

# **A Research on the Contribution of Urban Transformation Projects to the Renewal of Cadastral Activities in Turkey**

**Saban INAM and Hasan CAGLA, Turkey**

**Key Words:** Cadastre, urban renewal, urban transformation

## **SUMMARY**

Cadastral activities in Turkey began in 1912 but could not be continued due to the adverse effects of The Balkan War, The First World War and The Independence War. Systematic cadastral activities began in 1934 and are currently performed in line with Law on Land Survey no: 3402 and dated 1987.

Cadastral work in our country has been completed 97 % in urban areas and 77 % in rural areas. However, the investigations conducted have revealed that the cadastral work produced in line with regulations formed at different times, with different measurement methods and evaluation systems, in different sizes, base plates and sections are qualitatively far from meeting the expectations. Another fact that has been expressed by those in authority is that 14 % of the cadastral work in Turkey has been made using graphic method and around 60% of the existing documents and information need to be updated.

Today, when Turkey's founding cadastre land survey is intended to be completed within the context of the Land Managing Project (ARIP), the real problem and the primary target is not the completion of cadastre; it is to establish a title deed registry as required by the Turkish Civil Code no: 4721 by determining the borders of real properties on land and field based on the topographic cadastral map of the country and the database that will be needed by spatial information systems. In this vein, the content of this study comprises the investigation of the effects of transformation projects in urban areas on the renewal of cadastral activities and work aimed at updating property use.

## **Türkiye Kadastrounu Yenileme/Güncelleme Çalışmalarına Kentsel Dönüşüm Projelerinin Katkısı Üzerine Bir İnceleme**

### **ÖZET**

Türkiye'de kuruluş kadastro çalışmaları 1912 yılında başlanmış ancak Balkan, Birinci Dünya ve Kurtuluş Savaşlarının etkisi ile sürdürülememiştir. Sistemik olarak kadastro çalışmalarına 1934 yılında başlanmış olup, halen 1987 tarih ve 3402 Sayılı Kadastro Kanunu eşliğinde yürütülmektedir.

Ülkemizde kadastro çalışmaları kentsel alanlarda % 97, kırsal alanlarda % 77 oranlarında tamamlanmış durumdadır. Ancak yapılan incelemelerin ortaya koyduğu sonuç, farklı zamanlarda oluşturulan mevzuatlar eşliğinde, farklı ölçme yöntemi ve değerlendirme sistemlerinde, farklı ölçek, altlık ve pafta boyutlarında üretilen kadastral ürünlerin nitelik olarak günümüz kadastrosu beklentilerinden uzak olduğudur. Türkiye kadastrasının % 14'ünün grafik yöntemde yapılması, mevcut kadastral belge ve bilgilerin yaklaşık % 60 oranında güncellemeye ihtiyaç duyması, sorumlular tarafından ortaya konulan bir gerçektir. ARİP Projesi kapsamında Türkiye'de kuruluş kadastrasının tamamlanmasının hedeflendiği günümüzde, asıl sorunun ve birincil hedefin kadastronun tamamlanması olmayıp, ülke sistemine bağlı topoğrafik kadastral haritasına dayalı olarak taşınmaz sınırlarının harita ve arazi üzerinde belirterek hukuki durumlarını tespit etmek suretiyle 4721 Sayılı Türk Medeni Kanununun öngördüğü tapu sicilini kurmak ve mekansal bilgi sistemlerinin ihtiyaç duyacağı standart veri alt yapısını oluşturmak olduğu gerçeğinden hareketle; kentsel alanlarda geliştirilecek dönüşüm projeleri uygulamalarının, kadastronun yenilenme ve mülkiyet kullanımını güncelleme çalışmalarına sağlayacağı etkileri incelemek, bu çalışmanın içeriğini oluşturacaktır.

Anahtar Kelimeler: Kadastro, Kentsel Yenileme, Kentsel Dönüşüm

# **A Research on the Contribution of Urban Transformation Projects to the Renewal of Cadastral Activities in Turkey**

**Saban INAM and Hasan CAGLA, Turkey**

## **1. INTRODUCTION**

The effort of defining the shape of the land and developing measurements methods and techniques related to this is one of the major professional disciplines of the two; and the other one is the cadastre and registration of a title deed study that comes out depending upon the fact on possession.

Cadastre is defined as “the work of planning all type of ground and property on earth in a country by stabilizing the situation, location, square, value and all kind of rights and liability on them.

According to the commend of Republic of Turkey Constitutional Court; cadastre of Turkey is the symbol of modern identity, real and certain definition of immovable superficies, first condition of the arrangements of reconstruction and places, only way of ground reformation, big power which the state taxation of the immovable is based on, social existence that eliminates the factors which negatively effect the national solidarity and the most secure protector of the investment on immovable.

With a different approach, as a result of the cadastre studies which is also defined as modeling information system of the relation of ground and people, the modern title deed registration set up is organized as projected by the Turkish Civil Code by designating possession, reliving conflicts, preventing tax loss, obtaining organized urbanization, establishing a functional recording system for the immovable investment partnership and immovable based on capital market, forming a data infrastructure on site information systems to establish the “e-state” and regulating legal and technical content related to ground and possession which are for the public service such as, rural and urban progress, road, dam, irrigation, expropriation and land arrangements.

In order to upgrade the existing title deed and cadastre data that will be update, trustable and fit to the technical and informational technologies of today for the national database usage, approximately 2/3 of it should be renewed. One billion dollar source is needed for such a renewal according to the Expert Committee Report.

Important projects are being carried out by the Title Deed and Cadastre General Management (TCGM) by providing wide expansions on information technology support. Some of the projects are, Title Deed and Cadastre Information System, Constant GPS Stations, Completing the Structure Cadastre,

Population of some cities in developing countries is doubled in every ten years. According to the assumptions, most of the cities of “all worlds’ most populated ten cities” will be in the developing countries. However this urbanization process is extremely unhealthy and it creates the same hardship faced in the first years of industrialization in West Countries. This hardship can be defined as, overcrowded cities, unhealthy life conditions, unemployment and insufficient development of the economy and shanty regions being widely prevalent at the superb of cities (Es, 2004). Unfortunately, local authorities are not effective on preventing the process which results as the degeneration of the cities on physical, economical and social aspect; and some regions of the city are extremely affected with this period especially the old city centers in front. In the mean time, historical town buildings that were constructed for certain aims once are transformed into left industrial store areas and they get lost in the life space by suffering of architectural erosion.

## **2. CURRENT SITUATION OF THE CADASTRAL ACTIVITIES IN TURKEY**

Cadastral activities in Turkey began in 1912 but could not be continued due to the adverse effects of The Balkan War, The First World War and The Independence War. Systematic cadastral activities began in 1934 and are currently performed in line with Law on Land Survey no: 3402 and dated 1987. Two main documents are produced as a result of the cadastre activities:

- a) Register of Title Deeds
- b) Cadastre Plan

These two documents are related with each other with the city, township, village, block and parcel numbers. The users get enough knowledge on the immovable by using information together in these documents. Being the source of these two documents fixing the rights of the holders and borders of the property is assured by the laws.

The cadastre studies about property fixation content on the period of Ottoman Empire in the years of 1800s, transferred into property cadastre contented taxation which also formed the base of multi purpose cadastre at the beginning of Turkish Republic with the law number: 658 and then it was transferred into digital cadastre that provided information system database at the end of 1900s (Erdi and Ark. 1999: Erkan, 1991).

Annual and periodical targets were chosen to finalize the property cadastre of whole Turkey. Deadline of these chosen targets were never met and rather than eliminating the reasons of the failure, target reducing was preferred. Especially the approach during the five year development plan by the State Planning Agency can be shown as an example (Erdi, Ozkan and Cay, 1999).

The establishment of cadastral plan of the urban field was mentioned as 40.000 km<sup>2</sup> and the rural field as 440.000 km<sup>2</sup>, total of 448.000 km<sup>2</sup>, in the long term strategy and eight year development plans (period 2001-2005) prepared by the State Planning Agency. However, the redefinition of the uncertainty of the fields to have a cadastral plan are to be finalized for

reasons as the evaluation of the left field without establishment of cadastral plan, leaving the fields out of the border that lost its character as a forest and establishing new city and district regions.

## 2.1 Production and Format of the Current Documentation of the Cadastral Activities

Foundation cadastre was verified in the ratio of 97 % in urban field that is quarter based and the ratio of 77 % in rural field that is village based up until now in Turkey. 55 million parcels exist at the Office of the Land Registry. As the cadastral information and documents produced on the variations of different legislation, scale, measuring methods, coordinate system, plot creating and naming system till today will be used as the ground plan application support, the existent errors or technical deficiencies will be a problem in the urban transformation studies. In addition to this, discord of the borders at the plan and at the usage, difference on the areas in the official registration and in the calculated registration, edging of the parcels that have connection to each other and have different cadastre sections, unregistered vanity or overlapping parcels, incongruity of the cadastral land control points, transformation of the coordinates among systems, digitalizing the un-digital cadastre maps and existence of the wrong information during the land registry study period are generally the faced problems (Cay, Inam and Iscan, 2004).

It is understood that cadastre sections as a result of the studies are obtained after 13 laws, 4 regulations and 15 statues being created at different times; different geodesic and photogrametric measurement evaluation methods and systems changing between 1/200 - 1/10.000 in 11 different scales, dimension and produced with different equipments (Inam, 2004). It is known that there are 310.854 pieces of cadastre sections produced in this way by the Title Deed and Cadastre General Management. (Table : 1)

No.	Production Method	Unit	%
1	Graph Method	113,499	%36.51
2	Polar Method	63,733	%20.50
3	Prismatic Method	62,846	%20.22
4	Photographic Method	46,191	%14.86
5	Digital Method	24,585	%7.91
Total of five different production method		310,854	%100.00

**Table 1:** Section bases produced in different time lines by using different methods in Turkey's cadastre.

There are still over 10.000 villages that have no cadastre plans in our country. These villages are far away from the city centers and they have connection to the forest, mountainous and rugged topographic lands that is hard to measure but it is aimed to be finished under the "Land Managing Project" (ARIP).

## 3. THE NEED OF URBAN TRANSFORMATION

Urbanization and urban society in modern meaning are the facts that appeared at the same time with the Industrial Revolution to a large scale. In other words, urban life becoming

widespread, the acceptance of urban concept as development, progress and economical growth and a social life that is wholly organized is the result of the industrialization period eventuated within last 150 years (Canatan, 1995). There are two differences between the industry cities and pre-industrial urban life; first one is the difference on population and density and the second one is the difference on the qualitative relations between the city and the society. With the industrialization urban areas became densely populated. In the industrial cities of today, level of urbanization is 70% in some countries and 80 – 100 % in others (Kumar, 1988).

In general format urban renewal can be defined as; changing, transforming, improving and reviving the urban atmosphere that got old, dilapidated, lost much of its force or left out for different reasons within a period of time according to the socio-economic and physical conditions of today and bringing it back to the city.

Bringing in the urban land pieces which are seen as the wreckage field of the city as a result of refreshing and returning it to life can be achieved by urban renewal. Urban renewal is achieving this by loading new identity and character to the left old city field pieces with socio-cultural, economical and physical aspects. We can express the activities of the urban renewal and transformation as below (Ozden, 2001):

- a) Revival - Revitalization
- b) Renewal - Renovation
- c) Regeneration
- d) Gentrification
- e) Rehabilitation

### **3.1. Reasons of Urban Renewal**

Immigration movements till the end of 1980s in Turkey caused problems like enhancing the population of especially the big cities in quantity aspect and bringing out qualitative problems as unregistered constructions and slum houses. The immigration process being slow down and the population being stabilized in the 1990s brought out some new concepts and took to a different dimension at the discussions about cities.

On the other hand, the situation of the cadastral bases of the lands that the urban transformation was applied is another problem. Registered fields as a result of the cadastre studies carried out at the last period of Ottoman Empire and at the beginning of the first years of the Turkish Republic remain still in effect and appear to be a technical problem at the transformation applications of the old city centers especially. For this reason it is clear that the studies at the materialization stage of urban transformation in other words city improvement, besides the physical environment, space and social problems the technical problems are at a level that can not be ignored. For the urban transformation policies to reach the success especially the municipalities should study the subject seriously and should evaluate it in many aspects.

In addition to the general aim of forming livable healthy urban environment, urban transformation should include topics as; transformation of the unregistered construction

areas, the houses and other places at inconvenient areas and that are effected directly by the natural disasters, the working fields that the usage is inconvenient at city centers, the unqualified places that are out of the urban standards, the historical places under protection that lost their functions.

### **3.2. Legal Support of Urban Renewal**

In Turkey where there is change permanently in social development line, lots of laws and regulations are constituted that form legal support to the applications at the urban fields however there was a need for change and renewal as it stayed under the expectation of the public society. In the urban transformation projects, which are legally regulated with the law about “historical and cultural immovable properties that are threadbare to be renewed, protected and perpetuated” in addition to the Zoning Law dated 1985, it is aimed to enliven the market by using the public sources within limits and encourage the private sector with especially the leadership of the local administration support.

### **4. CADASTRAL PROBLEMS ON URBAN TRANSFORMATION**

The cadastral information that was produced 40-50 years ago and formulated in graph method in total of 14 % and needed to be updated at the ratio of 60 %, does not fulfill its function that is determined as “giving state guarantee on possession usage” and is insufficient on meeting the multi expectations and needs of the projects and investments (HKMO, 2003). Cadastre as a service being live and has continuity, does not meet the conditions of dynamism in parallel with the socio-economical structure and the current technologies as well as not meeting the technical requirements after the cadastre and section studies and as a result of this cadastre does not cover the expectations. Below points can be stated for the current situation of cadastre;

- The procedure of tracking and updating of the changes in the prepared document could not be done. So validity and usage of the documents is open to discussion.
- It seems that it is hard to purchase a new technical map; sections that are not integrated could not be a base of the prosperity study.
- Instead of working in coordination with the environmental systems that have interaction with the country cadastre system, it keeps on the activities within itself like the other public institutions.
- Title deed registrations of the rural areas lost their actuality. This situation causes big difficulties on the application of the projects like nationalization, collectiveness or establishing site information systems.
- There is a need of a cadastral system that is update and has fast access to the subjects as opening up the investigations which are one of the most important subjects of our country agenda and doing research on property wealth in a quick way. This system has no function as a base to the country wide information technology. This situation is insufficient on fast, correct and efficient contribution on the subjects as, providing clearness on management style, avoiding speculations, tracing the property wealth movement by the independent judgment sides.

- Providing the formation of the urban transformation by adding fourth dimension as “time function” to the cadastre that is a living fact.

There is a need of update and transfer of the title deed cadastre registration system to the computer and a system establishment to print out the scaled cadastre map registration in order to have a permanent solution on the subjects of Rural Area, Urban District Planning and Reconstruction Applications, Urban Transformation and Land Unity. 18 institutions were authorized to produce reconstruction plans in Turkey. This situation causes decrease on the planning responsibilities and breakdown of authority and information.

There is no obligation for cadastre at the stage of physical planning. In the laws of Reconstruction and Cadastre, the unity of reconstruction plans and cadastre was mentioned but it is not defined as an obligation. In other words, reconstruction plan can be done to a field that has no cadastre. However, cadastre is the pre-condition to apply the reconstruction plans. Turkey is one of the richest countries in the world in terms of living culture and nature beings. Identification, registration and transfer of the beings to the next generations by protecting is one of the most important duties in our agenda.

Coordination among the institutions for bringing up the problems on the process of identifying and registering of the culture and nature beings and solution of the problems should be obtained; besides, inventory of these beings on national and international standards by making use of the development in technology should be prepared and an information system database should be verified.

It is stated that the line-off maps prepared to designate the borders of the protected area must be produced according to the “Regulation on Plans and Maps that are Subject to Registration and “Large Scale Map and Map Information Production Regulations”; the Ministry of Culture and Tourism and the Ministry of Public Works and Settlement should conduct a study on this subject together.

A new tendency in the immovable market called “mortgage” (a system of acquiring mortgaged house) creates a social expectation. In order not to create speculations on this system, it is vital to represent correct information to public and update cadastre data that will be needed in the urban field. This information also forms the database of establishment of the “City Information System” that is under the responsibility of municipalities in Turkey. Considering that 2/3 of the current cadastre to be changed according to the new technology, municipalities and city private administrations should absolutely reveal their needs and expectations from the Title Deed and Cadastre General Management in their strategic plans. For this reason, while Turkey’s “establishment cadastre” is about to finish and preparations of renewal and multi purpose cadastre should start.

Cadastral problems on urban transformation areas can be expressed under 4 topics;

- a) Insufficiency for technical reasons
- b) Loosing the “application” function
- c) Deficiency

d) Not showing the real borders on the ground

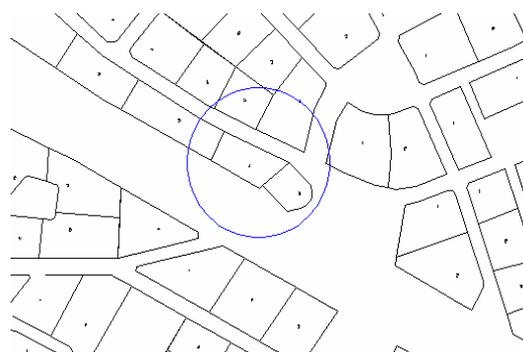
It is not possible to reach the expected results with the current legal regulations. These regulations only provide technical improvement, it is not possible to make updates because of the restrictions in the regulations and not finding out the rights appeared after the cadastre cause the indifference of the immovable property owners to the studies and there will be no salutary results (Cay and Ark., 2005).

## 5. INSTITUTIONAL CONTRIBUTION TO URBAN TRANSFORMATION

Forming corporate aims is to create a healthy and comfortable life environment that fits the technical and artistic disciplines, to improve the conformance to urbanization standards and the sensitivity to natural disasters, with the help of related institutions to arrange settlement and renewal of the development fields. Connected with this, some institutions such as the Housing Development Administration or Metropolitan Municipality that are tied to the central management but are independent on regulating legal laws, evaluate the economical situation and financial sources that are at the cities that the projects are applied on, make the assessment of damage in case of natural disasters, renew the conditions on market price and the income of people living in shanty regions, they also materialize the current cadastre situation by changing the related fields reconstruction plans and the update of the property usage.

## 6. RESULT

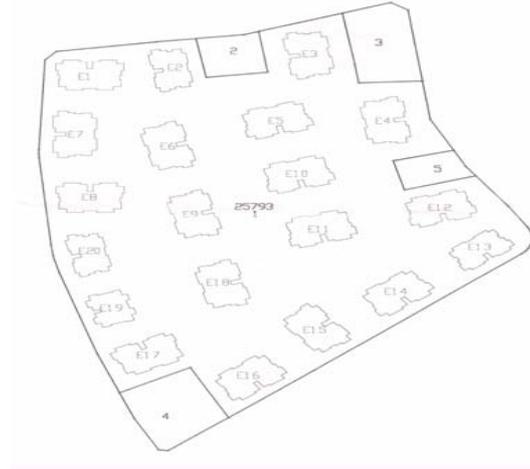
Despite losing its function and getting dilapidated salutary construction and comfort conditions of the urban areas that indeed have a potential value should be regained to the city with the contribution of related factors within definite social and economical programs. While implementing this process, renewal of the current cadastral base, its application to the ground and the physical reconstruction planning of the possession usage situation will be updated. Urban transformation study will be an alternative tool for the solution of the technical and social problems in the current cadastre (Pictures: 1, 2, 3) (Yıldız and Meşhur, 2005).



**Picture1:** Improvement in the cadastre maps.



**Picture 2:** Improvement in the format of the ground.



**Picture 3:** Improvement in the possession usage by renewing the reconstruction plan.

## 7. PROPOSITIONS

It is still not distinct that what kind of an organizational chart should be prepared because of the legal gaps for implementing the projects. In order to be successful of the urban transformation projects on this manner:

- a) A city committee to be founded with the participation of that region's residence
- b) A technical committee to be founded as a consultant, with the participation of the y topographic engineers, city planners, architects, economists, sociologists, ecologists and jurists.
- c) A local administration control committee to be founded that has responsibility on implementation and control of the reconstruction plans.
- d) A discipline committee to be founded that has representatives from the local administration and civil social institutes (Özden, 2001).

When the global change and improvements are concerned, the quality and quantity of the parcel based data is vital in order to be managed according to the decisions on protection and usage and to plan the fields for the good of public which is suitable to the democratic

planning principles. For this reason, an integrated land management should create information which is suitable to international standards and developing national projects such as, Map Information Bank and Land Managing Project.

At the process of urban transformation study preparations below mentioned procedures should be obtained within the formation of the “Map Information Bank”:

- Establishing a high performance “Cadastré Automation System” that keeps data in numeric and provides fast and efficient automation system digitally and represent it to the users.
- Editing the “circle of system” in a way that creates additional value in itself and producing the financial source of installation, maintenance and renewal in itself.
- Increasing the productivity by re-structuring the public data share system.
- Creating virtual archive that covers all lands in the country, where the private and corporate rights and responsibilities and restrictions are clearly seen.
- Deficiencies of land control points on quality and quantity aspect should be removed and coordinate systems should be accorded.
- With the digital map that shows the urban site latest situation, integration of the cadastral base should be done and existing reconstruction plans should be revised according to the model or urban transformation.
- Reconstruction applications should be carried out based on the plan and the actuality should be approved but the application on parcels should be banned except from the simple procedures like border corrections.
- Insufficiency of the supply and technical personnel should be relieved, expertise should be applied to the municipality council reconstruction members and contracted consulting committee should be founded.

As a result, the urban transformation studies based on projects should be evaluated on the platform that is formed by the central and local administrations, related profession chambers, academic staff and the members live in the project field and yet the cadastral insufficiencies with the current format should be solved.

## REFERENCES

- Erdi, A., Ozkan, G., Cay, T., System Problems in Turkey’s Cadastre, Possible Integration Problems on Information System 11- 12 October 1999, Black sea Technical University- Trabzon
- Erkan, H., Technical Cadastre, TMMOB-HKMO Publish 1991, Ankara.
- Es, M., : Urban Transformation in Information Society, Sample: Istanbul, Kocaeli University Gebze Vocational High School, May 2005, <http://www.kou.edu.tr>
- HKMO., Cadastre 2023, Report About Turkey’s Cadastre, TMMOB-HKMO, December 2003
- Inam,S., 1999, A Research on the process on the Urban Transformation Applications, Selcuk University, Konya

- İnam, Ş., Çay, T., İşcan, F. 2004.Kentsel Dönüşüm Sürecinde İmar Planı Uygulamalarının Sonuçları Üzerine Bir İnceleme, 8 Kasım Dünya Şehircilik Günü 28. KOLOKYUMU değişen Dönüşen Kent ve Bölge, cilt 1, s:401-417, 8-10 Kasım, Ankara.
- Kumar, R., “An Evaluation of Istanbul on Management and Planning System as a Metropolitan City”, *Istanbul Towards the HABITAT 2020,ITU*, Istanbul:1996, s.107.
- Özden,P.P., Kentsel Yenileme Uygulamalarında Yerel Yönetimlerin Rolü Üzerine Düşünceler Ve İstanbul Örneği ,İ.Ü.Siyasal Bilgiler Fakültesi Dergisi, No: 23-24 (Ekim 2000-Mart 2001)
- Yıldız, F., Chamber of Topography Engineers Konya branch, Turkish Newsletter 21.07.2005, Konya
- Yıldız,F.,Meshur,M.C.,Technical and Site Problems Faced During the Process of Urban Transformation Seminar, 25.June.2005, Istanbul.
- URL1., [www.hkmo.org.tr](http://www.hkmo.org.tr)).

## BIOGRAPHICAL NOTES

**Mr. Hasan Cagla** is a lecturer at Selcuk University in Turkey. He has been academic staff at the university since 1997. His research interests focus on high cadastral surveying, mapping, land registry, Land Consolidation, Development Planning

## CONTACTS

Assis.Prof.Dr.Saban Inam  
University of Selcuk  
Faculty of Engineering –Architecture  
Department of Geodesy and Photogrammetry  
42075 Konya  
TURKEY  
Tel. + 90 332 223 19 41  
Fax + 90 332 241 06 35  
Email:sinam@selcuk.edu.tr

Mr. Hasan Cagla,  
Selcuk University  
Kadinhani Vocational School of Higher Education  
Mapping-Cadastral Programme, Kadinhani  
Konya  
TURKEY  
Tel. + 90 332 8340306  
Fax + 90 332 8340305  
Email:hcagla@selcuk.edu.tr,  
Web site: <http://www.kadinhani.selcuk.edu.tr/>