

**THE ESTABLISHMENT OF RESIDENTIAL AREAS FOLLOWING
THE 1999 EARTHQUAKE IN TURKEY AND THE EFFECTS OF THE
EARTHQUAKE ON THOSE NEW ESTABLISHMENTS**

**ORGANIZAREA AREALELOR REZIDENȚIALE DUPĂ
CUTREMURUL DIN 1999 DIN TURCIA ȘI EFECTELE SEISMULUI
ASUPRA ACESTOR NOI AȘEZĂRI**

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Abstract: After the earthquake in the region of Marmara, already existing housing shortage rapidly increased. Permanent residential projects were formed to meet the housing needs; priority was given to those who lost their homes during the earthquake. In addition to permanent residential projects, communal residential projects drew attention as well. As a result of the mentioned housing shortage, various unions and institutions undertook the project of establishing numerous new residential areas. In this study we aimed to observe and to work on classification criteria concerning new residential areas, hence we tried to classify these new establishments according to the criteria we have made. In cities such as Kocaeli, Yalova and Sakarya, which were directly struck by the earthquake, similarities as well as differences were observed and they determined the selection on new residential areas. It is to be noticed that the changes, especially in Istanbul and in other cities in eastern Marmara, were not realised as a consequence of the earthquake, but in expectation of a major one and coincided with the tertiary era cities. Accordingly, new residential areas that were established after the earthquake were closely examined and after the processes concerning the settlements, they were put forward. The new formations were compared with the tertiary era cities. The differences and the similarities were studied.

Key-words: earthquake, new settlements, satellite city, dormitory town, eastern Marmara.

Cuvinte cheie: seism, noi așezări, oraș satelit, oraș dormitor, estul Mării Marmara.

Introduction

Especially due to the congestion, complicity and high land prices in metropolitan settlements; people tend to move towards the outskirts of the city which provide empty

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spaces on which planned settlement and social infrastructure can be built. Thus, new population areas have emerged in the outskirts of cities. In these areas which accommodate large mass of population, a structure has emerged where formations occur similar to the “*suburbanisierung*” or *suburb* process undergone by the western countries living post-industrial era (Tümertekin, 1997; Lichtenberger, 2002; Hofmeister 1993; Heineberg, 1993). In Turkey, in the Marmara Region in particular, 1999 Izmit Earthquake of approximately 7.6 magnitude has had a huge impact on the formation of this structure. These settlement areas, having unity but dependent on the centre in meeting their needs, are grouped into different categories on the basis of their structural and functional characteristics.

Peripheral settlements created around the centre due to the impact of the continuous growth of cities lead to changes in the expansion areas of the cities. The expansion and enlargement of a city gradually creates different centers within it. Thus, cities turn into multi-centered settlements. The fact that these centers constitute one single large centre although they are separate from each other result from that the high-level services are determined and the rendered by the same centre. We can observe such developments in cities such as Istanbul, Izmit and Adapazari which are located in the eastern part of Marmara Region. Developments especially in infrastructure services -such as communication and transport- have facilitated the peripheral expansion of cities; and have lead to the planned or unplanned, controlled or uncontrolled growth of cities to the surrounding areas. In this context, it is aimed with this study to present a general overview of the changes recorded in the cities located in the study area.

Settlement Changes in the Eastern Marmara Provinces Affected by the Earthquake

The fact that earthquake caused the biggest damage in the alluvial lands of large cities due to liquefaction has turned land surveys into an obligation for the establishment of post-earthquake settlements. After the earthquake, taking into consideration the significant damage caused by the earthquake especially in city centers, scientists and politicians have suggested establishing new structures on the areas safer against earthquake risk. This widely-accepted view has raised the issue of land surveys prior to repairment of the earthquake-affected provinces mainly extended on alluvial lands. These surveys have been carried out by various institutions and organizations in the form of projects.² New settlement areas have been determined by

² Surveys have been conducted under the cooperation of General Directorate of Mineral Research and Exploration (MTA) and Middle East Technical University (ODTU) in Sakarya Province and of TUBITAK (The Scientific and Technological Research Council of Turkey) and- Marmara Research Centre (MAM) in Kocaeli Province.

examining the general structure presented by the surveys. Expropriation costs have also been considered in the determination of new settlement areas, and treasury lands have been given priority among the areas determined to be safe for the new settlement. Different developments have taken place in the formation of new settlements in these areas. The new settlements established on these areas can be categorized as follows:

1. Earthquake housings built for the beneficiaries whose houses were located in the areas directly affected by the earthquake and either collapsed or were severely damaged (Camili, Karaman in Adapazari; Gundogdu, Yuvacik, Kosekoy, Golcuk in Kocaeli; and Sogucak, Calica, Subasi in Yalova etc.)

2. Settlements emerging due to people preferring planned settlements located outside of cities as they do not want to live in old houses due to earthquake fear but cannot afford a new building in the centre (Korucuk in Adapazari, Yahyakaptan and Yuvamkent in Izmit, etc.)

3. Settlements emerging due to the desire to escape from the crowd and complicity of cities and to live in areas with low earthquake risk and having social infrastructure (Kartepe Houses³, Gokkusagi Villas, Atso Houses in Adapazari; ... in Izmit etc.)

Lack of empty areas in the city centre suitable for settlement and limitations imposed by the official government on the settlement in the city centre supports this process. Efforts are exerted to recover the central parts of the cities damaged by the earthquake. Izmit has been the city which recovered fastest. This partially results from the fact that the damage in Izmit city centre was less severe compared to other city centers. The effects of the earthquake in Adapazari city centre can still be observed clearly although nine years have passed since the earthquake. The reasons for the delay in remedying these damages can be listed as that the city centre was severely-damaged and that plans/decisions related with moving the city centre to new settlement areas were developed/taken late.

Another development experienced in earthquake regions is a new settlement form –which can be called “edge city”- made up of 40-50 villa houses located on rural areas. These villa housing complexes can expand to large areas by merging with each other as the case in Hizirilyas Hill, Adapazari. At this point, it is appropriate to discuss the changes undergone by the Eastern Marmara cities to have suffered severe destruction in the earthquake.

Yalova

Yalova is one of the settlement areas affected by the 17 August 1999 earthquake. Particularly Haci Ahmet Plain and Cinarcik, on which the Yalova city centre is

³ The prefabricated houses built on Hizirilyas Hill, one of the Serdivan Hills, were called Kartepe Houses; after the prefabs were removed, villas were built on this area; and several villa housing complexes have been constructed, one of which is called Kartepe.

founded, are the two places where the earthquake caused the biggest destruction. During the post-earthquake recovery process in these areas, new settlement areas have been planned to meet the housing need of those who lost their houses in the earthquake. In this process the city has been provided with three new settlement areas created in three different locations. These are *Calica Earthquake Housings* built in Calica within Cinarcik District located in the west; *Sogucak Earthquake Housings* founded in Sogucak located in the south; and *Subasi Earthquake Housings* built in Subasi within Altinova District of located in the east of Yalova city centre (Fig. 1).

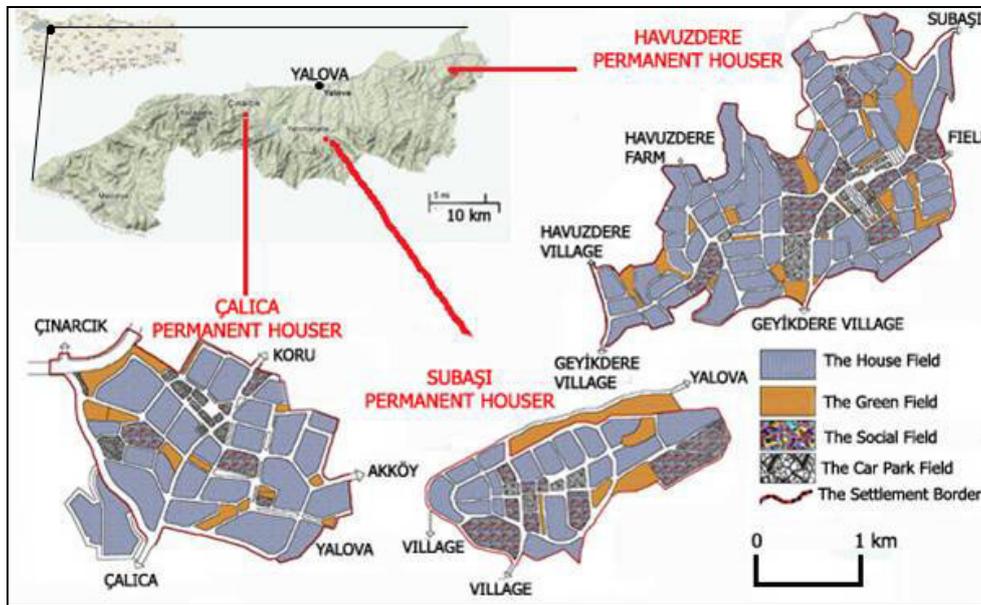


Fig. 1: New settlement areas established in Yalova in the wake of the 1999 Earthquake

These settlement areas accommodate a population much bigger than the local population of the rural areas they are founded on and their relationship with the rural area they are founded on is limited only to the land they are built on. They are comprised entirely of households who previously used to live in the city and have moved here after the earthquake. Although this situation can be called tertiary urbanization with regards to settlement of urbanized people in the newly founded housings around the city, in this case the movement of city-dwellers to outskirts of the city does not stem from the desire to escape the crowd in city centre due to industrialization and to escape to nature but from the earthquake destruction in the city centre and the efforts to establish new settlements on solid grounds resistant to earthquake. During the establishment of these new settlement treasury lands having desired characteristics are preferred by taking into consideration the expropriation

costs. This, in turn, has consequently led to foundation of these housings at a considerable distance from the city, as in the case of Subasi. Although this settlement area, founded as 3000 housings on a 150 hectare area, looks like a satellite city due to the 24km distance to the city centre, the only characteristics matching with the qualifications of a satellite city is its distance to the city.

The settlement areas established in Sogucak and Calica fall in the scope of edge city or dormitory town classification in terms of distance. However, examining all three housing areas, it can be concluded that nearly all of the residents of these areas have daily movement to the city centre. TOKI (Housing Development Administration of Turkey) houses founded in Hacı Ahmet Plain have the characteristics of edge settlements founded immediately by the city.

Kocaeli

New housing areas in Kocaeli Province, the city most affected by the earthquake, have generally been created near central city areas.

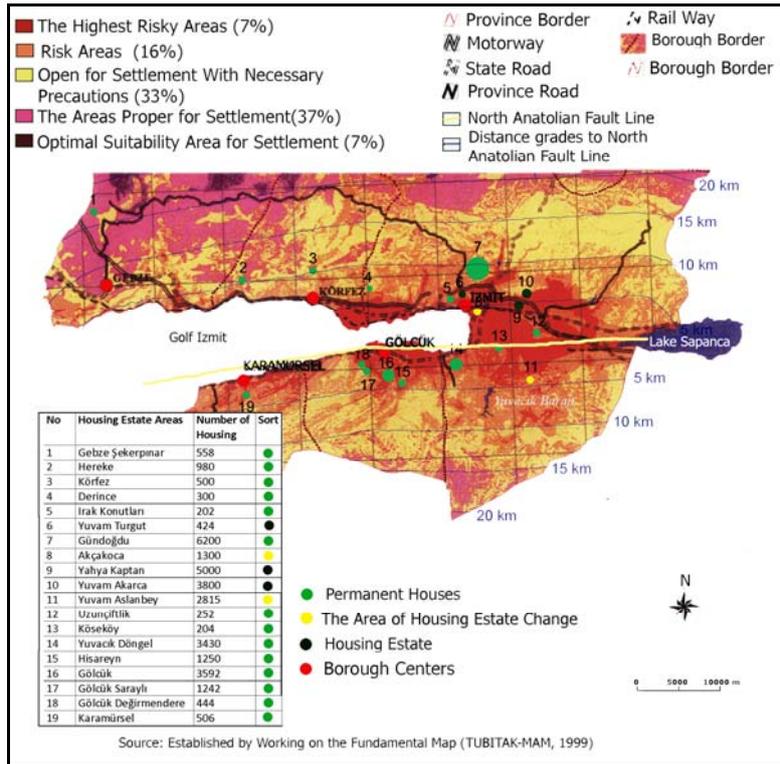


Fig. 2 Kocaeli Potential Settlement Suitability Map and Housing Areas Established After the 1999 Earthquake

Adapazari

Unlike other cities affected by the earthquake, the issue of “moving the whole city to a new place” has risen in Adapazari after the earthquake. Accordingly, the northern part of the city, on which there are already-established permanent dwellings and collective settlements and which has a more appropriate ground when compared to the pre-earthquake city ground, has been considered to be appropriate for the new settlement. However, this plan regarding moving the whole city has so far only been limited to moving of some settlement areas.

Karaman, Camili and Korucuk villages shown in Map 4 and which used to be ordinary villages till the 1999 earthquake have now lost village characteristics. Agriculture or animal husbandry is no longer possible in the village lands which are filled with residential dwellings. Despite the intensive construction ongoing in this part, the city still remains in its pre-earthquake place and resists this movement attempt. With the completion of the governorship campus, some functions in the centre will shift to the new settlement area. I believe the next major earthquake will result in the movement of the city centre.

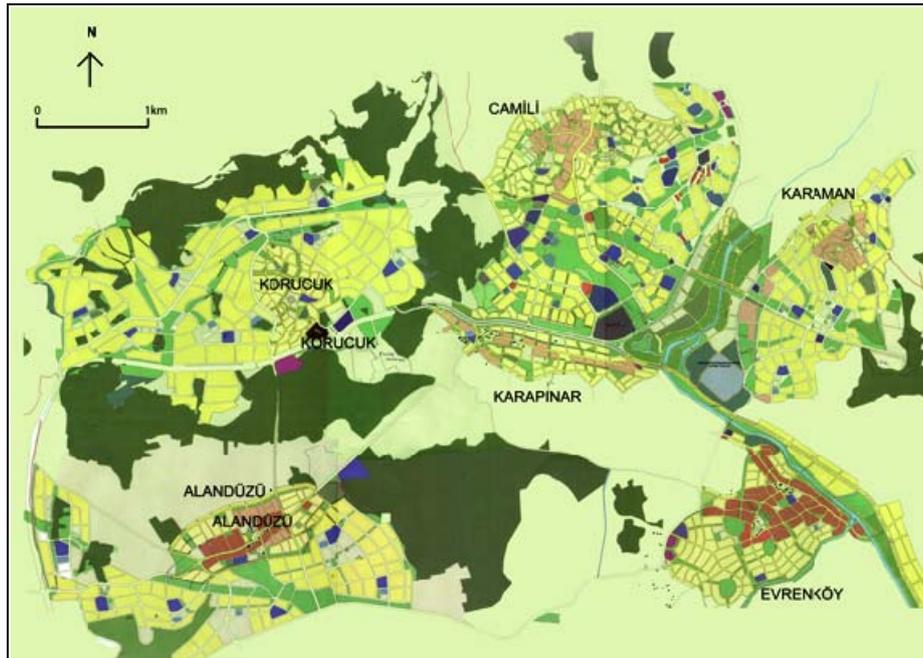


Fig. 3 The new settlement area decided for Adapazari Province
Source: Directorate of Development, Adapazari Central Municipality

It can be foreseen that once Ankara Highway -which links the new settlement areas to İzmit behind Sedivan Hills- is renovated and realigned, this area will be more attractive and the two settlements will be connected to each other through a point other than Sapanca Lake coast. İzmit and Adapazari will be connected over the new settlement areas and from the north. Because the new settlement areas (in İzmit) which want to move away from the İzmit Bay-Sapanca Lake-Adapazari Plain axis due to the earthquake tend to expand towards the north as well. Furthermore, the Sapanca Lake basin is partially closed to settlement as it is “*water retention basin*”. The global directive effect of transport on settlements will also be observed in this case and İzmit and Adapazari will be connected (in textual terms) after the reconstruction of Ankara Highway.

Istanbul. Istanbul is going through the tertiary urbanization⁴ process very rapidly due to the expectation of an earthquake and the possible consequences of an earthquake.

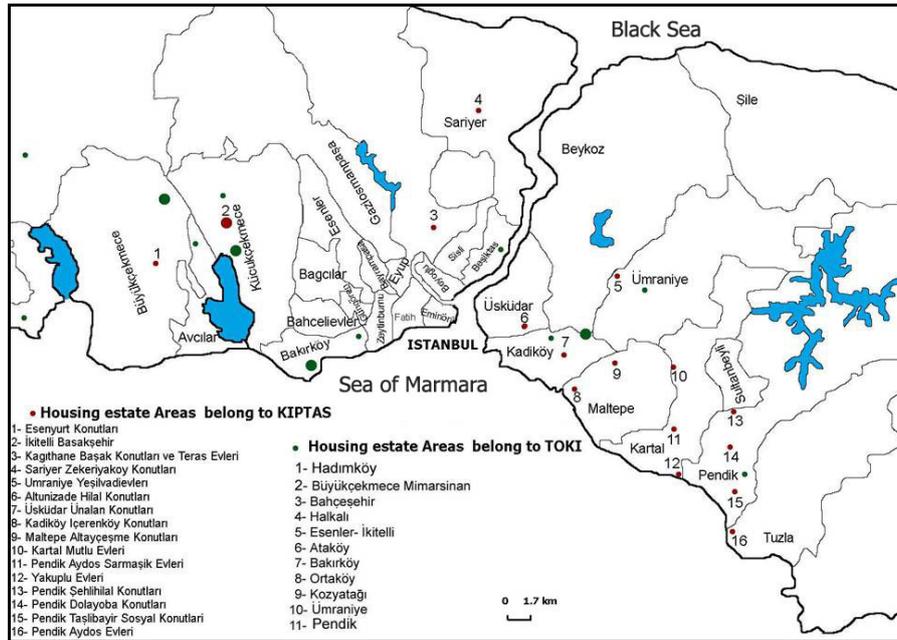


Fig. 4: Housing estate Areas Established in Istanbul after 2000

⁴ **Tertiary urbanization** or suburbanization is the situation which occurs as a result of the movement of housings and business and shopping centers towards outskirts (having different structures) of the industrialized cities in post-industrialization phase (Hofmeister, 1993, Butzin 1996).

The industrial facilities which were moved to out of the cities in 1980's and 1990's have rapidly been surrounded by collective housing areas in recent times. Thus, a complicated zoning emerges in Istanbul. It can be explained with an example from the European side. Taking the area within the city walls as the city centre and following the E-5 highway as a line to the west, the alignment is as follows: Topkapı (industrial area) – Merter (Residential + Industrial) - Bahcelievler (residential area) - Sefakoy (industrial area) - Avcılar (residential area) - Haramidere (industrial area) - Beylikduzu (residential area).

Conclusion

This study discusses the movement of the city population living in the cities of industrialized countries to less populated regions and rural areas and the settlement characteristics that emerge during this process.

This process has also take start in Turkey, mainly in Istanbul. This indicates that the change experienced by the cities of industrialized countries has started to be observed in some parts - not all over the country though- of Turkey as well.

Whilst the process of urbanization and accumulation in the centre due to migration from rural areas continues on the one hand, the center expands towards the surrounding areas on the other. New settlement characteristics emerge with the expansion of the centre to the surrounding.

Formations such as satellite city, dormitory town, garden city, suburb etc. are created in a planned manner. This study has investigated the changes taken place in recent years in the cities within the Kocaeli – Catalca section which has the highest urbanization rate of Turkey. The effects of the 1999 earthquake on this change and the characteristics of the new settlement areas have been put forward by comparing with those of post industrial urban areas.

The results of the study indicate that the earthquake has led to a change in settlement areas in all the regions it has affected. Settlement on a solid ground has been appreciated and the importance of construction appropriate for the ground characteristics has been comprehended. Efforts to move cities to solid grounds have changed the development axis of the cities. Despite partially sliding towards north, Istanbul continues its development in the east-west axis; whilst Golcuk develops to the south; and Izmit and Adapazari to the north. Cities now spread over much wider and various areas compared to the area they covered prior to the earthquake due to the newly established or emerged settlement places. These formations generally have edge city characteristics and have developed as the accommodation areas for the people working in the city.

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