

Spatial and economic effects of TOKI practices in the context of public housing investments: The Erzincan example

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Abstract

Housing Development Administration of the Republic of Türkiye (TOKI), which was established as a public legal entity in 1984 to provide solutions to urbanization and housing problems, became the most important actor in steering urbanization and housing policies with the powers granted to it after 2002. This study analyzes public housing production in Türkiye through TOKI's housing policies, with a particular focus on the transformation of housing policy that has occurred since 2002. The aim of the study is to examine the economic and spatial impact of public housing investments at the local level, focusing on the Erzincan city center as an exploratory case study, where TOKI has invested the most, and as an example of non-metropolitan provinces. The study attempts to measure the impact of TOKI investments at the local level, both economically and spatially, through a total of seven variables using the descriptive analysis method and the spatial analysis method. The analysis revealed that TOKI manifested exclusively as an earthquake, disaster, or social housing practice, devoid of any discernible direct economic impact. It has been observed that the practices of TOKI exerted a multifaceted influence on the urban spatial development, exhibiting both positive and negative spatial implications.

Keywords: Erzincan city center, housing policy, public housing investment, spatial and economic impact, TOKI

1. Introduction

The impact of public housing investments in urban areas can be explained by economic, social, and spatial factors (Amidu et al., 2016). Housing investments also have social, economic, and spatial impacts. Housing is a fundamental human need that impacts individuals' well-being across all nations, exerting significant social and economic influence on people's lives (Moreno-Monroy et al., 2020). The public housing sector's investment and policy decisions are influenced by the priorities set by the public sector. Usually, the most common approach to public housing investment has been in the form of mass housing production, both internationally and nationally. Housing Development Administration of the Republic of Türkiye (TOKI) was established as a public legal entity in 1984 to provide solutions to urbanization and housing problems. With the powers granted to it after 2002, it became the most important actor in steering housing policies. Housing policies established within the scope of the neoliberal economic program shape the urban space through the planning process, design, construction process, and related legislation. In 2003, a significant policy change occurred where the central government, through TOKI, took over responsibilities, thus affecting the organization of the urban space. As a result of these powers assumed by TOKI, an almost unlimited right of use over urban lands, obtaining planning and development rights has caused several urban problems. First of all, a conceptual framework is needed to observe the effects of the state, society, and space relations on large-scale urban projects. With the decline of the welfare state approach in the world and the rise of neoliberal policies, the place of public administrations in the housing sector was transferred to the private sector/market, and a new era began in housing policies (Beyazıt & Yarım, 2020).

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Studies on TOKI conducted in the literature after 2002 are as follows: on the spatial development process (Yenigül, 2009), on urban transformation and renewal (İslam, 2009; Kandaloğlu, 2012; Solmaz, 2013; Kas, 2014), on the production of urban space (Akin, 2007; Öznam, 2010; Acar Özler, 2012; Özbilen, 2014; Akkaya, 2018), on housing policies (Olgun, 2014; Yüksel, 2014; Turut, 2018; Yılmaz, 2018), on social welfare state and of housing finance (Koçançı, 2014; Özpolat, 2014; Coşkun, 2014; Kurt, 2020; Yeşilbağ, 2020; Tatlı Çolak & Türk, 2022), on the housing production process (Altay 2004; Sağ 2011; Koca, 2012; Ek, 2012; Kara 2012), on the social dimension (Arslan, 2011). However, studies on the impact of TOKI projects on both the economic and spatial development of cities are limited. Tantan and Türk (2024) urbanization policies (Yaman, 2011; Akkoç, 2018), on examined the impact of public housing investments on the economic development of provinces at the macro level using the panel data method. According to the findings of their study, although private sector housing investments have affected the development of provinces at the macro level, it was concluded that public housing investment and production did not play a decisive role in the economic development of provinces. However, studies on the spatial and economic effects of public housing investments at the micro level are quite limited. Micro-level studies have mostly focused on spatial effects (Gürbüz et al., 2023; Yılmaz Şimşek, 2021; Erdem, 2016).

In this sense, there is a need to measure the impact of TOKI at the micro level, which is an important actor and determinant in terms of urbanization and housing policies in cities. In this context, some research questions were aligned:

- How have public housing policies affected the shaping the urban space in Türkiye?
- What are the effects of TOKI, which has broad powers as a result of the legal regulations after 2002, on the economic and spatial development of the Erzincan Central district, where TOKI has invested the most among the non-metropolitan provinces in Türkiye?

To better comprehend the economic and spatial impacts, the focus of this study was placed on a city that does not hold a metropolitan status. Therefore, Erzincan city center was selected as the case area. The aim of this article is to analyze the spatial and economic impact and change created by TOKI housing investments in the Central district of Erzincan during the period between 2004 and 2018. In this study, Erzincan is examined as an exploratory case study. Exploratory case study is a deep-dive qualitative research method used to investigate a distinct or new phenomenon where little preliminary research exists. The main goal of exploratory case study is to identify patterns and generate fresh insights, rather than test existing theories (Mills et al., 2010; Yin, 2009).

When the number of housing units produced by TOKI in 14 non-metropolitan provinces between 2004 and 2018 are compared, it is seen that TOKI produced the highest amount of housing units in Erzincan (see Figure 1). Between 2004 and 2018, 11,577 housing units were produced in Erzincan, followed by Edirne with 5,661 units, Düzce with 6,114 units, Kırıkkale with 4,781 units, Bolu with 4,701 units, Hakkâri and Bitlis with 3,966 units, Çanakkale with 2,813 units, Burdur with 2,671 units, Kastamonu with 2,630 units, Bilecik with 2,518 units, Giresun with 2,452 units, Rize with 2,270 units, and Siirt with 1,279 units (Housing Development Administration of the Republic of Türkiye, n.d.).

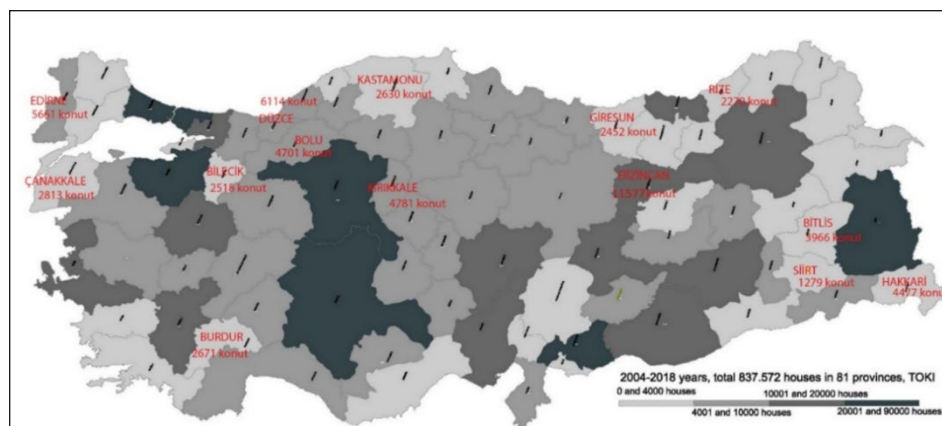


Figure 1 Housing production by TOKI between 2004-2018 (Status in 81 provinces and 14 provinces) (Housing Development Administration of the Republic of Türkiye, n.d.)

There are several reasons why Erzincan was selected as the case study area. Firstly, it received the highest amount of public housing investment between 2004 and 2018 among the 14 provinces that are not metropolitan areas. Secondly, the largest amount of investment within the province was made in the city center. Between 2004 and 2018, a total of 11,577 housing units of various project types were produced in Erzincan. Public investment in Erzincan was higher in 2014 and 2015 compared to other years. However, 8,516 of these projects are located in the city center (Figure 2). Therefore, Erzincan, which received the most investment among the 14 non-metropolitan provinces, was selected as the study area.

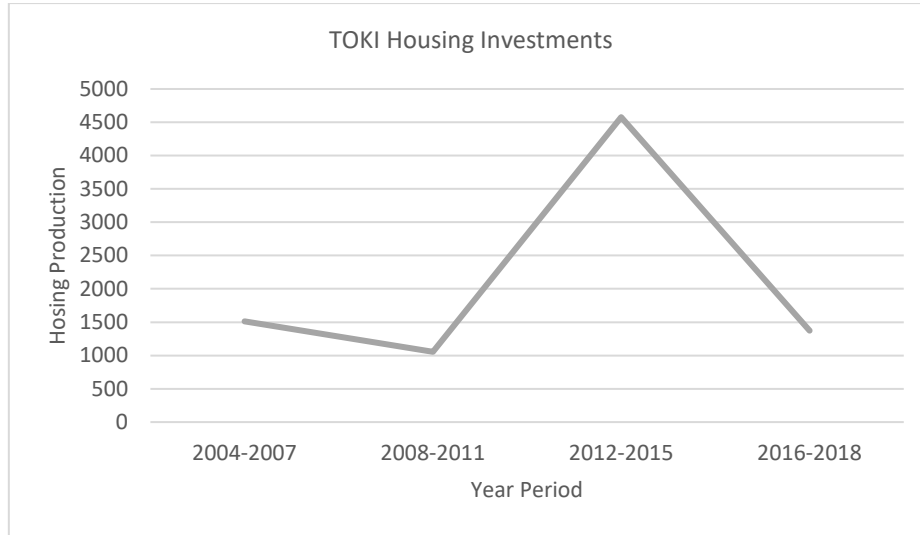


Figure 2 Housing production by TOKI between 2004-2018 (Erzincan city center) (Housing Development Administration of the Republic of Türkiye, n.d.)

Thirdly, the level of development of Erzincan within the region was another consideration. Indeed, considering the current period, Erzincan ranks 25th among 81 provinces and has the highest GDP in its region (KUDAKA, 2019). In other words, this shows that Erzincan has economic and spatial dynamism. Fourthly, there is the diversity in public housing investments throughout the province and in the city center. TOKI's main strategy is to provide social housing for low- and middle-income groups, along with the necessary service units and infrastructure. In this context, TOKI's housing practices, carried out through joint protocols with various public institutions, include housing for the poorest segments of society, urban transformation applications, social housing applications for low- and middle-income groups, and agricultural village housing projects. All of these applications are found in Erzincan and its city center (Housing Development Administration of the Republic of Türkiye, n.d.). Fifthly, the existence of demand in the formation of public housing investments was considered. Indeed, public housing projects implemented throughout the province and in the city center have been determined by the demand collection method. According to this method, requests are determined by the Governorship, District Governorship, and Municipalities.

In the second section following the introduction, literature review is presented. In this section, the understanding of housing policy that shapes urban space in the context of the historical process and the role of TOKI within the scope of housing policy and its effects are examined. Also, spatial and economic impacts of public housing investments at the local scale are explored. The third section consists of three sub-sections. In the first sub-section, the characteristics of the Erzincan Central district, which was selected as a sample, are described, while in the second sub-section, TOKI housing investments are explained. In the third sub-section, data, design, and analysis findings are given. The fourth section of the article is devoted to results and the general evaluation.

2. Literature Review

2.1. Policies for Public Housing Investments and the TOKİ Example

Governments, which have direct or indirect effects on housing supply and quality, housing standards, and urban planning, create housing policy through legislation, programs, and implementation actions. In the literature, considering the roles of the public and private sectors in housing production, housing policy is divided into three basic approaches (Manoochehri, 2009; Kemeny, 1995; Esping-Andersen, 1990). These include the Marxist, Social-Democratic, and Neo-Liberal approaches. The first involves an intensive state intervention, the second involves a partial state intervention, and the third mostly entails a non-state intervention (Al-Hafith et al., 2019; Manoochehri, 2009; Doling, 1997). Since the ideologies of countries are influential in the formation of housing policies and housing has many different functions other than shelter, states have resorted to producing policies regarding the housing problem. Improving the quality of housing, providing access to affordable housing, and increasing housing supply are the most important goals of housing policy. The core of housing policy has been social housing policies (Organisation for Economic Co-operation and Development, 2021; Ulusoy, 2020; Şiriner Öner, 2016; Alkan & Uğurlar, 2015; Şentürk, 2011). As an extension of the neoliberal process, in the globalizing world, the state has shrunk in its role as a provider of regulatory public services. In the 21st century, European housing markets have created significant instability with the global crisis (Zhang & Ball, 2016; Alkan & Uğurlar, 2015). In this context, strategies such as the downsizing of the state, deregulation, privatization, political reforms, and transformation of socio-economic policies have become the fundamental policies of countries (Feigenbaum & Henig, 1994).

According to Buckley et al. (2016) and Balaban (2012), policies have been developed to launch a large-scale mass housing construction to accelerate and increase housing production, especially in rapidly and dynamically developing countries. One example is the Brazilian government's Minha Casa, Minha Vida (My Home, My Life) social housing program, which was launched in 2009 with the goal of producing 3.4 million homes by the end of 2014. In China, 3.3 million new social housing units were produced in 2010 alone (Altunok & Uğurlu, 2021). Furthermore, a program to produce 36 million social housing units was initiated in China between 2011 and 2015 (Shi et al., 2016). Pakistan launched the Naya Pakistan Housing Programme (NPHP) in 2018 with a target of providing 5 million affordable housing units to low- and middle-income groups by 2023, and has developed models for providing affordable housing (Nadeem et al., 2020). In Iran, the Mehr Housing Project, planned in 2007, aimed to provide housing to needy families by constructing approximately 2 million housing units within 5 years, with a target of producing only 150,000 units per year (Ghaedrahmati & Zarghamfard, 2021; Shahraki et al., 2020; Abbaszadeh, 2016). Latin American countries have also improved their housing production processes with plans to improve the supply of affordable land to provide affordable housing (Rojas, 2018). For instance, the Colombian government launched a 100,000-unit free housing program for impoverished groups in 2012 (Murray & Clapham, 2015). One of the policies followed is to provide public housing investments through a centralized public institution with financial and managerial power (Tatlı Colak and Turk, 2022).

Although the construction sector has held an important place in fixed capital formation since the foundation of the Republic of Türkiye, two critical turning points brought about the acceleration of the sector: (1) especially the second half of the 1990s, and (2) the transformations in economic policies in the 1980s, the effects of which were seen in the 2000s (Purkis, 2016). When the urbanization process in Türkiye within the framework of housing policies is considered in terms of periods, it has followed a course in which the official ideology played the leading role in the first period, gecekondus in the second period, cooperatives, which had a more widespread effect throughout the country, in the third period, and structures that separated cities with the cooperation of capital and TOKİ in the last period (Arslan, 2014). After 2000, the housing development in Türkiye was shaped by capitalist-neoliberal approaches and the influence of the global economy. In the first decade of the 2000s, public institutions approached housing production

with a market logic framework, and legal regulations were renewed to emphasize entrepreneurship (Koca, 2015a). After 2002, with the legal regulations established in 1984 and the renewed effect of TOKI, shopping malls, and residence-type housing investments gained importance (Baykal et al., 2018). After 2002, in the process that mostly attracted the attention of large-scale, institutionalized capital groups, public institutions became new investment partners to get a share of housing investments (Koca, 2015b). During this process, TOKI's institutional structure was developed, and its powers were expanded with legal regulations. Balaban (2012) states that in Türkiye, the central government has supported the recent construction boom by making various legal arrangements and changes, especially within the framework of urban planning (authority to prepare zoning plans, legal regulations regarding public lands and properties, legal regulations regarding "urban transformation"), to increase housing production and transform informal settlements by strengthening TOKI and encouraging construction activities. Following the legal and institutional changes, TOKI was provided with 64.5 million m² of public land that can be used to develop housing projects, and many mass housing projects were initiated by TOKI in almost every province in Türkiye (Balaban 2012). In this period, when the rate of housing production increased rapidly, and the construction sector grew strongly after 2002, new legislation on urban transformation was enacted, and changes were made to the mass housing legislation. The government's mass housing practices increased TOKI's influence during this period. Compared to previous periods, TOKI and its subsidiary Emlak Konut, which produced a high number of housing units, entered into partnerships with large-scale companies within the framework of revenue-sharing projects (Kömürcüoğlu, 2017). In the literature, in the results of the research conducted on TOKI project applications, Coşkun (2015) stated that although there are successful aspects of the TOKI model on the basic characteristics and the effectiveness of its financial structure, TOKI activities and related financial results are not transparent enough, and the financing structure may cause risk/effectiveness problems. While this study is focused on TOKI's institutional structure, Eşkinat (2015) focuses on its practices. In the 1980s, TOKI, which was declared as the primary authorized institution to meet the housing needs of low-income people, made a move in housing production after 2003. While many people who became homeowners at prices they could not have imagined before were happy with the developments, TOKI has become a much-discussed institution due to the emphasis given to luxury housing, the construction of low-quality housing for the poor, large-budget works given mostly to capital groups close to the political power, its exemption from inspection, its being equipped with indescribable and unlimited authority, the unfair competition it creates, and similar reasons (Eşkinat, 2015). Again, the spatial effects of TOKI investments have been expressed in the literature. In a study conducted for Gaziantep (Gürbüz et al., 2023), it was stated that treasury and agricultural lands on the city periphery were opened to development as a result of TOKI investments, and constructions were carried out in a way that was contrary to the architectural aesthetics of the city. As a result of such a development, construction did not occur in the form of sprawl, but in the form of oil stains (Gürbüz et al., 2023). In a study conducted in terms of the construction sector, Kömürcüoğlu (2017) analyzed the effects of TOKI, construction, and urban transformation laws on the construction sector and found that while the policies in the 1980s and 1990s mostly resulted in favor of small- and medium-sized companies, the policies after 2000s mostly resulted in favor of large-scale companies. In a study that provides a descriptive analysis of the reflection of housing policy on space (Yeşilbağ, 2020), before the 2002 Republic of Türkiye elections when the Justice and Development Party (AKP), which was assigned to form a government, approximately 3.8 million houses (an annual average of 236 thousand) were built in 16 years (between 1987-2002), while a total of 8.3 million houses (an annual average of 516 thousand) were completed between 2003-2018 after the AKP came to power in 2002. Of this amount, 10% was realized by TOKI. This corresponds to an increase of 118% compared to the previous period. The 8.3 million houses built during the AKP years correspond to one-third of the total housing stock in Türkiye. In other words, this data shows that one out of every three houses was built during the AKP years (Yeşilbağ 2020, pn.108). In a similar study, Marschall et al. (2016) examined the relationship between distribution politics and the AKP's electoral success by focusing on TOKI housing projects. It was found that in

districts where TOKI built more houses, the probability of winning all three local elections was considerably higher than in the districts where TOKI made fewer housing investments, the number of TOKI houses increased as the districts lost population, and TOKI houses were positively and significantly associated with urbanization in the districts where the AKP won the most, thus urbanization and politics played an important role in TOKI housing investments rather than factors related to housing need and demand. However, the opposite is true in the districts where the AKP lost the most, and it is also stated in the results of the study by Marschall et al. (2016) that TOKI housing investments are more related to population growth.

2.2. The Spatial and Economic Impacts of Public Housing Investments at the Local Scale

Small and medium-sized cities (SMCs) offer several advantages in terms of scale when considered outside of developed theories and approaches. In particular, SMCs provide the opportunity for a more detailed examination and analysis of their political, economic, social, cultural, spatial, and physical characteristics (Bell & Jayne, 2009). However, information on the characteristics of SMCs and how to address their specific features is limited. The dynamics of SMCs differ from those of metropolitan areas. These cities have important functions for national and regional development (Bell & Jayne, 2009). Therefore, most countries invest in SMCs depending on their national and regional development approaches. The impact of economic conditions on public investment decisions depends on the government level (Fisher & Peters, 2016).

Residential areas, being one of the basic functional areas of a city, are directly related to the spatial development and planning process of the city. Therefore, housing investments have a significant impact on public investments (Tepe, 2010). However, information on the economic and spatial impacts of public housing investments in cities of this scale is limited. Yet, the effects of public housing investments are more easily measured in small- and medium-sized settlements compared to metropolitan areas.

In small- and medium-sized settlements, public housing investments are a strong economic catalyst in terms of job creation potential, and they can also strengthen local supply chains and support local service sectors related to construction (Alper, 2017). Public housing in small and medium-sized settlements is seen not only as a social service but also as a fundamental economic infrastructure (Kenna, 2010). In other words, public housing investments have a direct economic impact at the local level. Studies have shown that public investments have significant effects on the values of immovable properties such as workplaces, residences, plots, and land in their immediate vicinity, as well as on the overall development direction of the city (Erdem, 2016). Investment in housing construction is not only a key factor that determines the well-being of the population and increases the activity of businesses, but also a necessary condition to ensure a stable social and economic development and economic growth in the city (Ovsianikova et al., 2017). On the other hand, affordable housing policies significantly contribute to job creation and economic growth by stimulating construction and related sectors. When housing costs decrease, household income increases, which is reflected in consumer spending and stimulates local economies (Akinsulire et al., 2024).

When considering the spatial impacts of public housing investments, they can affect the growth of the city, as well as bring about changes in the immediate vicinity of the areas where they develop. In small-to-medium-sized settlements, public investment projects may have the potential to change the direction of urban development. For example, in a small city like Karaman in Türkiye, it has been observed that public housing production causes the fragmentation of the urban area. Both luxury and social housing projects are generally located in the urban periphery, which causes low-income groups to live far from city centers and amenities, while leading to the emergence of "inward-looking" luxury areas that increase social stratification and individualization (Sürmeli Söğüt, 2025). A similar situation applies to public housing projects in Van. Public housing projects have changed the development axis by defining a new development route (Gürbüz et al., 2023). One of the most important dynamics of change in urban space is housing production. Today, housing production is

seen as an investment tool and comes to the forefront through its exchange value rather than its use value to meet a basic need such as shelter (Kovankaya & Türkün, 2023). Public housing projects can increase spatial dynamics in their immediate surroundings. They can accelerate private sector investments. They can lead to development in terms of social and technical infrastructure areas. They can also cause changes in land values (Rabiega, 1984). It is said that the size of the city causes costs to increase, thus moving away from both efficiency and effectiveness. Medium-sized cities have an advantage in this respect (Fainstein & Campbell, 2011). Compared to large cities, the limited size of medium-sized cities also has advantages in establishing tighter communication and cooperation among social units and in providing easier access to urban public spaces (Yazar, 2015). Economic benefits such as job creation and increased local spending are crucial for stimulating growth, while social impacts like improved community cohesion and better health are essential for enhancing overall quality of life. Policies that integrate both economic and social aspects tend to be more effective in delivering comprehensive and lasting improvements in housing and community well-being (Akinsulire et. al., 2024).

3. Analysis of TOKI Practices in the Context of Public Sector Housing Investments in Erzincan Central District

3.1. Erzincan Context

Erzincan is a province that can be reached via the D-100 (E-80) Highway, which starts from the western end of Türkiye and extends to the border gates in the east, and on the railway route since the date of the Republic, and by air since 1988. The geographical structure also shaped the economic characteristics of the settlements in the province. Located on the main transportation route, the Central district has developed as the only center of attraction in terms of services and industrial sectors throughout the province. The center is the district with the highest population and the most developed district in terms of the socio-economic development criteria of the Erzincan province, and it has a value above the average of Türkiye in terms of these criteria. The Erzincan provincial center is located in the central part of the province, on the D-100 Highway route. Most of the city was destroyed by the earthquakes that occurred in 1939 and 1992. The city was almost rebuilt after that and therefore showed a planned development with its urban infrastructure. The military areas and university campuses in the north of the city and the large public areas in the east are the uses that determine the social life of the city. Erzincan University, founded in 2006, has revitalized the socio-cultural and economic structure of the city. The city develops linearly in the east-west direction. However, the settlement, which is also the center of the migration movement within the province, is developing on agricultural lands in the plain. The development of Erzincan city center is focused on services and industrial sectors (Erzincan Center Municipality, 2010).

The Erzincan province, with a surface area of 11,640 km², is the fourth largest province in the Eastern Anatolia Region, after Erzurum, Van, and Malatya, and the 24th largest province in the country. However, Erzincan is among the provinces that experience out-migration because more than half of the provincial land consists of mountainous areas and is exposed to natural disasters from time to time. For this reason, with 18.7 people per square kilometer, it is the second province with the lowest population density in the country after Tunceli. Although some districts of Erzincan, which have 9 districts including the central district, remain within the functional influence area of neighboring provinces due to proximity and geographical conditions, some districts of neighboring provinces outside the provincial borders also fall within the functional area of influence of the city of Erzincan. Today, Erzincan develops largely in the retail trade and service sector. However, agriculture is still the dominant sector. Up to 40 industrial buildings in the province were sold within the scope of privatization (Karadeniz & Altınbilek, 2018). In the economic development of Erzincan province, agriculture, forestry activities, public administration, education, human health and social service activities, industry, and service activities seem to be more dominant in GDP. Although the impact of construction and real estate activities on GDP is less than that of other activities, it is also

seen that construction and real estate activities have increased over the years (Figure 3), (Turkish Statistical Institute, 2016).

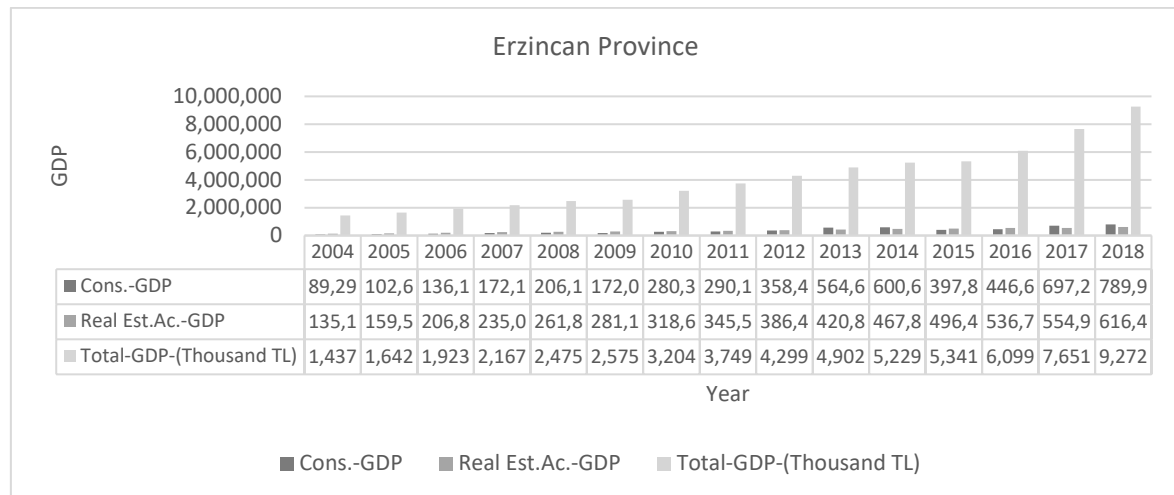


Figure 3 Gross domestic product, construction GDP, real estate GDP status of the province (Turkish Statistical Institute, 2016)

3.2. TOKI's Investments

In Erzincan, a non-metropolitan province where TOKI produced the highest amount of housing between 2004 and 2018, 11577 houses of different housing project types were produced. TOKI's strategy is to provide social housing and necessary service units for low and middle-income groups by completing their infrastructure. Accordingly, the method of developing mass housing projects in cooperation with the Governorship, District Governorate or Municipalities to supply housing buyers through preliminary demand collection in districts and towns with a population of 40,000 or less, within the scope of different protocols signed by TOKI with institutions such as the Ministry of National Defense, the Ministry of Internal Affairs, and the General Staff, housing application has been made in line with the needs of these institutions, poor houses produced in cooperation with TOKI and the General Directorate of Social Assistance for the poorest and non-household segments of the society, urban transformation practices by cooperating with municipalities in order to transform and improve slum areas and areas at disaster risk, social housing applications for low-income and middle-income groups, Agricultural Village housing projects, implemented with the cooperation of the General Directorate of Disaster Affairs or with the application of the competent authorities at the municipality or governorship level of a province, in order to bring the infrastructure and social facilities available in the city centers to the villages, It implements different housing programs such as (Housing Development Administration of the Republic of Türkiye, n.d.). In this article, since investments were made predominantly in the Central district of the Erzincan province, the analysis was made only in this district. The types and numbers of investments made by TOKI in the central district are shown in Table 1.

Table 1 TOKI's Housing Project Types and Number in the Central District of Erzincan Province

Project Types	Number of Residences
Urban Regeneration and Development Project	2073
Administration Housing Application	4635
The Agricultural Village Projects	408
Demand Organization	1282
Military Housing (HAIT)	118
Total	8516

Ref: TOKI, housing statistics (Housing Development Administration of the Republic of Türkiye, n.d.)

When examined by years, the housing project areas completed by TOKI are classified in four different periods, taking into account the completion times of the construction (Figure 4). The first period, between 2004 and 2007, within the scope of the Administration's housing application, 633 housing projects in the Mengüceli District in 3 stages, within the scope of the slum transformation project implementation, 880 housing projects in 2 stages in the Çarşı District, thus a total of 1513 houses were produced.

In the second period, between 2008 and 2011, within the scope of the Agriculture Village application in the Central district, 42 housing projects within the borders of Çukurkuyu Town, 277 housing projects in Yaylabası Town, within the scope of the social housing application, a 16-classroom primary school building in Geçit Town, 304 housing projects with a trade center, 176 housing projects in İnönü neighborhood, within the scope of poor housing, a total of 1055 houses were produced, including 256 housing projects in Fatih neighborhood, thus a total of 1055 houses was produced.

In the third period, between 2012 and 2015, within the scope of the social housing application in the Central district, 144 housing projects within the borders of Gülabibey neighborhood, 1187 housing projects in Kavakyolu Town, 757 housing projects in Ulalar Town, 240 housing projects in Çağlayan town, 251 housing projects in Çukurkuyu town that total of 4577 houses were produced, including 118 housing projects in Cumhuriyet neighborhood within the scope of lodging housing, 560 housing projects in Taksim neighborhood within the scope of urban transformation, and 1320 housing projects in Geçit town within the scope of demand gathering method, thus a total of 4577 houses were produced.

In the fourth period, between 2016 and 2018, 89 housing projects were built in Akyazı town within the scope of the Agriculture Village application in the Central district, within the scope of the demand gathering method, including 340 housing projects in Yanlızbağ town, 586 housing projects in Yoğurtlu neighborhood, and 356 housing projects in Kavakyolu town, thus a total of 1371 houses were produced (Figure 4), (Housing Development Administration of the Republic of Türkiye, n.d.).

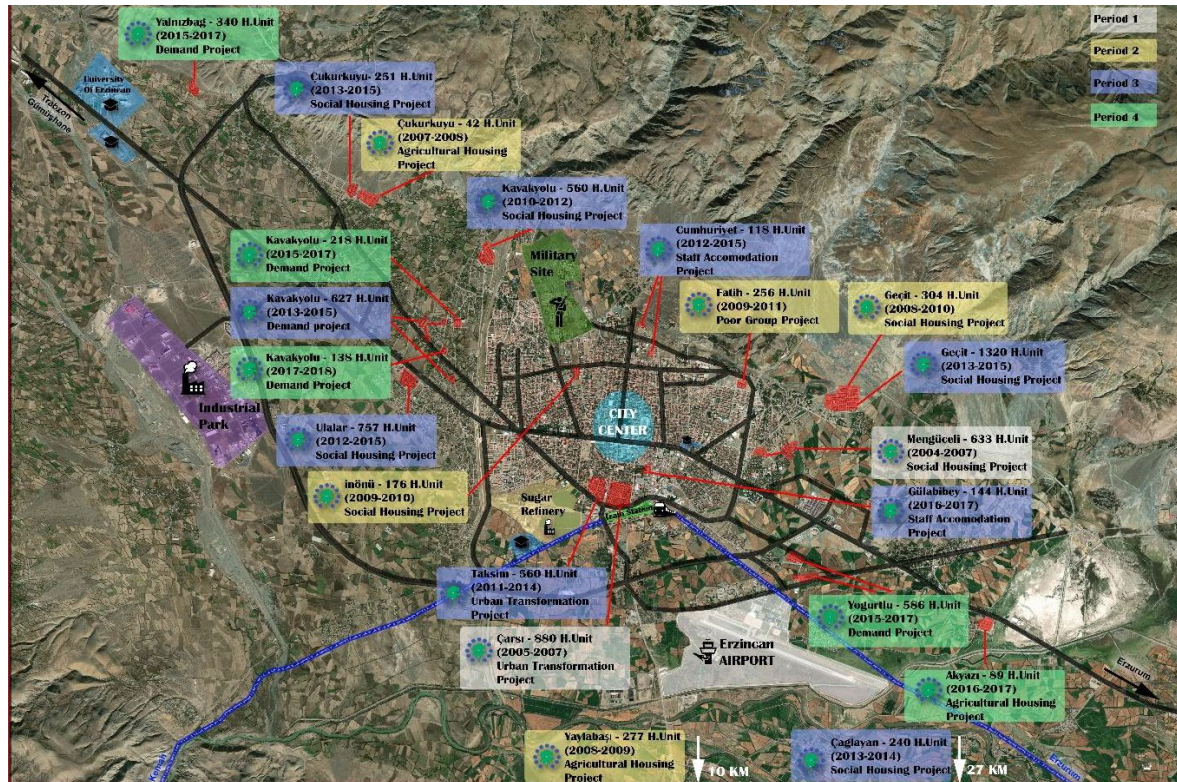


Figure 4 Central district TOKI housing investments between 2000 and 2018 (Housing Development Administration of the Republic of Türkiye, n.d.)

3.3. Data, Design, and Analysis

In this study, the spatial and economic impact and change created by TOKI housing investments in the Central district of the Erzincan province are analyzed by focusing on the period between 2004 and 2018. In this study, Erzincan city is examined as an exploratory case study.

At the local level, spatial change can be explained by urban growth, land use, or land cover changes over a specific period. Analyzing past trends in urban growth, land use, and land cover changes is important for evaluating current and future land use policies (Liu, 2018). CORINE data is used for various purposes in Europe, such as to determine the effects of urbanization and agricultural activities on land cover changes, to monitor and manage changes in natural areas. Therefore, many studies use CORINE data to detect urban sprawl, land use, and land cover change (Czyża et al., 2023; Aksoy et al., 2022; Çetin et al., 2021; Şahin et al., 2021; Cieślak et al., 2020). In this study, CORINE data was used to understand the spatial impact of TOKI housing investments in a small-to-medium-sized urban area that does not have metropolitan characteristics at the local level — in other words, to detect spatial growth or land use change during the specified period. However, it is clear that simply assessing spatial growth or land use patterns is insufficient. Observing changes in urban areas can often be done through the manual interpretation of aerial photographs. Indeed, comparing different images of residential areas allows for the visualization of construction activities (Kressler & Steinnocher, 2001). This study examines where TOKI housing investments were made during the specified period, what kind of urban fabric they created, and whether they caused development in their surroundings over time. On the other hand, it is also possible to examine real estate sales data spatially and temporally in the examination of spatial impact (Erdoğan & Memduhoğlu, 2019). In particular, spatial statistics are widely used to determine neighborhood effects in the housing market (Anselin, 2018). In this study, it is necessary to examine housing sales values spatially and temporally between the specified periods. However, housing sales data for the period between 2004-2018 for the central settlement of Erzincan are not available. Therefore, this data could not be used in the study. In contrast, to understand the dynamism of the housing market and, in particular, the impact of TOKI projects on the surrounding area, the number of land use changes within the 500 m and 1000 m buffer zones of these projects was analyzed. Land use changes include conversions from undeveloped to developed or from undeveloped land to building plots. Land use change data was obtained from the Land Registry and Cadastre Information System (TAKBIS) system.

The impact of construction activities is important in determining the economic impact of housing investments at the local level. This is because housing projects provide significant gross added value to the local economy by creating direct employment during the construction phase and indirect and triggered employment during the operation and management phases (Wardrip et al., 2011). The construction sector acts as the locomotive of the economy by affecting more than 200 sub-sectors (Aydın, 2016). Indeed, Alkay et al. (2019) based their measurement of the economic impact of construction activities on data such as planning permits or construction permits. Accordingly, in this study, the number of construction permits, and occupancy permits, housing sales data, and housing sales figures in the immediate surroundings (500 m and 1000 m) of TOKI projects for the determined period were used to understand the change in terms of spatial and economic dimensions. On the other hand, it is stated that the population variable is an important factor that positively affects the economic growth performance of cities (Sun et al., 2021). Therefore, population data was also used as a variable in the study. On the other hand, local-scale housing investments can act as economic catalysts in terms of job creation and the sustainability of services (Tibaijuka, 2009). Therefore, the variable of change in the number of business licenses during the determined period was also used in this study. To further understand the economic impact, the number of housing sales within the 500m and 1000m buffer zones of TOKI projects was analyzed. Sales figures in the immediate surroundings of TOKI projects indicate whether or not these projects have an economic impact on the surrounding area. These sales figures were obtained from the TAKBIS system.

In addition, to support the analyses conducted under the headings of economic and spatial dimensions, the impact of TOKI was revealed by conducting short face-to-face interviews with important actors who are influential in the district center as local and central government, between March 20-24, 2023 (see Table 2). According to the results of these face-to-face interviews, the effectiveness of TOKI was measured, and the extent of its impact was revealed through short interviews with important actors in terms of their authority and influence at the local level.

Table 2 Institutions and Organizations Interviewed in the Central District of Erzincan Province

Category	Interviewees	Interview Results	Time (Minute)
Public Sector	Erzincan Governorship / Provincial Planning Directorate	TOKI initially came to build hospitals, schools, and police stations. However, there is a housing shortage in the province.	20
	Erzincan Municipality / Private Secretary Directorate	TOKI is needed in the city for low-income and disaster housing.	15
	Erzincan Municipality / Deputy Mayor	The factors increasing housing prices are the revaluation rate, inflation, profit increase, trade volume, and new zoning regulations; TOKI has no influence on this.	30
	Land Registry Office / Land Registry Director	The construction sector is quite active in the city due to renovation and remodeling projects.	20
Professional Chamber	Chamber of Industry and Trade/General Secretary	The investment and social life expenses are limited, housing is seen as an investment. However, it is not bought to be rented out, but as an investment for oneself and one's children.	20
Private Sector	Fuar Construction Company	It is stated that TOKI has no impact on the city's economy. The subcontractors who undertook the work are not paying local businesses.	30
	Dağ Real Estate Office	Housing for low-income and disaster relief is needed in the city through TOKI. Apart from that, housing production is carried out with local contractors for local development.	30

3.3.1. Analysis for Changes in Spatial Dimension

For the analysis, three variables are used to understand whether housing investments affect spatial change in Erzincan city. For this purpose, the variables examined under the title of spatial dimension are the change between 2004 and 2018 based on CORINE data and the change data between 2004 and 2018 based on satellite images (see Table 3).

Table 3 Variables Used in the Study

Analysis for Changes in Spatial Dimension		
No	Variables	Source
V1	The change between 2004 and 2018	CORINE data (Ministry of Agriculture and Forestry, 2022)
V2	The change data between 2004 and 2018	Satellite images (Google, n.d.)
V3	Number of land use changes in the immediate surroundings (500m. and 1000m.) of TOKI projects	Land Registry and Cadastre Information System (TAKBIS)
Analysis for Changes in the Economic Dimension		
V4	Total building permit change in the central district between 2004 and 2018	Erzincan Municipality (Erzincan Center Municipality, 2023)
V5	Change in the number of business licenses in the city center between 2004 and 2018	Erzincan Municipality (Erzincan Center Municipality, 2023)
V6	Number of housing sales in the city center between 2013 and 2018	TUIK (Turkish Statistical Institute, 2023)
V7	Housing sales figures in the immediate surroundings (500m. and 1000m.) of TOKI projects.	Land Registry and Cadastre Information System (TAKBIS)

For variable V1, the CORINE data is used, and the data represents the land cover/use classification determined by the European Environment Agency. Within the scope of the data,

artificial areas and natural restrictive boundaries that show land cover/use with the computer-aided visual interpretation method on satellite images are determined. In the study, the spatial development of the Erzincan city center between 2004 and 2018 is analyzed within the scope of the data (Ministry of Agriculture and Forestry, 2022). Accordingly, in the Central district of Erzincan province with a surface area of 11,903 km², the urban area, which is an artificial zone, has increased by 0.12% in average between 2000 and 2018, forest and semi-natural areas increased by 0.54%, and agricultural areas decreased by 1.03%. The artificial zone area of the central district was 529 ha between 2000 and 2006. The area has decreased to 397.40 ha between 2006 and 2012, and 316.84 ha between 2012 and 2018. A total area of 714.24 hectares has been transformed into an urban area. The data demonstrates the spatial growth in the urban region. However, the data does not provide any information about the extent or characteristics of spatial change. For another variable, V2, satellite images (Google, n.d.) are used to understand the spatial change of the city area in Erzincan city center before and after TOKI housing production. A comparison is made using satellite images between 2004 and 2018. Besides, the population data of the Central district of Erzincan province and the data containing floor heights of neighborhood-based buildings are examined, and comparisons are made in the increase in city area.

According to the analysis, the increase in the city area between 1987 and 2006 was 31.37%. The increased value is proportional to the population increase between 1985 and 2000 (Yücer & Erener, 2016). Although there is no population data for the Central district of Erzincan city between 2004 and 2006, the population information is analyzed within the scope of the growth in the city area with the population distribution data obtained from the information of the existing years. While population growth was at a relatively constant level from 2007 to 2010. The population increased by 13% in 2010. It had remained at a relatively constant level until 2018. There was a significant population increase of 46% in 2018 (see Figure 5). Compared to 2007, the population increased by 54,239 people in 2018, and this increase corresponds to 0.5% in average. Considering the same dates for Türkiye, population growth is calculated as 0.1% in average. As an example of dynamic and non-dynamic cities in terms of population, Antalya province has an average population increase of 0.3%, Istanbul, Ankara, Bursa, and Sırnak provinces have an average population increase of 0.2%, Izmir, Bayburt, Adıyaman, and Balıkesir provinces have an average population increase of 0.1%. The population of Kars and Ardahan provinces decreased by 0.1% in average between these years. It is calculated that the population of Artvin province remains constant. It can be concluded that this increase in the central district of Erzincan is at the same rate as the dynamic cities and that spatial growth in the city area is inevitable with the population increase in this period (see Figure 5), (Turkish Statistical Institute, 2020).

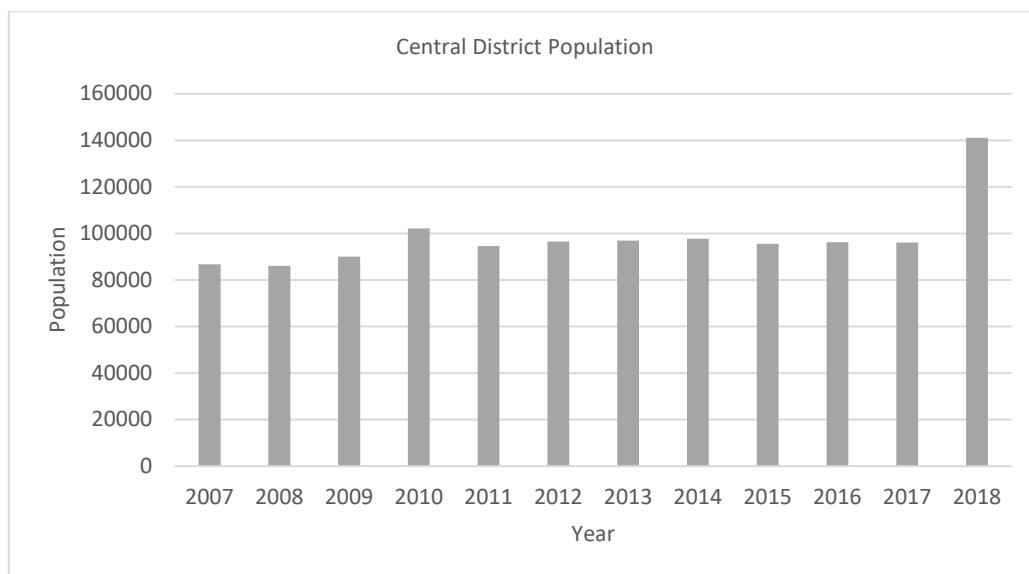


Figure 5 Erzincan province central district population data between 2007 and 2018 (Turkish Statistical Institute, 2020)

Most of the existing buildings in the city have 1 or 2 storeys. 1-storey buildings; In Yenimahalle, İnönü, Cumhuriyet, Akşemsettin, Atatürk, Fatih, Halitpaşa, Kızılay, Hocabey, Taksim, Gülabibey, Karaağaç, İzzetpaşa, and Ersevenler neighborhoods, 2-storey buildings; In Mengüceli, Bahçelievler, Barbaros, Başbağlar, and Kazımkarabekir neighborhoods, 3-storey buildings; In Aslanlı, Yavuzselim, Ergenekon, Mimarşinan, and Yunusemre neighborhoods. It is concentrated in the Çarşı neighborhood with 4-storey buildings (see Figure 6).



Figure 6 Erzincan province central district neighborhood map (Erzincan Center Municipality, 2023)

Unlike other cities, in Erzincan, apart from the commercial center area, low-rise buildings are located in the neighborhoods in the city core, and high-rise (3-4) buildings are located on the city periphery. It is thought that the earthquakes that occurred over time had an impact on the development of this situation (Erzincan Center Municipality, 2010).

When the satellite images in Figure 7 are examined, after the TOKI projects, there are some changes in the space depending on the project type (Google, n.d.). For example, in the central neighborhoods of Taksim and Çarşı, the texture created by single-storey or 2-storey, dilapidated, and earthquake-prone buildings has created a change in the space towards the concept of mass housing consisting of four-storey buildings. The practices in the towns of Kavakyolu, Ulalar, and Yoğurtlu have created living spaces within themselves and created a different spatial texture from the surroundings. However, according to the analysis, the projects with the agricultural village projects do not create any construction around them, and there is no spatial growth.

CORINE data shows that the urban area has grown spatially. However, this data does not provide any information about the extent or characteristics of spatial change. In contrast, satellite images (Google, n.d.) were used to determine the spatial changes in the urban fabric of Erzincan city center before and after the TOKI housing construction.

	
Satellite image of the center district in 2004	Satellite image of the center district in 2018
	
Satellite image of Taksim-Carsi district in 2005	Satellite image of Taksim-Carsi district in 2018
	
Satellite image of central-Cumhuriyet district in 2004	Satellite image of central-Cumhuriyet district in 2018
	
Satellite image of Cukurkuyu district in 2004	Satellite image of Cukurkuyu district in 2018



Satellite image of Caglayan district in 2006



Satellite image of Caglayan district in 2018



Satellite image of Ulalar-Kavakyolu district in 2004



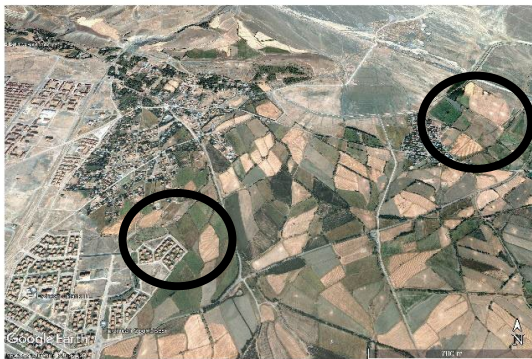
Satellite image of Ulalar-Kavakyolu district in 2018



Satellite image of Yogurtlu district in 2004



Satellite image of Yogurtlu district in 2018



Satellite image of Gecit-Menguceli district in 2004



Satellite image of Gecit-Menguceli district in 2018

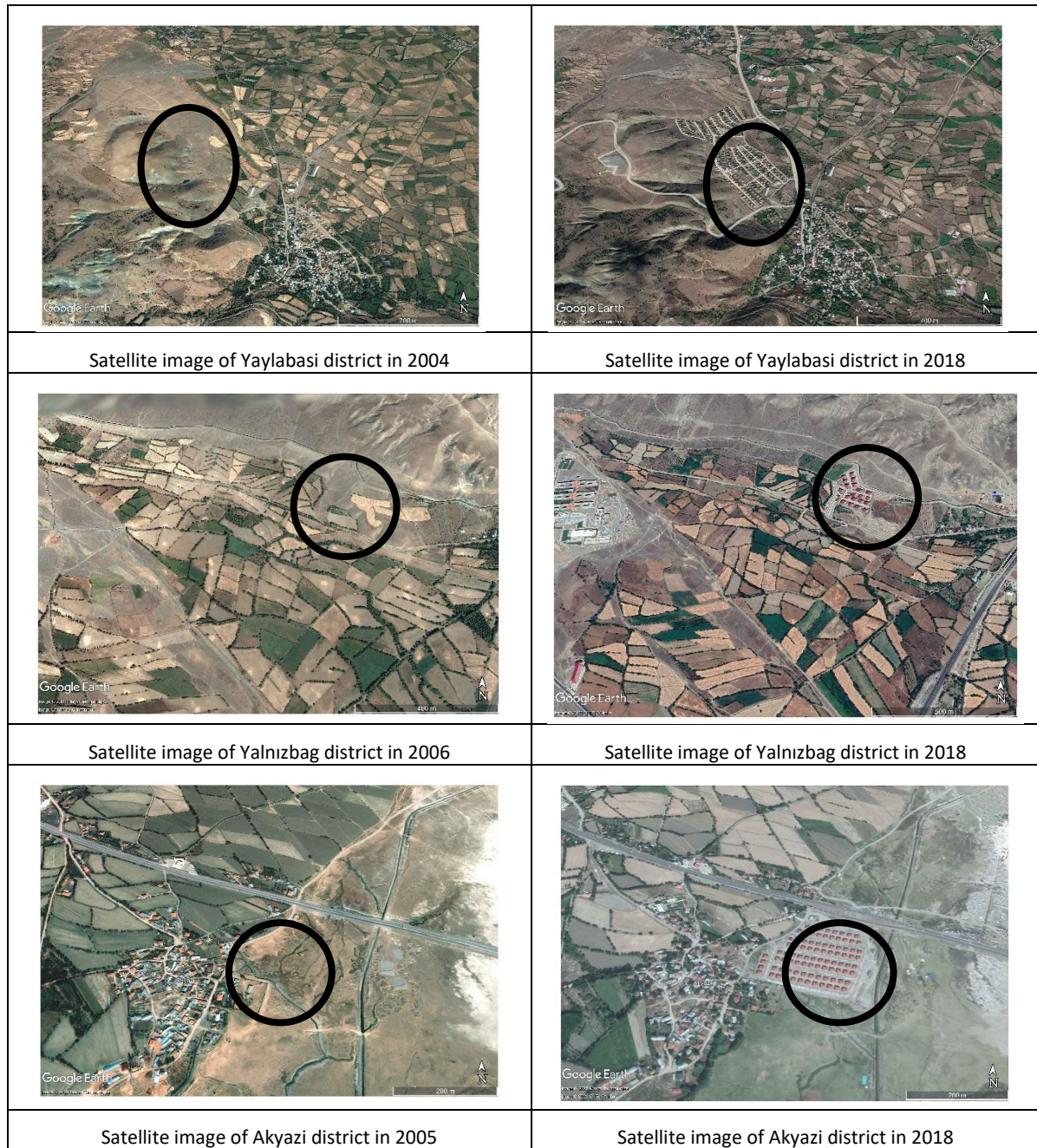


Figure 7 Satellite images of Erzincan central district between 2004 and 2018 (Google, n.d.)

This study analyzes land use change procedures in the immediate surroundings of TOKI projects. (V3). Among these projects, the Taksim Project (Projects 9-10 listed in Table 4) is an urban transformation and development project that began in 2011 in two phases and was defined in 2014 as the construction of 560 residences, a primary school with 16 classrooms, a mosque, and a library. Within the scope of this study, two buffer zones were identified at distances of 500 m and 1000 m from the project. Accordingly, land use change transactions were examined on a total of 642 properties between 2004 and 2018 (See Table 4). It was determined that 10 land use change transactions occurred on 12 properties located within the project area, and 22 land use change transactions occurred on 477 properties within 500 meters of the project. Within 1000 meters, 42 land use change transactions occurred on 153 properties. This indicates that land use change transactions occurred on 642 properties in the immediate vicinity during the 15-year period. Based on this number, it was determined that there were five land use change transactions per year, which does not indicate significant real estate activity. Projects 11, 12, and 13 were not examined separately due to their proximity to the Taksim Project. Projects located in Mengüceli and Geçit

were considered together due to their proximity (Projects 1, 2, 3, 4, and 5 in Table 4). The analysis included properties within 500 meters of these projects. It has been determined that 32 land use changes occurred in 32 properties within a 500 m distance, and 75 land use changes occurred in 75 properties within a 1000 m distance. Furthermore, the projects in Kavakyolu and Ulalar neighborhoods were analyzed together due to their proximity (projects numbered 18 in Table 4). According to the analyses, it was determined that 397 land use changes occurred in 646 properties within a 500 m distance of the Kavakyolu projects. For the research period (2004-2018), the average is calculated as 26 changes per year. This indicates that the region is dynamic in terms of urban development. For the Ulalar settlement (project number 18 in Table 4), 20 land use changes occurred in 115 properties within a 500 m distance, and 10 land use changes occurred in 74 properties within a 1000 m distance. For the Çukurkuyu settlement (projects numbered 19 and 20 in Table 4), 20 land use changes occurred in 115 properties within a 500 m distance, and 10 land use changes occurred in 74 properties within a 1000 m distance. 22 properties underwent 22 land use change procedures within a 500 m distance, and 19 properties underwent 18 land use change procedures within a 1000 m distance. Other projects were analyzed separately due to their distance from the central district. In the Çağlayan settlement (project number 21 in Table 4), no land use change procedures were carried out on 22 properties within a 500 m distance, and three land use change procedures were carried out on 15 properties within a 1000 m distance. In the Yalnızbağ settlement (project number 22 in Table 4), 51 land use change procedures were carried out on 47 properties within a 500 m distance, and 17 land use change procedures were carried out on 15 properties within a 1000 m distance. In the Yoğurtlu neighborhood (project number 23 in Table 4), 24 properties within a 500 m distance, two land use change procedures were carried out. 22 properties within a 1000 m distance, five land use change procedures were carried out. In the Akyazı settlement (project number 24 in Table 4), within a 500 m distance. It was determined that there were 22 land use change transactions on 22 properties within a 1000 m distance, 34 land use change transactions on 27 properties within a 1000 m distance, 12 land use change transactions on 11 properties within a 500 m distance in Yaylabaşı town, and 11 land use change transactions on 11 properties within a 1000 m distance. It was concluded that the number of land use change transactions in these projects is not high and that development activity is stagnant in these project areas.

Table 4 Number of Land Use Changes in Buffer Zones of TOKI Projects, Period 2004-2018

TOKI Project Group/ Project Name	Project Type	TOKI Housing Number	500 m.	1000 m.	500 m.	1000 m.	500 m.	1000 m.
			Land-Block/Parcel Numbers	Land-Block/Parcel Numbers	Parcel Area m2	Parcel Area m2	Land Use Change Numbers	Land Use Change Numbers
1- Mengüceli Project Stage 1	Social Housing	153						
2-Mengüceli Project Stage 2		368						
3-Mengüceli Project Stage 3		112	32 (30%)	75 (70%)	17,351.27 (23%)	57,177.60 (77%)	32 (30%)	75 (70%)
4-Geçit Project Stage 1	Social Housing	304						
5-Geçit Project Stage 2		1320						
6-İnönü Project		176						
7-Fatih Project	Poor Housing	256						
8-Cumhuriyet Project	Military Housing	118	75 (70%)	32 (30%)	57,177.60 (77%)	17,351.27 (23%)	75 (70%)	32 (30%)
	Urban							
9-Taksim Project Stage 1	Transformation and Development Project	96						
10-Taksim Project Stage 2		464						
	Urban							
11-Çarşı Project Stage 1	Transformation and	368						
12-Çarşı Project Stage 2		512						

	Development Project							
13-Gülabibey Project	Social Housing	144	489 (76%)	153 (24%)	204,446.30 (73%)	75,451.56 (27%)	32 (43%)	42 (57%)
14-Kavaklıyolu Project Stage 1	Social Housing Demand Organization	560	646		544,638.09		397	
15-Kavaklıyolu Project Stage 2		627						
16-Kavaklıyolu Project Stage 3		218						
17-Kavaklıyolu Project Stage 4		138						
18-Ulalar	Social Housing	757	115 (61%)	74 (39%)	224,997.79 (81%)	51,723.43 (19%)	20 (67%)	10 (33%)
19-Çukurkuyu	Social Housing	251	22 (55%)	18 (45%)	20,286.56 (68%)	9,339.78 (32%)	22 (46%)	19 (54%)
20-Çukurkuyu	Agricultural Village	42						
21-Çağlayan	Social Housing	240	22 (59%)	15 (41%)	16,655.61 (20%)	67,260.33 (80%)	0	3
22-Yalnızbağ	Demand Organization	340	47 (76%)	15 (24%)	23,836.72 (83%)	4,957.22 (17%)	51 (75%)	17 (25%)
23-Yoğurtlu.	Demand Organization	586	24 (52%)	22 (48%)	10,982.00 (55%)	8,944.87 (45%)	2 (29%)	5 (71%)
24-Akyazı	Agricultural Village	89	22 (45%)	27 (55%)	5,973.39 (14%)	37,646.20 (86%)	22 (39%)	34 (61%)
25-Yaylabaşı	Agricultural Village	277	11 (50%)	11 (50%)	9,992.01 (54%)	8,639.18 (46%)	12 (52%)	11 (48%)

3.3.2. Analysis for Changes in the Economic Dimension

Four variables were determined, and an attempt was made to understand whether housing investments impact city economic development. For this purpose, the variables are: 'Total building permit change in the central district between 2004 and 2018', 'Change in the number of business licenses in the city center between 2004 and 2018', 'Number of housing sales in the city center between 2013 and 2018' and 'the number of housing sales in the immediate surroundings (500 m and 1000 m) of TOKI projects.'

The economic vitality of the district center is understood with the variable of total building permit change in the central district between 2004 and 2018. The total building permit in the Erzincan Central district between 2004 and 2018 (V4) is examined according to the graph in Figure 8. The period spanning from 2004 to 2010 was marked by significant fluctuations. There is a significant increase in 2010. According to Figure 8, the highest production was in 2014; this situation continued in 2015, but started to decline after 2015 (Erzincan Center Municipality, 2023).

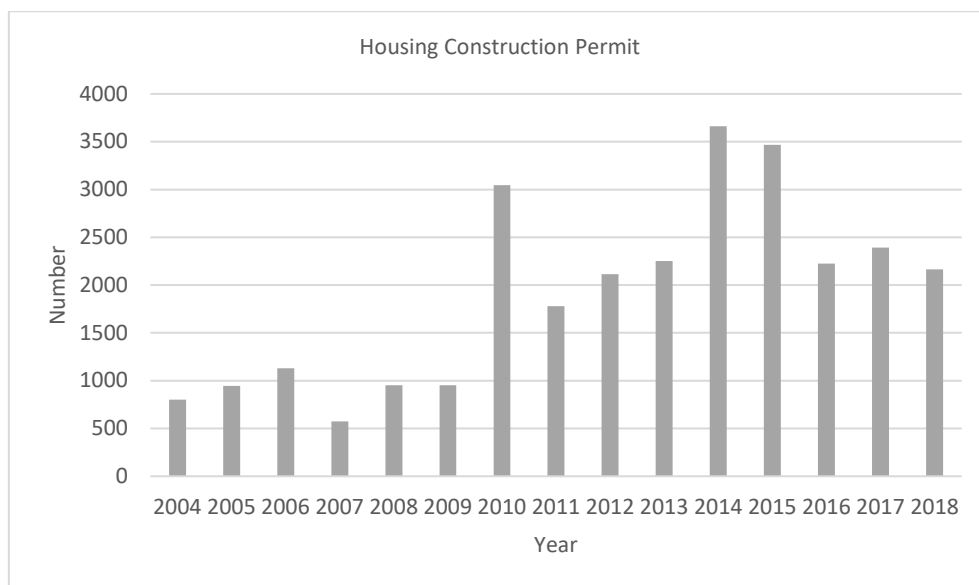


Figure 8 Erzincan province housing construction permit status between 2004 and 2018 (Erzincan Center Municipality, 2023)

On the other hand, when examining the permit and settlement situation of the Central district in 2004, there was no public housing investment that year. In 2004, there was mainly private housing investment, and most new constructions were in the İnönü neighborhood. The Cumhuriyet neighborhood showed a less intense development in that term (Figure 9). TOKI produced a total of 1055 houses between 2008 and 2011. The most production was made by TOKI between 2012 and 2015. That is, the housing production of the construction sector in the central district is not in direct proportion to TOKI.

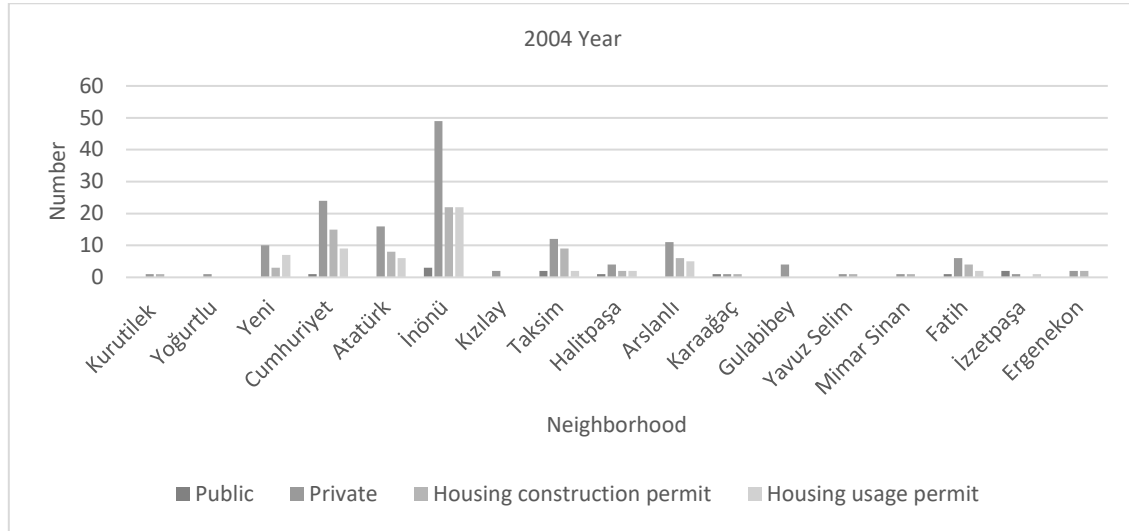


Figure 9 Erzincan central district housing license and settlement status in 2004 (Erzincan Center Municipality, 2023)

On the other hand, in 2018, new construction or building renovation took place mostly in the Cumhuriyet neighborhood, followed by İnönü, Atatürk, and Mimarsinan neighborhoods, respectively (Figure 10).

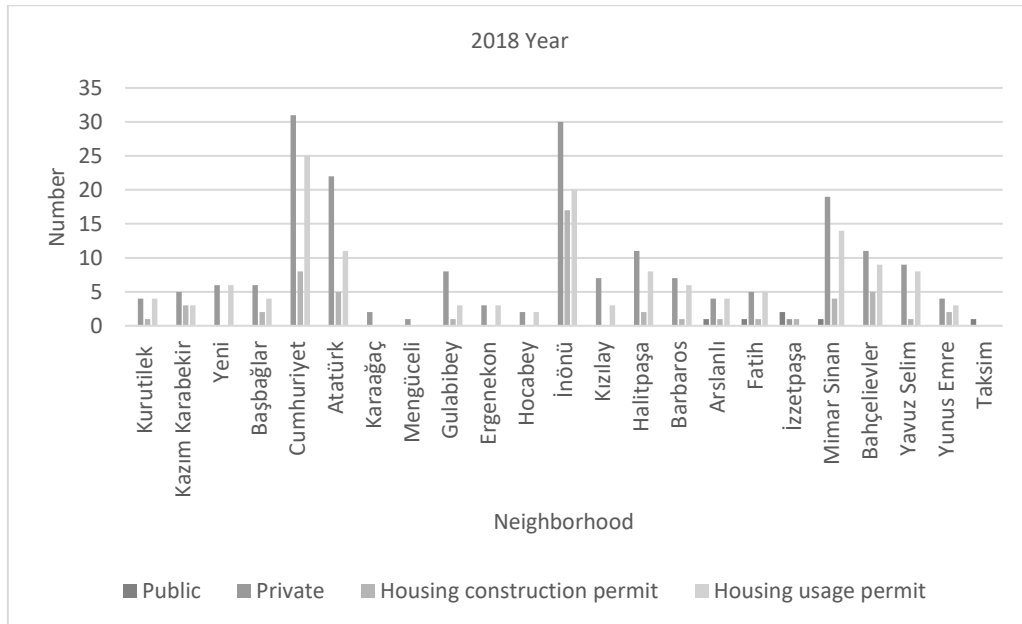


Figure 10 Erzincan central district housing license and settlement status in 2018 (Erzincan Center Municipality, 2023)

The change in the number of business licenses in the city center between 2004 and 2018 (V5) and the existence and vitality of commerce in the city center are examined. There is no significant decrease between 2005 and 2018. However, the year with the highest number of workplaces opened was 2014 (Figure 11). This period saw the highest number of houses produced by TOKI in

the district, in comparison to other years. Therefore, a correlation can be established between the number of business openings and the 4,577 houses produced by TOKI between 2012 and 2015.



Figure 11 Business license status in Erzincan central district (Erzincan Center Municipality, 2023)

The number of housing sales in the city center between 2004 and 2018 (V6) is examined after 2013 due to a lack of data. When these years are examined, sales in the province were almost at the same rate between 2012 and 2015, which were the years when TOKI produced the most, while mortgage sales were at the highest rate in 2013. They decreased at the same rate in 2014 and 2018 (Figure 12).

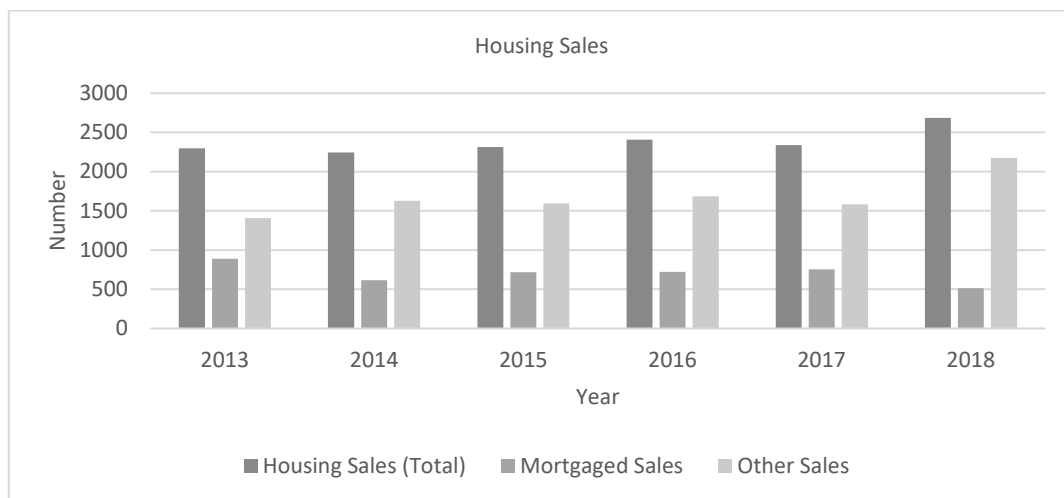


Figure 12 Housing sales situation in Erzincan province 2013-2018 (Turkish Statistical Institute, 2023)

This study attempted to measure the impact of TOKI investments, both economically and spatially, through a total of seven variables (see Table 3) using the descriptive analysis method. According to the findings, while the population of the Central district increased by 5% between 2004 and 2018, it is seen that TOKI investments are not shaped according to the needs of the population. During this period, two major urban transformation and development projects were carried out in the central district, and the city was transformed spatially. In these projects, the principle of on-site transformation, not displacement, has been adopted. Other projects carried out outside the center are demand projects carried out with the weighted demand collection method and agricultural village projects. The most basic effect of spatial change is that the treasury and public lands on the city periphery were opened to development, creating a change in the growth direction of the city. However, these projects did not create a spatial growth effect in their surroundings but changed the character of the place. The main reason for this can be related to the

fact that the rate of population growth and urbanization is not high. On the other hand, TOKI had no effect in the context of the variables examined in economic terms.

To understand the economic impact of TOKI housing investments in the city center of Erzurum between 2004 and 2018, the number of housing sales in the immediate vicinity (500 m and 1000 m) of TOKI projects was analyzed (V7). Sales transactions for a total of 642 properties within the Taksim Project (Projects 9-10 in Table 5) were examined between 2004 and 2018. 23 sales transactions were recorded for 12 properties located within the project area. In the Hocabey neighborhood, 500m from the project, 193 sales transactions were recorded for 477 properties. In the Halitpaşa neighborhood, 1000m. from the project, 99 sales transactions were recorded for 153 properties. This indicates that sales transactions occurred for 642 properties over the 15-year research period. Considering this on an annual basis, the number of sales transactions is 21, which does not reflect significant real estate activity. Projects 11, 12, and 13 in Table 5 were not examined separately due to their proximity to the Taksim Project. The projects located in the Mengüceli and Geçit settlements (projects 1, 2, 3, 4, and 5 in Table 5) were evaluated together due to their proximity. It was determined that seven sales transactions occurred in 32 properties within 500 m of the projects, and 41 sales transactions occurred in 75 properties within 1000 m of the projects. The projects in the Kavakyolu and Ulalar settlements (projects 14, 15, 15, 17, and 18 in Table 5) were analyzed together due to their proximity. Accordingly, it was determined that 587 sales transactions occurred in 646 properties within 500 m of the Kavakyolu projects. For the research period (2004-2018), the average is calculated as 39 transactions per year. This indicates that the region is active in terms of sales transactions. For Ulalar, 83 sales transactions occurred in 115 properties within 500 m, within 1000 m. 72 sales transactions were completed on 74 properties within a certain distance. In Çukurkuyu town, 11 sales transactions were completed on 22 properties within a 500 m distance, and two sales transactions were completed on 18 properties within a 1000 m distance. In Çağlayan settlement (Project No. 21 in Table 5), 2 sales transactions were completed on 22 properties within a 500 m distance, and seven sales transactions were completed on 15 properties within a 1000 m distance. In Yalnızbağ settlement (Project No. 22 in Table 5), 18 sales transactions were completed on 47 properties within a 500 m distance, and two sales transactions were completed on 15 properties within a 1000 m distance. In Yoğurtlu neighborhood (Project No. 23 in Table 5), eight sales transactions were completed on 24 properties within a 500 m distance, and 1000 m. It was determined that there were 10 sales transactions in 22 properties within a 500 m distance in the Akyazı settlement (project number 24 in Table 5), no sales transactions in 22 properties within a 500 m distance, seven sales transactions in 27 properties within a 1000 m distance, six sales transactions in 11 properties within a 500 m distance in the Yaylabaşı town, and six sales transactions in 11 properties within a 1000 m distance. It was concluded that there was no sales transaction activity in these project areas, as this rate was not high for the research period.

Table 5 Housing Sales Numbers in Buffer Zones of TOKI Projects, Period 2004 – 2018

			500 m.	1000 m.	500 m	1000 m.	500 m.	1000 m.
TOKİ Project Group/ Project Name	Project Type	TOKİ Housing Number	Land-Block/Parcel Numbers	Land-Block/Parcel Numbers	Parcel Area m2	Parcel Area m2	Housing Sales Numbers	Housing Sales Numbers
1- Mengüceli Project Stage 1	Social Housing	153			17,35			
2-Mengüceli Project Stage 2		368			1.27	57,177.6		
3-Mengüceli Project Stage 3		112	32 (30%)	75 (70%)	(23%)	0 (77%)	7 (15%)	41 (85%)
4-Geçit Project Stage 1	Social Housing	304						
5-Geçit Project Stage 2		1320						
6-İnönü Project		176						
7-Fatih Project	Poor Housing	256						
8-Cumhuriyet Project	Military Housing	118	75 (70%)	32 (30%)	57,17 7.60 (77%)	17,351.2 7 (23%)	41 (85%)	7 (15%)

9-Taksim Project Stage 1	Urban Transformation and Development Project	96	489 (76%)	153 (24%)	204,4	75,451.5	216 (69%)	99 (31%)
10-Taksim Project Stage 2	Urban Transformation and Development Project	464			46.30 (73%)	6 (27%)		
11-Çarşı Project Stage 1	Urban Transformation and Development Project	368						
12-Çarşı Project Stage 2	Urban Transformation and Development Project	512						
13-Gülabbey Project	Social Housing	144						
14-Kavakolu Project Stage 1	Social Housing	560						
15-Kavakolu Project Stage 2	Social Housing	627			544,6			
16-Kavakolu Project Stage 3	Demand Organization	218	646		38.09		587	
17-Kavakolu Project Stage 4	Organization	138						
18-Ulalar	Social Housing	757	115 (61%)	74 (39%)	224,9	51,723.4	83 (54%)	72 (46%)
					97.79 (81%)	3 (19%)		
19-Çukurkuyu	Social Housing	251	22 (55%)	18 (45%)	20,28	9,339.78	11 (85%)	2 (15%)
					6.56 (68%)	(32%)		
20-Çukurkuyu	Agricultural Village	42						
21-Çağlayan	Social Housing	240	22 (60%)	15 (40%)	16,65	67,260.3	2 (22%)	7 (78%)
					5.61 (20%)	3 (80%)		
22-Yalnızbağ	Demand Organization	340	47 (76%)	15 (24%)	23,83	4,957.22	18 (90%)	2 (10%)
					6.72 (83%)	(17%)		
23-Yoğurtlu.	Demand Organization	586	24 (52%)	22 (48%)	10,98	8,944.87	8 (45%)	10 (55%)
					2.00 (55%)	(45%)		
24-Akyazı	Agricultural Village	89	22 (45%)	27 (55%)	5,973.	37,646.2	0	7
					39 (14%)	0 (86%)		
25-Yaylabaşı	Agricultural Village	277	11 (50%)	11 (50%)	9,992.	8,639.18	6 (50%)	6 (50%)
					01 (54%)	(46%)		

4. Conclusion and Evaluation

This study aimed to understand the impact of TOKI housing investments in the central region of Erzincan province between 2004 and 2018, focusing on spatial and economic dimensions. It sought to answer questions such as: What is the impact of public housing policies on the shaping processes of urban areas in Türkiye, and how has TOKI, which has extensive powers as a result of legal regulations after 2002, impacted the economic and spatial development of Erzincan Central district, a non-metropolitan province where TOKI has made the most investments? The scope of this study was to interpret the transformation of public housing policy in Türkiye, particularly since 2002, through the lens of a medium-sized city. To understand the economic and spatial impact of this transformation in the context of public investments, the study examined the central region of a non-metropolitan province where the most housing production occurred between 2004 and 2018. In Türkiye, the legislation introduced after 2002 regarding the shaping of urban areas through housing policies boosted the quantity of housing produced, and it was decided that this would be carried out through TOKI. The analyses in this study were interpreted based on the data obtained. The significant limitation of this study is the lack of locally produced, city-level data. The study was particularly limited because there was not enough data collected at the local level during the research period between 2004 and 2018. This data was produced by institutions and the national statistics agency. The chosen analysis in the study focuses on the micro level and the study's reliance on descriptive comparisons. Therefore, the study does not provide a comprehensive evaluation of the extensive impact of TOKI investments.

This study revealed the economic and spatial impacts of TOKI investments in the central Erzincan region at the urban scale. Accordingly, the effects of TOKI public housing investments on the economic and spatial development of the central Erzincan region are both positive and negative.

The findings show that while TOKI investments create a spatial impact, they do not play a decisive role economically. Similarly, Yılmaz Şimşek's (2021) study shows that TOKI's housing production activities in Van province did not have a positive impact on the spatial development of the city; on the contrary, it created a new development path that forced authorities to act in terms of service provision and created a necessary development axis for cities (Gürbüz et al., 2023).

The research period revealed that the analysis of property type changes and housing sales transactions recorded in the land registry around TOKI projects did not yield meaningful results. In fact, while TOKI has had a positive impact on the spatial transformation of the city through two transformation projects carried out in cooperation with local administrations, aimed at transforming dilapidated areas in the disaster-prone city center into planned settlements, it has had a negative impact in its projects in neighborhoods outside the city center. In particular, it has led to negative consequences in the west-northwest development of the city in terms of the city's architectural character and the increasing costs of infrastructure services such as transportation, electricity, and water. This situation shows that its almost unlimited usage rights, planning and development rights, and the power to implement projects on almost any plot of land it desires have led to criticisms such as disrupting urban integrity, invalidating local planning practices, changing the direction of the city's growth and development, and creating increased infrastructure and transportation costs while exercising these powers (Tantan & Türk, 2024). Du et al. (2017) revealed an inequality in housing demand between small and large cities in China and stated that small cities have their own housing demand models different from large cities in China. Therefore, it is argued that housing policy cannot be effective unless local conditions are taken into account. The Erzincan example reveals that public housing policy shaped urban space between 2004 and 2018, with diverse housing projects implemented in the central district and villages regardless of actual needs. It was found that TOKİ (Housing Development Administration of Türkiye) projects caused spatial changes depending on the project type. In the central neighborhoods of Taksim and Çarşı, the urban fabric, consisting of dilapidated single-storey or two-storey buildings at risk of earthquakes, shifted towards four-storey structures and a mass housing concept. Projects involving agricultural villages did not create surrounding urban development or spatial growth. The projects in Kavakyolu, Ulalar, and Yoğurtlu created self-contained living spaces and resulted in a distinct spatial texture from their surroundings. While the artificial urban area of the central district decreased between 2000 and 2006, the urban area grew between 2006 and 2012. TOKİ construction during these years was directly proportional to this growth.

This demonstrates a linear relationship between TOKI projects and the growth of the urban area. Furthermore, based on field interviews, it was concluded that TOKI is desirable in the city as an earthquake, disaster, or social housing project, but does not play a decisive economic role. This article aims to understand the impact of public housing investments on small city units and to contribute to the development of different methods and analyses for future studies on public investments. Further studies that use statistical data at the local level are needed to better grasp the economic and spatial impacts of housing policies on cities.

CRedit Authorship Contribution Statement

Banu Tantan: Writing – review & editing, Writing – original draft, Methodology, Investigation, Analysis, Data curation, Conceptualization, Data visualization. Şevkiye Şence Türk: Writing – review & editing, Writing – original draft, Methodology, Investigation, Analysis, Data curation, Conceptualization, Data visualization.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data Availability

Data will be made available on request.

Ethics Committee Approval

Ethics committee permission is not required.

Note

This study was produced from the "Doctoral Thesis" of the first author of Istanbul Technical University Graduate Education Institute. The title of the thesis is "The Impact of Public Housing Investments on the Economic and Spatial: The Case of Turkey (TOKI)". The first author has been awarded the degree of doctor of philosophy the graduate school division of urban and regional planning urban and regional planning graduate program at 2024 year.

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Resume

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