achieving energy efficiency in building design. For example, the use of proper insulation and energy-efficient window glass can greatly reduce energy consumption. Renewable energy sources, such as solar and wind power, can provide clean and sustainable energy for buildings. Building automation systems also improve energy efficiency by using sensors and controls to monitor and adjust building systems. Sustainability should be a fundamental consideration in the design of mass housing projects, including aspects such as energy efficiency and the use of eco-friendly materials. Emlak Konut GYO mass housing projects incorporate energy-efficient design, use of eco-friendly materials, and the integration of green spaces, promoting sustainable living environments. Emlak Konut GYO also implemented green building standards such as LEED (Leadership in Energy and Environmental Design) and BREEAM (Building Research Establishment Environmental Assessment Method) to ensure that their buildings meet international energy-efficiency standards.

Indoor thermal environment-ventilation-air conditioning;

The indoor thermal environment refers to the temperature, humidity, and air quality inside a building. A well-designed indoor thermal environment can enhance occupant comfort and productivity. The building's orientation, insulation, and shading must be considered to optimize the indoor thermal environment. Ventilation is another crucial aspect of building design, as it ensures that indoor air quality is maintained at healthy levels. HVAC systems can help to maintain comfortable indoor temperatures and humidity levels, but they also consume significant amounts of energy. TOKI relies on traditional methods. Usually uses older and less efficient air conditioning systems that are not individually controlled, resulting in uneven temperature distribution and higher energy consumption. Emlak Konut GYO utilizes passive design strategies such as proper orientation and shading, natural ventilation, and high-performance insulation to reduce the need for mechanical cooling and heating.

Structural design;

The structural design of mass housing should consider economic and functional factors, which include material selection, construction methods, and the environmental conditions of the site. The material selection for structural design should consider the durability and stability of the structure, cost-effectiveness, and environmental impact. The environmental conditions of the site should also be considered in structural design, including factors such as wind, seismic activity, and soil stability. The structural system should be designed to withstand these conditions and

ensure the safety of the occupants and the building codes. TOKI's structural designs proved durable during several earthquakes and in several cities, including the February 2023 earthquakes. Emlak Konut GYO places a strong emphasis on earthquake resistance.

Economy;

From the initial planning stages to the construction process and eventual occupancy, every aspect of mass housing design and development is influenced by economic considerations. Market demand must be considered as well as construction costs. The materials used in construction have a significant impact on the overall cost of the project. Another important factor is the construction technique used which can reduce the cost and provide faster construction.

Table 3. Comparison table on engineering aspects

COMPARISON IN ENGENEERING ASPECTS	TOKI Turkuaz	TOKI Yapracık	EKGYO Baskent Emlak Konutları	EKGYO Koordinat Cayyolu
Quality-material	**	**	***	***
	implemented low-quality finishing materials due to economic reasons	implemented low-quality finishing materials due to economic reasons	uses high-quality and eco-friendly materials to maximize income	uses high-quality and eco-friendly materials to maximize income
Energy efficiency	*	*	***	***
	used outdated materials in terms of energy efficiency	used outdated materials in terms of energy efficiency	incorporate energy-efficient design	incorporate energy-efficient design
Indoor thermal environment-ventilation-air conditioning	**	**	***	***
	relied on traditional methods, uses older and less efficient air conditioning systems	relied on traditional methods, uses older and less efficient air conditioning systems	design strategies include proper orientation and shading, natural ventilation, and high-performance insulation, aimed to reduce the need for mechanical cooling and heating	design strategies include proper orientation and shading, natural ventilation, and high-performance insulation, aimed to reduce the need for mechanical cooling and heating
Structural design	***	***	***	***
	proved itself durable at several earthquakes and in several cities	proved itself durable at several earthquakes and in several cities	aimed at building earth quick resistant buildings	aimed at building earth quick resistant buildings
Economy	***	***	**	**
	tries to keep cost in minimum to target low to mid income families	tries to keep cost in minimum to target low to mid income families	used high end materials and techniques, the main objective is to generate most income	used high end materials and techniques, the main objective is to generate most income
Total in engineering aspect (* points)	11/15	11/15	14/15	14/15

Energy-efficient building materials and design strategies can reduce long-term operating costs for residents. TOKI tries to keep costs to a minimum. Offers the lowest possible prices to target low to mid-income families. Emlak Konut GYO is using high-end materials and techniques their main objective is to generate the most income possible. In Turkiye; Property Tax Law General Communique is released at least once a year. The communique categorizes housing in 5 segments; luxury, 1st class, 2nd class, 3rd class and basic. To compare both parties economical target group; luxury mass housing generally focuses on a more upscale market segment and second-class

housing, sometimes referred to as "lower-middle-class housing" or "affordable housing," is aimed at providing basic yet functional and decent living spaces for whom have more limited financial resources. It shows that for the year 2023, the m2 costs of the housing differ by approximately 2.3 times between luxury residences and 2nd class residences. In addition to this comparison, it can be seen that the m2 prices differ by approximately 3 times in the comparison made over the housing sales prices.

Conclusion

This research reveals that Emlak Konut GYO has 54 points and is ahead of TOKI which has 36 points in total. When the target groups are taken into consideration, it is seen that production is made in accordance with the target groups of TOKI, which appeals to the economically low-income group, and Emlak Konut GYO, which appeals to the high-income group. Further inspecting the tables, it can be seen that; TOKI needs to improve site planning aspect but when the housing unit prices and economic aspects are considered, they are almost as good as Emlak Konut GYO. TOKI needs to consider different design approaches on a parcel basis.

In accordance with this study, there are some suggestions for improvement in TOKI projects;

First of all, settlement areas should be preferred closer to the city center for the integration of residences with the city. If it is not possible, there should be a way to develop these areas to provide some benefits to the private sector from the Government or Treasury. In this way, socialization possibilities can be improved. Projects should be designed to respect and reflect the local cultural values, historical context, and urban fabric, rather than adopting a generic and standardized approach. Settlements in proximity to schools, restaurants, etc. should also be considered. Accessibility issues within the settlement areas such as ramps, should be arranged with disability measures in mind. In addition to that, giving importance to open, semi-open, and closed social areas and reducing the density of the settlement will have a positive effect on the psychological well-being of the residents. Parks, playgrounds, and other public spaces should be planned on a larger scale in the settlements. Instead of designing buildings that overpower the surrounding areas and each other, a design approach of combining high-rise buildings with some low-rise buildings with a flow can create a sense of openness, hence the feeling of belonging. Green areas should be implemented both inside and outside of buildings to present attractive and relaxing areas for residents to enjoy. Market research should be conducted before the design process to better understand the needs of residents. Both the settlement and the houses should be designed in accordance with these needs. The settlement design process should include light and shading analyses. While these analyses are made the building heights must also be considered. Windows and balconies should be designed in accordance with the results of these studies. Even though there are some lessons learned from previous constructions about material quality, more up-to-date materials should be used in construction. Green and sustainable design principles should be integrated into projects as a factor of architectural design as well as an economical aspect. Finally; academic collaborations from several disciplines such as; sociology, architecture, urban design, and development should be made to follow innovations and approaches in the world. In this way creating human centered design approaches can be adapted and be affordable for low to middle-income groups as well as middle to high income-group. As planners, architects, policymakers, and developers collaborate, the potential to achieve housing solutions that address the multifaceted needs of individuals and societies becomes increasingly attainable.

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Conflict of Interests

The authors declare no conflict of interest.

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