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From rural landscapes to urbanized shores: Rurbanization and second-home dynamics in the Lake Van region

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Abstract

In recent years, in rural areas, rurban processes where rural and urban characteristics are intertwined and have attracted attention. In these areas, especially second homes, new second infrastructure investments and population movements cause socio-spatial transformations. These transformations result in rural areas gaining a new identity. This study investigates how second housing shapes the rurban process in Van/Mollakasım and its surroundings by focusing on the transformation of land use and changing settlement morphology. Within the scope of the study, changes in land use were analyzed using satellite images for the years 2000-2012-2024. In addition, a series of spatial analysis techniques such as Kernel density maps and Average Nearest Neighbor test were used. According to the analysis findings, it is seen that second housing in Mollakasım and its surroundings has increased over time and spatial clusters have formed especially in areas close to the coast. In addition, it is observed that second homes spread over agricultural areas and natural areas and this pressure exhibits a growth pattern that spreads to the inland areas. Within the framework of the research outputs, it is necessary to spatially define coastal and agricultural areas that are open to second home development, to determine the regions under construction pressure as priority monitoring areas and to develop planning strategies that will direct construction in these regions. In addition, it is important to implement spatial policy tools at the local level that limit the use of agricultural areas for non-production purposes and protect coastal areas in terms of public access.

Keywords: agricultural areas, land use changes, rurban, second home

1. Introduction

In recent years, rural areas have transformed from areas defined by agricultural production dynamics into spaces where different functions are intertwined. This trend is increasing especially in coastal areas with natural environments and makes it difficult to explain spatial boundaries with the classical urban-rural distinction. In this context, as rural areas acquire various urban functions, these areas have been reshaped and have caused the formation of rurban areas. The concept of rurban is generally defined as hybrid areas where rural and urban features coexist (Kolhe & Dhote, 2016; Malek & Baharudin, 2019; Delgado-Viñas & Gómez-Moreno, 2022; Keskin, 2024, pp. 9). Many dynamics have played a role in the emergence of these areas that combine urban and rural features. Especially the increasing demand for second homes is an important indicator in the transformation of rural areas. When evaluated in the context of Türkiye, rurban developments are observed in rural areas with scenic features such as coasts and lake surroundings; Second homes, fragmented construction and infrastructure pressure are becoming prominent elements of this process (Ceylan & Somuncu, 2020). Such transformations are mostly evaluated within the framework of urban sprawl in the literature, and the spatial patterns and dynamics of rurban areas are not sufficiently examined. In this context, the study conducted investigates the second housing trends in the rural areas around the Van Mollakasım coastline and whether these developments create a rurban pattern. While studies on second-home development in Türkiye largely focus on social, economic,

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or demographic aspects, there are very few studies that holistically examine the spatial formation of these processes, the dynamics of morphological change, and land-use transformation. In particular, the paucity of studies analyzing long-term spatial changes in coastal settlements using remote sensing data points to a significant literature gap in this area. This gap highlights the need for spatial and analytical approaches to understand how rural areas undergo morphological transformation under the pressure of second-home development. For this purpose, Mollakasım, located on the shores of Lake Van, was selected as a typical rural transition area that is losing its rural identity and acquiring urban characteristics under increasing construction pressure. Mollakasım location was determined as the study area because it is an area where the spatial pressure on rural areas can be concretely observed and the spatial spread of second homes can be clearly observed. In line with the stated purpose, the methodological infrastructure of the study was designed to allow the analysis of the spatial dimensions of the transformation of second homes. In the study, a temporal comparison of the changes in the space was made using satellite images from the years 2000, 2012 and 2024. In addition, the direction, density and morphology of the construction trends were analyzed. The Kernel Density Analysis (KDA) method was chosen because it allows for the numerical mapping of spatial concentration trends of buildings. This method is critical for revealing whether second-home projects along the coastline are shaped by random or directed dynamics. Thus, the urbanization process can be assessed not only conceptually but also as a measurable spatial pattern. After the introduction, the study explains the conceptual framework, includes the analyses and dataset in the method section, evaluates the spatial analysis results within the framework of the concept of rurban in the findings section, and finally discusses the findings based on the literature.

2. Literature Review

2.1. Second Home

Second homes are usually located in rural and coastal areas away from the city and are primarily used for seasonal and recreational purposes rather than as primary residences (Hall & Müller, 2004). The concept is often used in the literature with different terms such as “second home”, “recreational dwelling”, “seasonal residence”, “leisure home” (Figure 1). Paris (2014) defines second homes not only as recreational areas related to tourism but also as mixed-quality recreational areas that include investment and consumption aspects. Another approach is defined by Hiltunen and Rehunen (2014) as a mobile lifestyle in second home tourism. Hall (2015) emphasizes that second homes emerged in Western Europe and North America in the second half of the 20th century in parallel with the increasing income and leisure time of the urban middle class, and evaluates the concept as ‘multi-space lives’. In particular, the development of transportation opportunities and the increase in private car ownership have facilitated access to second homes located in rural areas. The studies conducted investigate different dynamics such as the frequency of use of second homes, their legal framework, the residence of the owner, investment motivations, and the socio-spatial transformations they create.

Second homes are generally concentrated in coastal, lakeside and natural beauties (Kılıçaslan, 2006; Hall, 2015; Okuyucu & Somuncu, 2016; Ceylan & Somuncu, 2020; Usun, 2023). These preferences vary depending on criteria such as being in touch with nature, accessibility and being an investment vehicle. However, the increasing number of second homes over time has brought up complex questions regarding changes in land use, housing affordability and rural transformations. (Paris, 2014; Skak & Bloze, 2016; Ceylan & Somuncu, 2020).

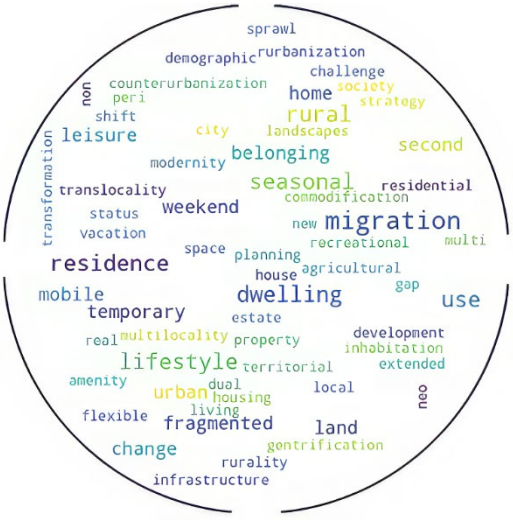


Figure 1 Concept cloud related to second home

In the current context where the boundaries between rural and urban areas are being redefined, spatial practices and ways of life are also undergoing significant transformation. Tacoli (1998) emphasizes that interactions between rural and urban spaces are not merely spatial but also economic, social, and cultural, and that the traditional dichotomy between the two is increasingly blurred. Especially in developing countries, livelihood strategies, migration patterns, and settlement preferences are forging stronger links between urban and rural spheres. In this respect, the development of second homes around Lake Van similarly reflects the transfer of urban lifestyles into rural settings, while simultaneously transforming rural productive landscapes into consumption-oriented environments. This transformation is not merely a matter of physical expansion; it represents a multifaceted socio-spatial restructuring process that clearly illustrates the local expressions of rurbanization (Tacoli, 1998).

The construction that started with the use of summer areas in rural and natural areas has spread over time and turned into spatial pressure. In particular, the increase in second home tourism in fertile agricultural areas has had a negative impact on food production, water resources and agricultural culture (Ceylan & Somuncu, 2020). In addition, this pressure on coastal areas produces inequality in terms of spatial justice and makes access to coastal areas possible only for a certain group.

With the discovery of coastal tourism in Türkiye, a large part of coastal settlements have been exposed to construction pressure and a new form of housing, second homes, has spread (Kılıçaslan, 2006; Okuyucu & Somuncu, 2016; Usun, 2023). Although second homes in Türkiye first appeared on the Aegean and Mediterranean coasts in the 1950s, they have developed intensively on the coasts of Istanbul. (Gökdeniz, 2014; Okuyucu & Somuncu, 2016). During the process, second homes are also observed in the Eastern Black Sea plateaus and around Lake Van in the Eastern Anatolia Region, which have various natural features of the country.

The lack of a comprehensive legal framework for second homes in Türkiye leads to flexibility in practices. For this reason, flexibility in the implementation of legislation such as natural protected areas, coastal law and agricultural land protection laws facilitates this housing (Kılıçaslan, 2006; Usun, 2023). In this context, the Coastal Law No. 3621, which supports the protection of coastal areas and a use that prioritizes public interest in Türkiye, came into force in 1990. This law aims to restrict construction and property uses that are contrary to public interest in coastal areas. However, these restrictions are not effective enough in terms of tourism practices and second homes. Therefore, the phenomenon of second homes in Türkiye has become a practice that contradicts both spatial and environmental sustainability goals due to existing legal gaps, lack of control and the spread of unplanned practices (Kılıçaslan, 2006; Usun, 2023). This emerging

phenomenon leads to problems such as both the transformation of public spaces into private property areas and the disruption of spatial justice in terms of planning. Similar governance and planning difficulties are observed in Southern Europe. In this context, Barke (1991) examines the spatial spread of second homes in Spain during the 1970s and clearly demonstrates how, in the case of Málaga Province (Costa del Sol), inadequate planning and governance mechanisms led to uncontrolled second home development. A similar study conducted in Portugal focuses on the economic and governance impacts of second home projects in the Oeste Region, located in the northwest of the Lisbon Metropolitan Area. Fieldwork by de Oliveira et al. (2015) shows that second homes in this region increase local incomes, but institutional deficiencies in planning and service delivery exacerbate spatial imbalances.

2.2. Rurban Areas

In recent years, the boundaries between rural and urban areas have become increasingly blurred, and rural areas have gained new functions beyond agricultural, traditional production and lifestyles. This transformation has led to the emergence of new settlement forms where rural and urban features coexist. This emerging settlement form is called rurban. The concept of rural-urban (rurban) was first used by Galphin in 1915 (Azhari, 2021). Rurban areas neither contain completely urban features nor overlap with the traditional rural definition (Shikalgar, 2013; Kolhe & Dhote, 2016; Delgado-Viñas & Gómez-Moreno, 2022). Due to these features, they require special attention in the field of planning.

The background of rurban developments is the urban dwellers' search for rural life, being in touch with nature, acquiring a second home, and increasing transportation opportunities and accessibility. These dynamics bring about the pressure of construction in rural areas, while causing agricultural production to decrease and rural areas to transform into a new morphology (Kolhe & Dhote, 2016). Moreover, many coastal settlements are shaped by more recreational, tourism-oriented demands due to their natural beauties. This transformation experienced in rural areas includes the transformation of socio-economic dynamics beyond physical change (Kolhe & Dhote, 2016; Keskin, 2024). Especially in coastal areas, the increase in second homes, initially built for seasonal use, is becoming a phenomenon affecting the transformation of rural areas (Kılıçaslan, 2006; Okuyucu & Somuncu, 2016; Usun, 2023). This phenomenon causes the original identity of coastal rural areas to erode over time and rural life practices to transform with urban demands. This transformation experienced in coastal areas can be shown as a typical example of rurban developments. In this context, secondary housing in coastal areas is not only the transformation of public space into private property, but also the commodification of rural areas, pressure on agricultural areas, redistribution of natural resources, and socio-spatial changes, and it becomes an important dynamic of the rurbanization process. Secondary housing and settlement practices with demands directed from the city to the countryside move away from randomness over time and form a structural pattern. In addition, rurban developments express a dynamic transformation in which space is reproduced in a multi-layered manner. Rurban patterns emerging in rural areas primarily bring about transformations in property structures, land use, and spatial value production. With second home investments, agricultural areas are turning into residential areas, rural landscapes are gradually fragmenting, and a conflict arises between the local people's usage priorities and external demands (Ceylan & Somuncu, 2020; Kılıçaslan, 2006).

2.3. Planning Policies and Governance Dynamics in Rural Transformation

As rural areas are transformed under increasing pressures, it has become necessary to take rural-urban processes into account in planning practice. (Azhari, 2021; Keskin, 2024). Recent debates on the transformation of rural spaces highlight the increasing relevance of peri-urban dynamics in shaping hybrid settlement forms. As emphasized in the PLUREL project synthesis (Piorr et al., 2011), peri-urban areas have emerged as distinct zones where urban and rural functions intermingle, producing fragmented landscapes and complex governance challenges. These zones are not merely transitional fringes but multifunctional territories under intense development

pressure due to economic restructuring, lifestyle changes, and land speculation. The study identifies that peri-urban expansion in Europe is occurring at a rate 3–4 times faster than core urban areas, often without adequate spatial planning and regulatory oversight. This has led to increasing land consumption, habitat fragmentation, and erosion of agricultural land, especially in regions with weak planning regimes. In this context, rural areas like those around Lake Van are also experiencing similar dynamics, where second-home developments function as vectors of rurbanization, contributing to the restructuring of rural morphologies along urban lines. Addressing such transformations requires integrated planning approaches at the rural–urban interface that go beyond the traditional urban-rural dichotomy and instead prioritize territorial cohesion and sustainable land governance (Piorr et al., 2011).These transition areas taking shape between rural and urban areas exhibit a complex character not only spatially but also in terms of demographic, economic and social structures. For this reason, rurbanization should not be considered as a mere construction problem, but as a multi-dimensional planning issue. The fact that planning approaches are still structured with an urban-centered and hierarchical logic causes rurban areas to not be fully managed either by rural development policies or urban planning tools. However, in such transition areas, flexible, local context-sensitive planning strategies that take into account dynamics such as seasonality and multi-space living, where different forms of use can coexist, should be developed. Otherwise, these new spatial patterns formed in rural areas spread uncontrollably and lead to irreversible environmental, social and economic problems. In this context, the inclusion of rurban processes in the planning framework is not only in terms of protecting the countryside; it is also critical to ensuring spatial justice, sustainability and sensitivity to local needs.

In the context of Türkiye, one of the fundamental challenges in managing rurban transformations is the inadequacy and fragmentation of spatial planning tools. Although several legislative frameworks exist—such as the Zoning Law (No. 3194), the Coastal Law (No. 3621), and laws aimed at the protection of agricultural lands—these are typically implemented in a disconnected and uncoordinated manner. This issue becomes particularly evident in rural and semi-rural areas. Furthermore, with the enactment of the Metropolitan Municipality Law (No. 6360), rural villages were reclassified as urban “neighborhoods,” which brought them under the jurisdiction of urban planning without ensuring adequate planning attention, service provision, or control mechanisms. As a result, areas like Mollakasım have experienced a proliferation of second-home developments that are often parcel-based, informal, and lacking in overall planning coherence. Thus, the core issue in the Turkish context is not merely the absence of appropriate technical tools but also the lack of a comprehensive rural planning paradigm that is capable of addressing hybrid geographies like rurban zones, and that responds to the multifunctional nature of rural territories with flexibility and contextual sensitivity.

2.4. The Conceptual Position of Rurbanization

In the broader spectrum of rural-urban transformation theories, the concept of rurbanization intersects with but remains distinct from related terms such as peri-urbanization, exurbanization, and counter-urbanization. Peri-urbanization typically refers to transitional zones at the edge of cities where rural and urban functions coexist, often characterized by fragmented land use and governance complexity (Piorr et al., 2011). Exurbanization, on the other hand, describes the process of high-income urban dwellers relocating to more distant rural areas while maintaining urban economic ties, often driven by lifestyle preferences and enabled by mobility (Nelson & Sanchez, 1999). Counter-urbanization involves a more demographic-driven shift, where population decline in urban areas is accompanied by growth in rural or smaller towns, often interpreted as a reaction against urban congestion and cost of living (Champion, 1989). Unlike these models, rurbanization places emphasis on the coexistence and hybridization of rural and urban elements within the same territorial and morphological context, resulting in a spatial form that defies traditional dichotomies. In this sense, rurban areas are not merely extensions of urban sprawl nor purely outcomes of population redistribution; they represent a distinct socio-spatial process of hybridization and

reinterpretation of rural space under urban logics. On the other hand, the concept of "urban oasis" expresses the effort to reclaim space and re-establish livability in spaces lost and wasted during the process of modernization and homogenization (Shirazi & Falahat, 2015). Similar to the rural phenomenon, this concept emphasizes the ability of areas where rural and unique characteristics intertwine to create a unique spatiality.

The dynamics observed in Mollakasım also resonate with what Nelson and Sanchez (1999) describe as exurbanization—where urban residents relocate to peripheral rural zones, maintaining urban economic ties while seeking lifestyle advantages. Although the case of Lake Van is not a textbook example of exurban migration, the seasonal and investment-driven nature of second homes indicates a parallel logic of spatial consumption.

Considering the conceptual discussions on rurban transformation and the planning challenges specific to the Turkish context, the following section presents the selected case study area in detail to observe how these processes materialize spatially. The conceptual differences discussed here demonstrate that rural-urbanization is not merely a temporary process but a distinctive socio-spatial formation. The following section examines how this transformation occurred around Lake Van, using the example of Mollakasım.

3. Study Area

This paper examines the coastal strip of Mollakasım Neighborhood in Tuşba district of Van province (Figure 2). Mollakasım is a neighborhood in the Tuşba district of Van province, located 30 km away from the Van city center. Mollakasım was updated as a neighborhood when Van province gained the status of a Metropolitan Municipality with the law numbered 6360 in 2012. With the Metropolitan Municipality Law, these villages, which were rural in nature, became neighborhoods affiliated to the central districts. Mollakasım Neighborhood is a settlement area that draws attention with its natural areas and lake view. Although the area falls within the jurisdiction of metropolitan planning, no comprehensive zoning plan or rural development strategy has been implemented at the local scale. In this context, due to its features, the increase in second home construction areas in recent years has created spatial transformations in these areas with high rural quality. In addition to physical transformations, the area has recently experienced changes in land ownership patterns and seasonal population flows, which further intensify development pressures.

Mollakasım and its surroundings were generally a rural settlement where agricultural production was carried out in the past, but after the 2000s, it entered a rurban process with increasing construction. In this context, the study area is transforming into a transition area that both continues its rural characteristics and has morphological urbanization tendencies. The region under analysis is a qualified sample worth examining, especially in terms of investigating the pressure of construction on the coastline, second housing and structural transformation of natural areas.

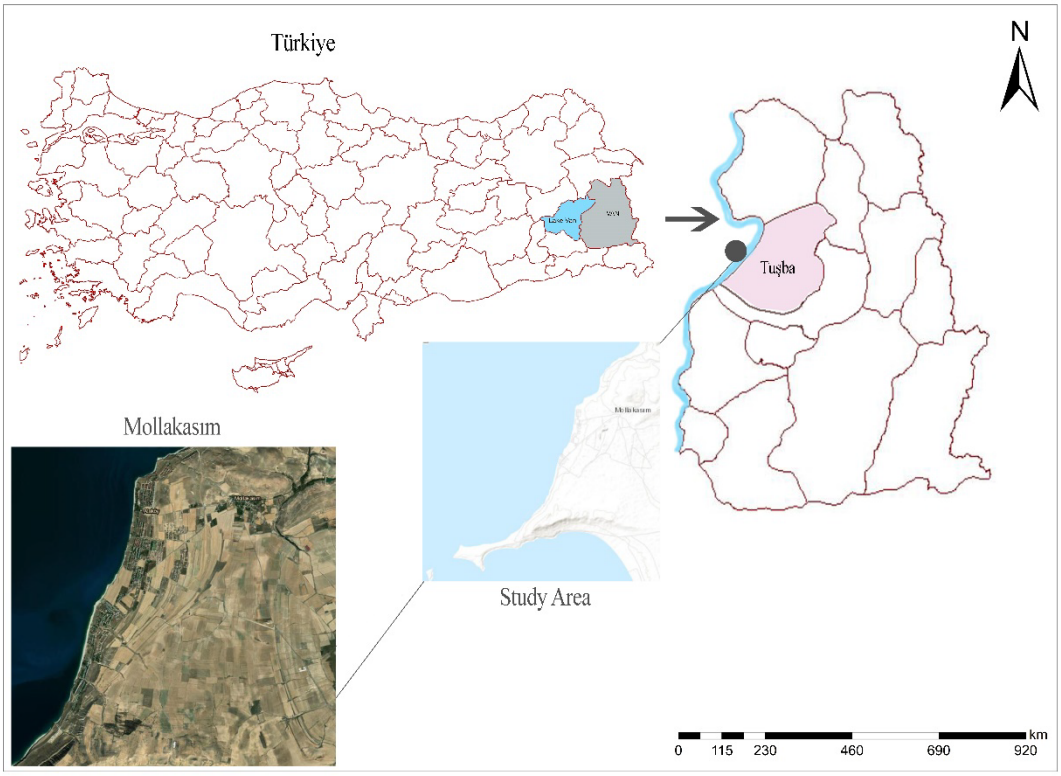


Figure 2 Study area / Mollakasım Van

4. Data and Method

This section provides detailed information on the method flow and data sets used in the study. In the first stage of the method, spatial changes in construction were analyzed using satellite images from Google Earth Pro for the years 2000, 2012 and 2024. In addition, satellite images from 2012 and 2024 were examined, buildings were manually counted and the percentage of change over the years was calculated. Satellite images from 2000 were examined, and due to the absence of any construction along the coastline, this year was used as the starting point for the analysis. Building numbers were evaluated using a zero reference point at this stage. Kernel density analysis was performed to strengthen this analysis method. This method was applied to reveal the spatial densities of building densities. The analysis based on point data allows understanding how construction trends change over the years. In the second stage of the method, Average Nearest Neighbor (ANN) analysis was performed to investigate whether the construction trend was random or had a specific spatial pattern. In the final stage of the method, CORINE land use data for the years 2000 and 2018 were analyzed and the impact of second home development on agricultural areas was evaluated by making spatial comparisons. The scope of the datasets used in this study presents some limitations. Because CORINE land use data has not been updated since 2018, assessments conducted after this date were supplemented by manual building counts from satellite imagery. In this process, images from different years were compared and verified using specific control points to improve the spatial accuracy of buildings. However, this visual interpretation-based method cannot completely eliminate human error and data sensitivity. Therefore, the findings for the post-2018 period focus on identifying spatial trends and distribution patterns rather than quantitative accuracy. Data from different years were transferred to ArcGIS software and processed with comparative spatial analysis methods. In this context, both spatial and numerical transformations were presented using tools such as raster calculators and reclassification.

5. Finding

This section describes the main empirical findings, paying special attention to the spatial features and transformation patterns identified in different land use categories.

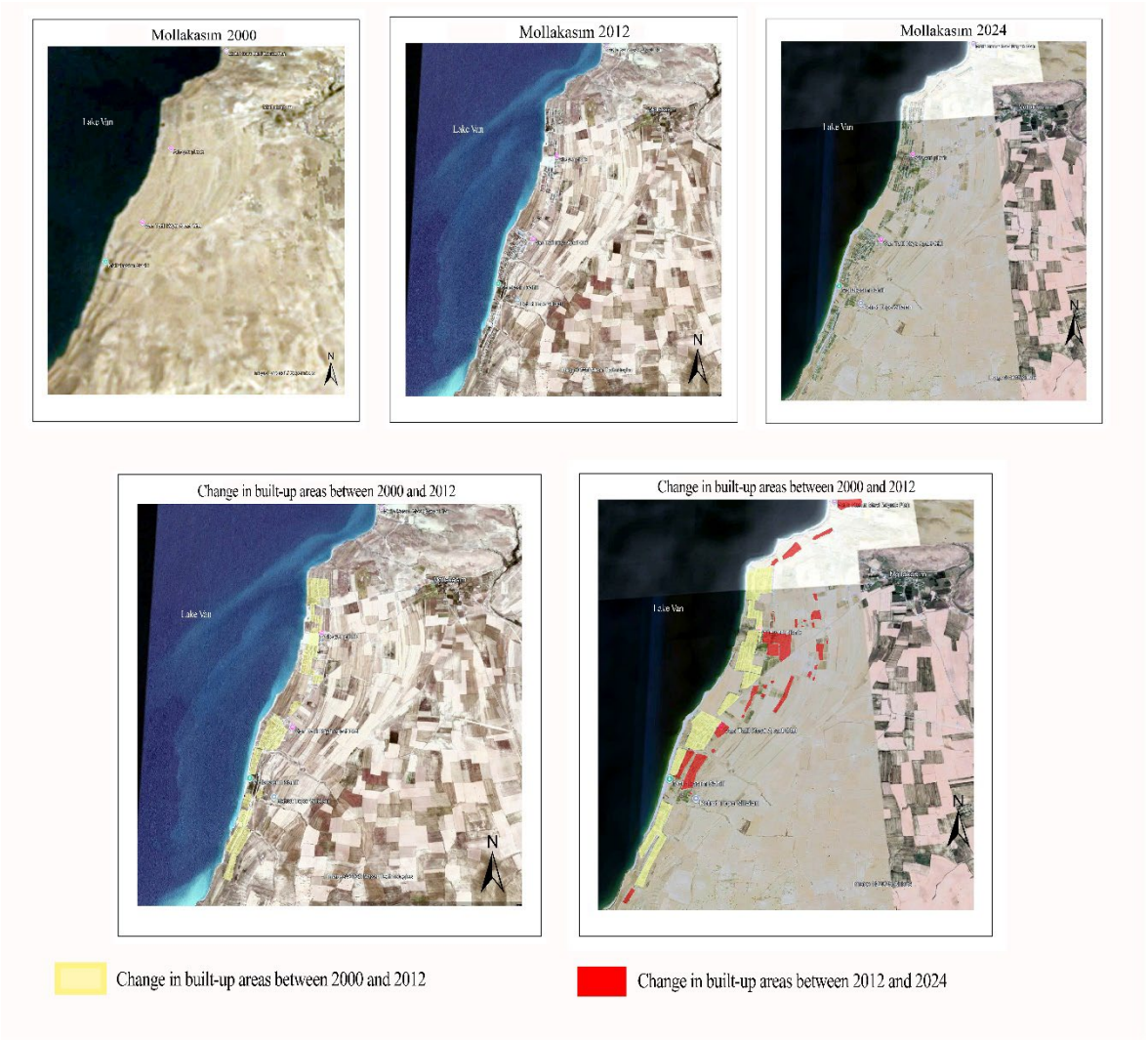


Figure 3 The changes in the construction of the Mollakasım district coastline between 2000 and 2024 (Analyzed with satellite images obtained from google earth pro)

Table 1 Number of Buildings Identified on the Coastline of Mollakasım Neighborhood Between 2000-2024

Year	Number of buildings	Increase %
2000	0	-
2012	549	-
2024	1149	%109

When the temporal development of construction trends is examined, traces of a typical rurbanization process are clearly seen in Mollakasım Neighborhood (see Figure 3). In this coastal area, which was characterized by agricultural production in the 2000s, clusters of construction suitable for second home use emerged in the period after 2012; and by 2024, it was observed that these constructions had spread from the coast to the inland areas (Table 1). This form of development indicates a rurban settlement pattern in which the rural texture is transformed by urban forms.

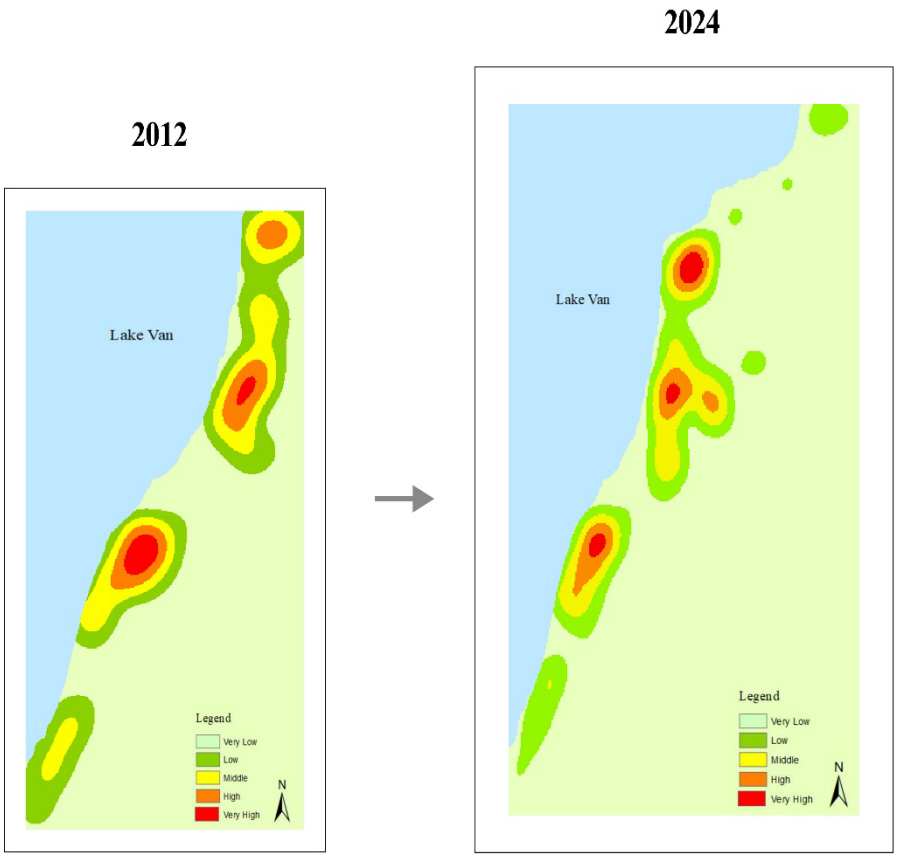
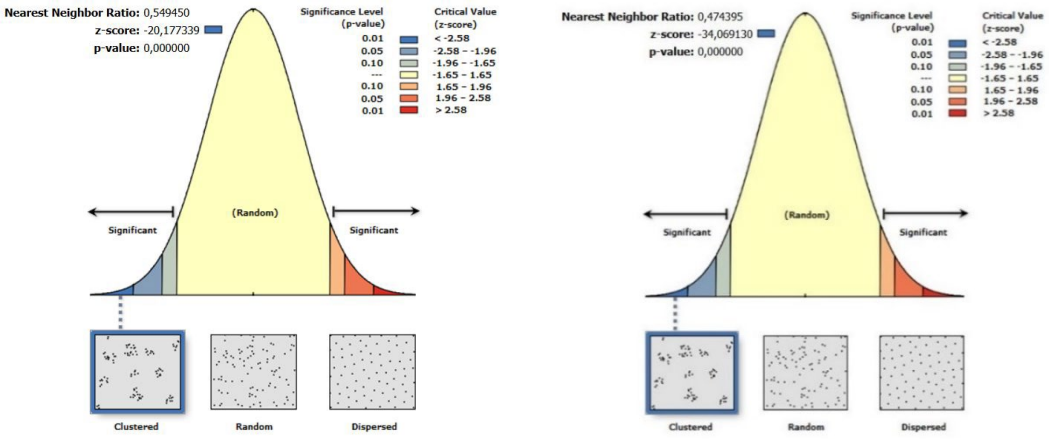


Figure 4 Second housing cluster density (Kernel density analysis): 2012-2024 comparison (Produced from google earth pro KML building points)

Density analysis results show that while construction was observed only in certain areas with limited to moderate density in 2012, this pattern appears to have changed significantly by 2024 (see Figure 4). Not only has density increased, but the area covered by construction has also expanded significantly. This expansion, particularly observed in coastal areas, indicates that construction pressure is spreading more strongly, both horizontally and spatially, clustering at specific focal points. In other words, construction has not only spread into new areas, but also central pressure areas have formed as density increases around existing construction.



(a) 2012 (b) 2024

Figure 5 Normal distribution graphs of the average nearest neighbor analysis for the years 2012 and 2024

Table 2 ANN Analysis Results on Secondary Housing Development in the Coastal Strip of Mollakasım Neighborhood

	2012	2024
Number of Input Points	549	1149
Actual Average Distance	0,0002 Meters	0,0002 Meters
Expected (Random) Distance	0,0004 Meters	0,0004 Meters
Z-score	-20,177	-34,069
p-Value	0.000000	0.000000
Distribution Comment	Clustered	Clustered

The Average Nearest Neighbor (ANN) analysis, which was conducted to analyze the spatial pattern of construction, revealed that secondary residences do not show a random distribution in rural areas (Figure 5). As a result of the measurement made on point data, a significant difference was detected when the observed average distance was compared to the expected value. The obtained Z-score (-34.069) was found to be negative and the p-value (0.00000) was found to be statistically significant, as shown in Table 2. The resulting Z score (-34.069) was negative, and the p-value (0.00000) was statistically significant. The number of building points increased from 549 in 2012 to 1,149 in 2024; however, the actual average distance remained the same (0.0002 m) and was lower than the expected distance (0.0004 m). This suggests that the average distance between building points was shorter than the random distribution, and therefore, buildings were placed closer together. These findings indicate that secondary residences were concentrated in certain areas and exhibited a spatially clustered building pattern. Furthermore, the higher absolute value of the Z-score in 2024 compared to 2012 (-34.069) indicates that clustering has strengthened over time. In other words, construction both increased in number and tended to be spatially concentrated around certain centers of attraction. These findings indicate that secondary residences were concentrated in certain areas and exhibited a spatially clustered building pattern.

Figure 6 Satellite images of the second housing cluster on the coastline of Mollakasım neighbor (2024)

In the field visual, different villa complexes positioned parallel to the coastline are placed side by side with similar plan schemes. These second housing developments, especially concentrated on the Mollakasım coastline, exhibit a striking pattern not only in terms of physical spread but also in terms of architectural similarity, plot order and morphological character. As seen in Figure 6. The

settlement units in question have become defined by being organized in certain spatial clusters, homogeneous building typologies, similar plot sizes in terms of scale and repetitive mass organizations.

The CORINE-based land use distribution for 2000 is shown in Figure 7, while the distribution for 2018 is shown in Figure 8.

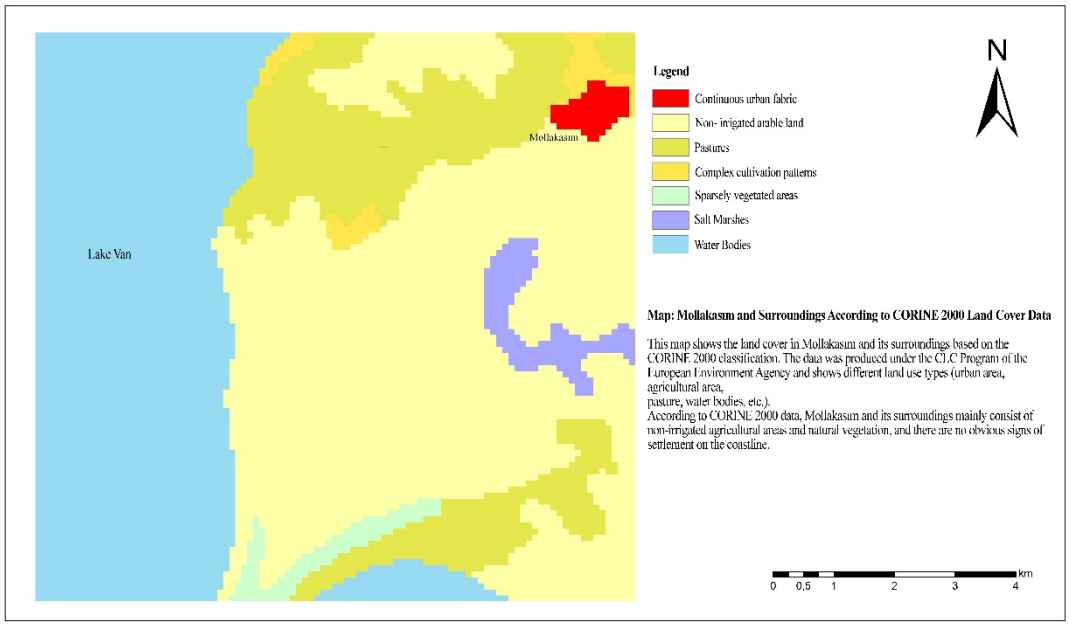


Figure 7 CORINE land use in 2000

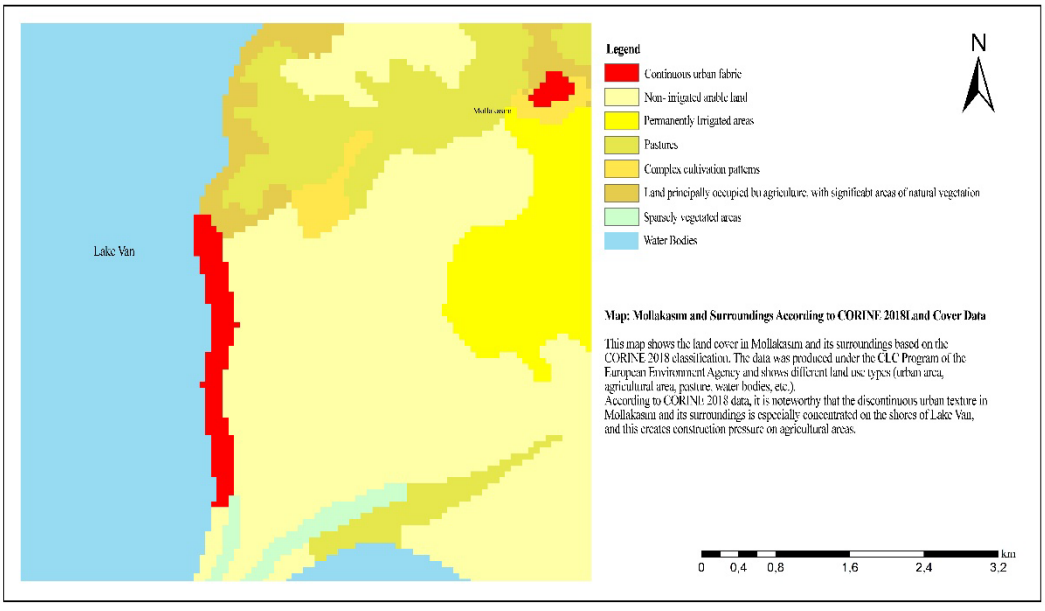


Figure 8 CORINE land use in 2018

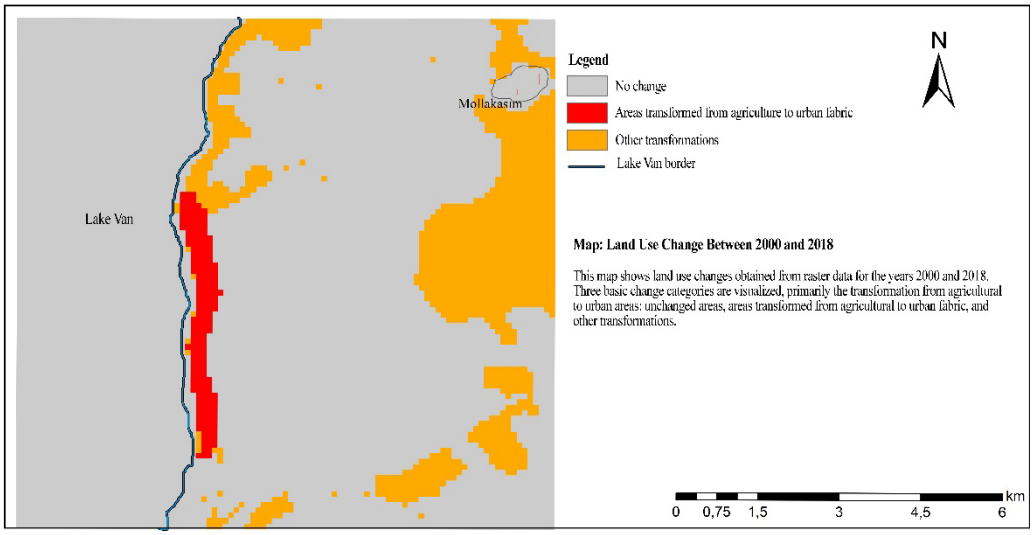


Figure 9 CORINE land use change 2000-2018

(Although the year 2024 was taken as a reference in the analysis, the most up-to-date Corine map (2018) was used to evaluate land use due to the lack of data for this year.)

According to the land use change analysis between 2000 and 2018 (Figure 9), approximately 11.8 hectares of non-irrigated arable land in the study area was directly converted to urban uses. This transformation is not only a physical land change; it is also a concrete indicator of the spatial pressure that rural areas are exposed to. The transformation of non-irrigated lands in particular reveals that lands considered to have lower agricultural production value are more easily opened to construction and that planning policies do not prioritize rural sustainability. This change trend shows that settlement pressure in rural areas is becoming more systematic and that urban demands are strengthening the transformative effect of rural areas. Although the magnitude of the transformation seems limited in absolute terms, such changes can be evaluated as the starting point of expansionist construction trends that threaten the unique landscape, production methods and ecological integrity of the countryside. Moreover, this transformation indicates not only a spatial shift; it also indicates that the rural area has begun to disintegrate in terms of identity and functionality. Therefore, such land transformations are not merely technical data in the planning process; It should also be considered critically important in terms of protecting rural areas, the future of agriculture and ensuring spatial justice.

Although the Van Lake area was registered as a “Sustainable Protection and Controlled Use Area” in 2022, the extent to which this status is reflected in the Mollakasım Neighborhood and the coastline is quite controversial. The construction trends observed on the coastline largely contradict the said protection decisions; the density of buildings, especially in parcels close to the coast, is significantly increasing. These structures are mostly built for second homes and are largely based on unplanned, individual initiatives developed solely on a parcel basis. Another particularly striking situation is the gradual decline in public use in coastal areas and the de facto transformation of these areas into private property. Despite the public interest principles stated in the Coastal Law and the regulations that the coastline should be open to everyone, access to the coasts is restricted in many areas with wire fences, private entrance gates and personal use areas; the natural coastline is largely under pressure from construction. This situation has negative effects not only on the physical environment but also on social equality and the right to access space. In this respect, Mollakasım presents a concrete example of the unplanned transformation and conservation-use contradiction experienced in the transition areas between the city and the countryside. This divergence between conservation decisions and the actual situation on the field is a sign of a larger-scale ecological and spatial degradation around Lake Van.

This transformation process not only alters spatial patterns but also entails long-term risks for the sustainability of the rural economy. The conversion of agricultural land into built-up areas reduces local production capacity and threatens traditional rural livelihoods. Moreover, in these hybrid areas where the boundaries between rural and urban are increasingly blurred, natural assets such as public spaces and coastal zones are progressively subject to privatization. This raises serious concerns in terms of spatial justice, as capital-owning groups gain access to second-home opportunities, while local residents become increasingly disadvantaged due to rising land values and limited access to resources.

6. Discussion

The findings of this study reveal that second home development in the rural coastal areas of Lake Van is not a random or isolated spatial phenomenon, but rather part of a broader and systematic rurbanization trend. The temporal progression of construction pressures reveals not only the physical spread of this change but also the speed and intensity of socio-spatial transformation. Increasing construction disrupts the continuity of natural areas, deepens the pressure on agricultural lands and coastal ecosystems, and demonstrates the inadequacy of local planning tools to combat this pressure. In this context, the period 2012-2024 is notable for demonstrating the increasingly systematic intensification of construction and the re-creation of space based on user profiles. Furthermore, the conversion of agricultural land into seasonal settlements, often outside of formal planning mechanisms, demonstrates the increasing urban impact on rural areas. Similar trends are observed in the European context (Piorr et al., 2011).

In this regard, Tacoli's (1998) assertion that the rural-urban dichotomy is no longer adequate to explain the complexity of contemporary settlement dynamics proves to be highly relevant. This demonstrates that structures opened for residential use in rural areas are shaped not only by individual preferences but also by specific spatial trends. Clustering, particularly in areas close to the coastline, with scenic views, or with high accessibility, can be considered spatial traces of rural transformation. This clustering of second homes reinforces trends in unplanned or uncontrolled plot-based construction, thus creating a fragmentation in the structural identity of rural areas. Spatial clustering reflects not only increased density but also the changing nature of spatial production. In this context, ANN analyses demonstrate the development of a new settlement model with urban characteristics in rural areas, demonstrating that the process of rural urbanization creates a measurable pattern not only at the sociological but also at the spatial level. In the case of Lake Van, second homes have become more than leisure spaces; they represent a mobile, consumption-oriented lifestyle that reflects changing socio-economic values among urban middle classes, similar to those observed in Western Europe (Hall, 2015; Gallent et al., 2005).

Moreover, the study confirms that rurbanization in this region is largely shaped by informal and opportunistic land use, facilitated by weak enforcement of legal frameworks such as the Coastal Law No. 3621. This aligns with the findings of Paris (2014), who highlights that second home development frequently occurs in regulatory grey zones, leading to increased environmental risks, spatial injustice, and rural commodification. This regularity reveals that these structures are shaped not only by individual preferences but also by a specific spatial logic and market-driven mode of production. The uniform building character reveals the physical traces of the rural morphology that emerged with the transfer of urban lifestyles to rural areas, and distances itself from the subjective morphology of the countryside. Therefore, this structural pattern demonstrates that the transformation undergone by rural areas is not merely pervasive but also reproduced with urban values at formal and semantic levels. In other words, this pattern reveals that the spatial traces of the rural-urban process are now visibly fixed.

The process around Lake Van, by granting access privileges to high-income groups, deepens spatial inequalities, threatening agricultural sustainability and cultural continuity. These results

echo similar tensions observed in peri-urban areas across Europe, where multifunctionality and fragmentation challenge traditional land uses (Piorr et al., 2011; Skak & Bloze, 2016).

Recent discussions on rural transformation emphasize the need to integrate spatial resilience and morphological continuity in areas undergoing informal second-home development. As highlighted by Demiroğlu İzgi (2022), the fragmentation of rural landscapes without ecological sensitivity weakens the adaptive capacity of these environments. Similarly, Mamunlu Kocabaş, (2025) study on water-sensitive planning underlines that increasing accessibility and land speculation in lakeside districts, such as those around Van Lake, directly contributes to the loss of agricultural lands and the privatization of public spaces. Consequently, the morphological homogenization of second homes around Mollakasım reflects a restructuring that challenges environmental and spatial justice.

In the case of Mollakasım, the rurbanization process is significantly shaped by institutional shortcomings and the limited capacity of local authorities to anticipate and manage spatial transformation. Although the region officially fell under the jurisdiction of the Van Metropolitan Municipality after the enactment of Law No. 6360, no comprehensive zoning or rural development plan was implemented at the neighborhood level. This governance vacuum has led to the proliferation of parcel-based, unregulated second-home development. The disconnect between metropolitan-scale planning imperatives and local-scale realities has left neighborhoods like Mollakasım in a marginal position, subject to urban planning controls without the necessary institutional support or infrastructure investment. Local administrations often lack the technical expertise, data infrastructure, and legal tools to monitor morphological change or enforce land-use regulations. In this context, alternative planning scenarios that integrate flexible zoning overlays, participatory land-use mapping, and seasonal population management strategies may offer more adaptive governance solutions. Furthermore, strengthening cross-scale coordination among provincial, district, and neighborhood administrations, particularly through institutionalized spatial monitoring tools such as remote sensing or cadastral inspections, can help reduce fragmented urbanization. Therefore, managing rural-urban transformation in Van requires redesigning local governance models beyond technical planning tools.

Thus, the case of Lake Van contributes to the broader theoretical discourse on rurbanization by illustrating how second homes act as spatial agents of urbanisation in rural settings, both materially and symbolically. These dynamics necessitate a new planning approach that prioritizes environmental sustainability and equal access in rural policies.

7. Conclusion

This study examined the spatial expansion and transformation of second homes in the coastal rural areas of Lake Van, focusing on the village of Mollakasım. Using spatial analysis techniques such as Kernel Density and Average Nearest Neighbor analysis, along with CORINE data, the research has revealed a significant shift in land use patterns driven by informal planning dynamics and increasing second-home demand.

The spatial analyses conducted in the study reveal that second housing projects in Mollakasım, on the shores of Lake Van, do not exhibit a random distribution but rather a systematic rurbanization process. According to the core density analysis results, construction observed in limited and medium-density areas in 2012 increased significantly by 2024, with construction along the coastline both expanding into new areas and tending to concentrate around existing settlements. Average Nearest Neighbor (ANN) analysis also supports this finding, showing that the construction pattern is not random but concentrated in specific attraction areas. These results reveal that the construction pattern in coastal areas is increasingly forming distinct clusters and that spatial pressure has intensified over time. According to the land use change analysis, approximately 11.8 hectares of non-irrigated agricultural land was directly converted to urban use between 2000 and 2018. This finding suggests that lands considered to have low agricultural

production value are more easily opened to development and that sustainability priorities in rural areas are not adequately addressed.

Second homes, initially perceived as seasonal and leisure-oriented units, have evolved into permanent or semi-permanent presences in rural zones, contributing to urbanization pressures and the commodification of nature. In the case of Mollakasım, this trend has produced clear morphological homogenization, fragmented agricultural land use, and limitations in public access to natural resources such as lakefronts. These processes raise critical questions about spatial justice, environmental sustainability, and the resilience of rural landscapes in the face of informal and unregulated development.

The findings of this study underscore the necessity for integrated rural planning approaches that transcend short-term individual land-use decisions. In this context, the main problems identified and corresponding policy recommendations are summarized in Table 3.

First and foremost, there is an urgent need to reconsider land-use policies in rural and semi-rural zones, particularly those experiencing tourism-led growth. The fragmentation of fertile agricultural lands and the commodification of lakeside zones into elite consumption enclaves call for stronger alignment between land protection legislation (e.g., agricultural land conservation, coastal protection) and local development plans. In this regard, spatial planning instruments should be designed to anticipate and guide informal transformation processes, rather than reacting to them retrospectively.

Moreover, the case highlights the critical role of morphological monitoring and participatory governance. The unchecked expansion of second homes has not only undermined the ecological balance but also altered the public nature of commons, such as shoreline access. Thus, planning institutions should integrate morphological change detection tools, such as remote sensing and spatial clustering analysis, into routine monitoring frameworks. Additionally, including local communities in decision-making processes can prevent exclusionary practices and promote adaptive reuse strategies that respect the ecological and social context of the region.

Finally, the rurban transformation evident in Lake Van requires a broader reconceptualization of rurality itself. Rural areas should no longer be seen merely as reservoirs of land for urban consumption but as dynamic and contested spaces where production, habitation, and recreation intersect. Policy frameworks must therefore be capable of managing this hybridity by embracing the multifunctional character of rural landscapes and fostering forms of development that are both equitable and resilient.

Future studies could further explore the concept of rurbanization as an analytical framework for explaining the interaction between rural and urban areas. This approach would contribute to a more comprehensive understanding of the hybrid spatial patterns created by second homes and new lifestyles in rural areas.

Table 3 Problem, Policy and Planning Recommendation

Problem	Policy and planning recommendations
Unregulated second- home development	Special zoning regulations defining density, lot size, and building boundaries should be prepared for second home developments in coastal and rural areas.
Public access problems in coastal areas	Public corridors and access points should be planned in accordance with the public interest access principle of the Coastal Law.
Loss of agricultural land	Planning decisions that protect agricultural production should be strengthened, and practices that allow non-agricultural use should be limited.
Undefined status of *rurban areas*	An intermediate status should be defined for rurban areas and location-specific planning approaches should be developed for these areas and included in the legal framework.

Weakness of local governance	Remote sensing and spatial monitoring systems should be institutionalized at the local scale and participation mechanisms should be activated.
Ecological and Spatial Justice Issues	Environmental controls in coastal, agricultural and natural areas should be strengthened; spatial justice should be supported through public access policies.

CRediT Authorship Contribution Statement

Berfin Karabakan Gökhan: Writing – review & editing, Writing – original draft, Methodology, Investigation, Analysis, Data curation, Conceptualization, Data visualization. Yelda Mert: Writing – review & editing, Writing – original draft, Methodology, Investigation, Conceptualization.

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.

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Resume

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