

PROF. DR. TAHSİN YOMRALIOĞLU

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GEOMATICS
ENGINEERING



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ABOUT “GEO303E – CADASTRE” COURSE

PRELIMINARY INFORMATION

Short description of the course (content)

Cadastral concept. Cadastre-human relations and the importance of cadastre. Cadastre in the world and Turkey. The definition of judicial and technical activities for the realization of the first cadastre regarding to cadastral legal framework. Cadastral issues, maintaining and renewing. Examining the concept of Multipurpose Cadastre and parcel-based land information system design and the development process.

Weekly course plan

- 1) Introduction, and general information about the land management and cadastral concepts.
- 2) Aspects of land ownership, land tenure, land management, the concept of real property, cadastre for real estate property management.
- 3) Basic information about the cadastre concept, the purpose and importance of the cadastre, the historical development of the cadastre. Cadastre in the world.
- 4) Cadastral activities in Turkey. The definition of Cadastre, benefits, laws and regulations.
- 5) The scope of cadastral legislation and implementation regulations. Administrative structure of LRCGD
- 6) Initiation of cadastral works, identification of the necessary process of determining the cadastral work area.
- 7) Technical processes in the cadastre. Land parcel demarcation, identify and control tasks.
- 8) Legal proceedings relating to the land ownership of property in cadastre. Formation of the land title deeds.
- 9) Finalization of cadastral works.
- 10) Maintaining of the Cadastre, updating of cadastral task. Turkish LIS project.
- 11) Renewing in Cadastral by the Law article 3402/22, No. 5304 laws and regulations.
- 12) Overview of modern cadastral systems. Cadastre 2014. Cadastral information systems.
- 13) GIS-Cadastre relationship. Land Information System Overview.

Dersin Öğrenme Çıktıları	Bu dersi başarıyla tamamlayan öğrenciler;	
		DÖÇ
	1	Arazi yönetimi ve kadastro kavramlarını anlar. Kadastronun toplumsal yararlarını anlar ve arazi yönetimi ile ilişkisini kurar.
	2	Ulusal ve uluslararası evrensel kadastronun gelişimine paralel tapu-kadastroya dair idari yapı ve işleyişi anlamıştır.
	3	Kadastronun mevzuatına ilişkin kadastradaki hukuki ve teknik işlemleri anlamış olarak kadastronun faaliyetlerindeki tüm süreci planlar (z.4).
	4	Kadastral veri setleri ve mülkiyet haritalarının üretilmesi ve modellenmesi için gerekli ölçme, hesaplama ve görselleştirme yöntemlerini seçer.
	5	İlk tespit kadastronun sürecini organize eder. Parsel üretimine ilişkin idari ve teknik işlem adımlarını yönetir, kontrol eder ve doğrular.
	6	Kadastroda sürdürülebilirlik ve güncellenmenin önemini fark eder; Kadastroda yenileme sürecini organize eder, idari ve teknik işlem adımlarını yönetir, kontrol eder ve doğrular.
	7	Kadastronun tapu fen işleri (ifraz-tevhit vb.) süreçlerini organize ederek, idari ve teknik işlem adımlarını yönetir, kontrolleri gerçekleştirir ve doğrular.
	8	Kadastroda parsel yönetir, kontrol eder ve doğrular, tespit yaparak sınırlandırma işlemlerini yönetir ve doğrular.
	9	Altyapı, Kıyı, Mera ve Orman Kadastrosu gibi disiplinler arası yapılan çalışmaları teknik ve hukuki mevzuat bakımından yorumlar.
	10	Tapu ve Kadastro Bilgi Sistemi'nin amaç ve fonksiyonlarını anlamıştır. Parsel tabanlı Arazi Bilgi Sistemi tasarımı ve kurulum sürecini uygular, gereksinimleri analiz eder.
(Course Learning Outcomes)	Students who completes this course successfully;	
		CLO (Course Learning Outcomes)
	1	Understand the cadastre and land management concepts. Understand the social benefits of the cadastre and establishes the relationship between land management.
	2	Understand the administrative structure and functioning of national and international cadastral land-surveying tasks regarding to development of land registry systems
	3	Understand the legal and technical processes in the cadastral planning of the whole process of legislation relating to the cadastral surveying activities.
	4	Decide and select the calculation and visualization methods, and necessary measuring models for the production of cadastral data sets and property maps.
	5	Organize the first process of the cadastral surveying. Manage the administrative and technical process steps for manufacturing the parcel, check and verify.
	6	Recognizes the importance of sustainability and update the cadastre; organizes the renovation process of Cadastre and manages the administrative and technical process steps, control and verify.
	7	By organizing processes of technical works in cadastre (land subdivision-amalgamate etc.), manages the administrative and technical steps, perform the directives and confirms them.
	8	Manage, controls and verify cadastral parcels. Determine and manage parcel boundary limitations process.
	9	Interpret and make relation among interdisciplinary areas like infrastructure, coastal, grassland and forest lands in terms of technical and legal regulations.
	10	Understand the purpose of Land Registry and Cadastre Information System and their functions. Implement and design parcel-based land information system, and analysis the requirements.

“This was one of my prayers: for a parcel of land not so very large, which should have a garden and a spring of ever-flowing water near the house, and a bit of woodland as well as these...”

Horace, 1st century B.C.

1 INTRODUCTION

1.1 Human-Land Relationships

Land is the mother. Although the human-land relationship has become more visible with the residence-to-residence life, in fact it begins with the moment when the relationship with the land begins to exist. Human is dependent on the land to survive. Almost all of the activities are based on land. Land is the place where we can firmly stand our feet. It gives life to plants and animals. The plants grow on the ground. Animals are fed with these plants that grow in the land. Since human beings first existed, they are fed with plants and animals. Again, life for man comes from the land. It makes things from the land. It makes garments from plants that are obtained from the land. It makes art from the land. The pictures that people made using land Even in 7000 years the walls of the houses were decorated. Çatalhöyük, one of the first settlements, has these unique examples. Again, the pot and clay pots found in the excavation areas show the variety of man's relation to the land.

Even holy books emphasize the importance of the relationship between man and land. The first man is derived from the Hebrew name Adam, the word for the man who means land. The name of the wife of Adam is Eve, the translation of the word of the air that comes to life in Hebrew. That is, this union of life and landforms the foundation of the creation story described in the Holy Books. In the book "Soil" given to Turkish by the TEMA Foundation, this is described by Montgomery as follows: 'God created the earth (Adam) and his life (Eve) from his ribs flushed from this land. The “homo” word, which means Latin man, is also taken from the word humus which means "living in Latin".

The first murder in the world was done in the name of land and property ...!

The fourth chapter of the first book of Moses (Torah) tells this tale: There was a wealthy and vast land of Babylon representing the city. But he was talking about being richer, and therefore landowner. Their boundaries rested on the rural land of Habil. At this point, property and border conflicts have begun. And ultimately, this conflict resulted in the killing of Kabul ...

HUMAN-LAND RELATIONSHIP

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killing of Kabul ...*



Cain took Abel to death,
James Tissot's painting.



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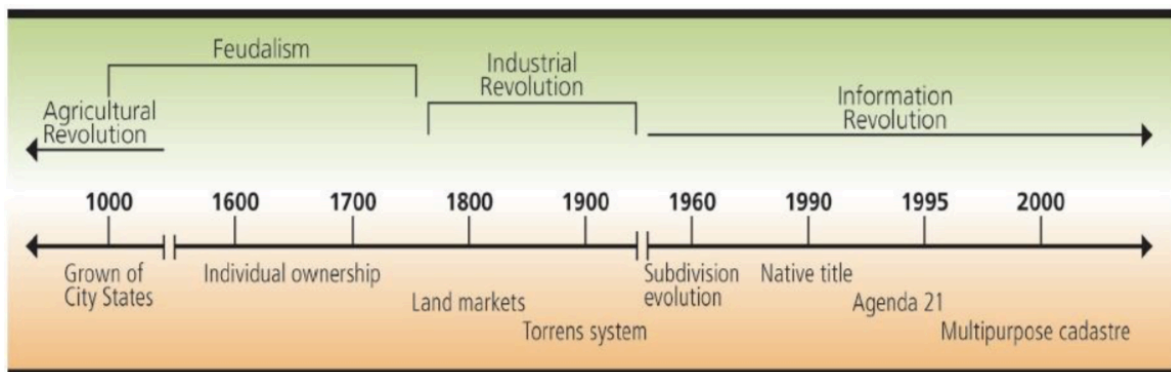
The relation of man to the land is handled with more agriculture. People have been living their lives for a long time as a hunter-collector, moving here and there. At the end of the last glacial period 11,000 years ago, important parts of the earth had long dry seasons with the change of climate. These conditions provided a suitable environment for seedy and tuberous annual plants. These plants have helped to provide much more energy available by producing seeds. These nutrients that can be stored in some areas firstly changed the structure of the hunter-gatherer society and the first settlements emerged as villagers. Thus, agricultural societies began to form. In other words, it is in fact a behavioural adjustment process that the inhabitants begin to deal with agriculture. Nevertheless, the soil began to deteriorate due to the increasing need for the land along with the increasing population and misapplication to overcome this need.

(Source: *Toprak (In Turkish)*, 2010, David R. Montgomery, Publications of the ISE Business Bank).

As you can see, human-land relationships have always been important throughout the civilizations. Especially land is the basic place of human activities. For this reason, human has always been in contact with land since he was there. The human-land relationship, which has a dynamic structure with the influence of life-long developments, has always been maintained in different forms in different periods of history.

1.2 The Place of Land in The Process of Civilization

In the beginning, the land used for housing and nutrition purposes was first used to meet the food needs of the inhabitants. Particularly in the "**agriculture society**" process, land has been used as a platform for farming and nutrition purposes so that people can live their lives. Then, along with the growing population, more land was needed, and on the other hand the "**industrial society**" with the new discoveries of mankind went on. Thus, the human power used at the beginning has left its place in the machine power. In this process, mechanization in agriculture has begun, while at the same time, land has become a sign of strength and wealth for humanity. More individuals and countries with more land were seen as stronger and richer. With the emergence of information technologies, the process of civilization development has shifted from the industrial society to the "**information society**" process. Again, in this process the land has become more important with preserving its importance as the first time and even more efficient use. In this process, land has now become an important investment source for individuals and societies as an economic investment instrument.



	Feudalism - 1800	Industrial revolution 1800-1950	Post-war reconstruction 1950-1980	Information revolution 1980-
Human kind to land evolution	Land as wealth	Land as a commodity	Land as a scarce resource	Land as a community scarce resource
Evolution of cadastral applications	Fiscal Cadastre Land valuation and taxation paradigm	Legal Cadastre Land market paradigm	Managerial Cadastre Land management paradigm	Multi-purpose Cadastre Sustainable development paradigm

Fig.x Evolution of western land administration systems

Given all of the above explanations, the following summary can be made for *land in the human-land relationship context*. These;

1. Land is a physical reality: land is a piece of land that we live on, where it interacts with society, providing food, shelter and resources for all living things ...

2. Land is an economic asset: land is the base of economic production, the main asset of development and wealth. In addition to the products obtained locally, the land is a commercial value through market ...

3. Land is a legal infrastructure: Land is constructed in accordance with the legal structure that establishes the basis for the rule of securing the right of ownership and determines how the land is used.

4. Land is a cultural asset: Land is a non-recyclable asset that cannot be transported and destroyed. It creates space for many mobile values of society and individuals ...

1.3 Sustainable Development

In 1853, according to Duwamish Indian President Seattle, "*... these lands we have lived on are not inherited to us by our ancestors, but relics left to be passed on to future generations ...*". Essentially, this is an important forward-looking statement that emphasizes how land use and resources should be looked at. Today, "***land is not recycled and cannot be re-produced as a scarce resource***" has been adopted. Because the pressures arising from rapid urbanization, globalization trends, planning processes, environmental management, and rapid developments in information technology, which have begun to be seen together with rapid population growth in the world, have become a threat to world life. Because of that reason, the management of the environment, and therefore the land, has become a necessity for the continuation of mankind today. As a matter of fact, as the land resources are decreasing day by day and threatening the vital activities in the world, the countries of the world came together and started to search for solutions.

For this purpose, a "Summit of the Earth" was organized in 1992 under the "United Nations Conference on Environment and Development-Agenda 21" with the participation of 178 countries in the Rio city of Brazil. The most important result of this summit is that all the nations for the protection of the environment have met with the concept of "Sustainable Development" and this concept has become official. Thus, binding decisions and responsibilities have been introduced on behalf of all countries in order to use and manage world resources according to the principles of sustainability. Again in 2002, the "Rio Principles" were reaffirmed strongly in the "World Sustainable Development Summit" in Johannesburg, South Africa.

Sustainable Development; it is a concept that emphasizes that projects should be considered as an intersection of "*economic*", "*social*" and "*environmental*" priorities.

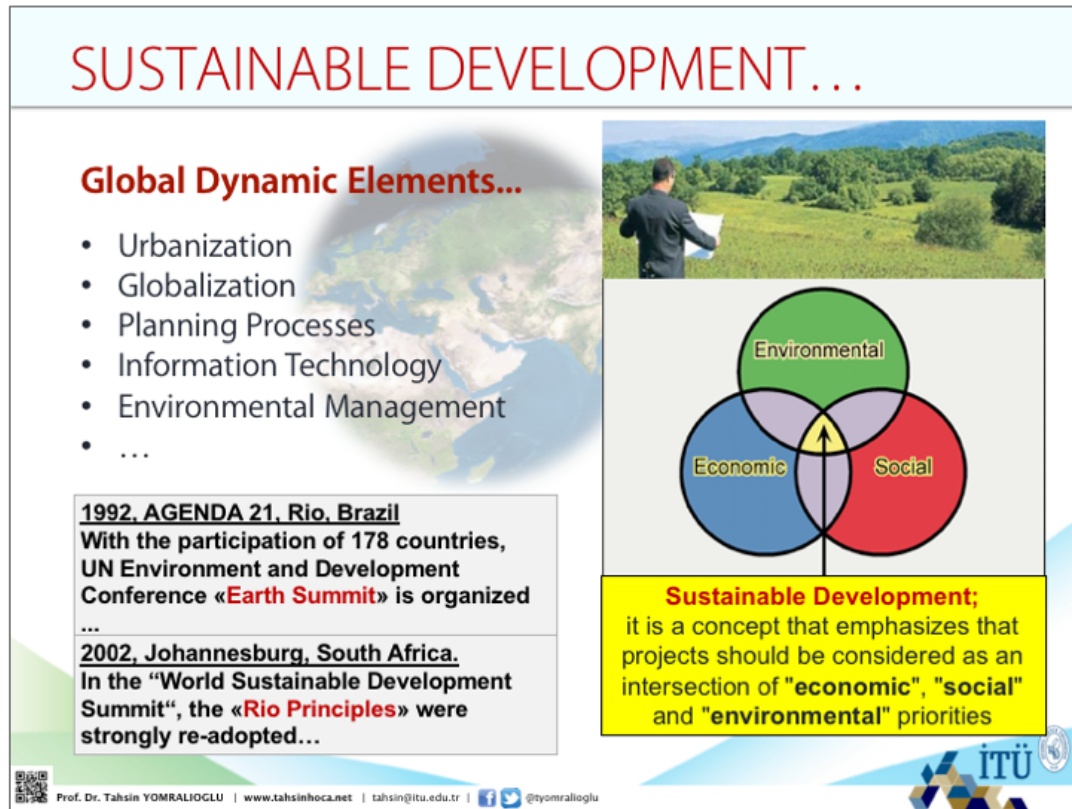


Fig. Sustainable Development Approach



Fig. Land-use elements of land management

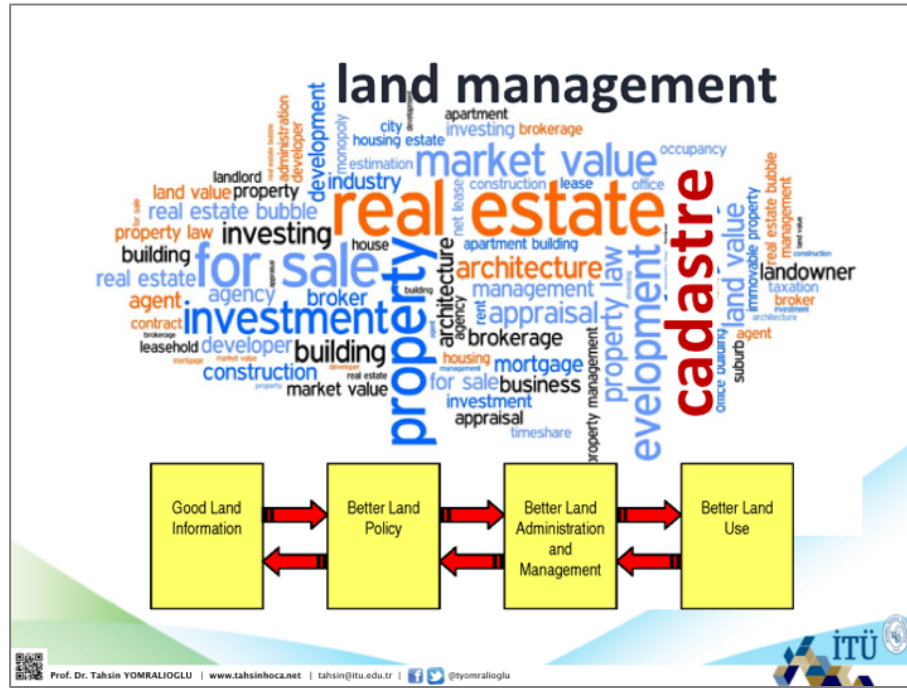


Fig. Keywords, better ways for good land development process in land management

Especially the orientation of the society to a more organized and planned way of life and the necessity of the institutional structures for the establishment and establishment of the property right through the legal grounds have led to the emergence of the concept of "**land management**" together with the developments in information technology, especially "**cadastre**".

1.4 Cadastre: A social entity

Today, "cadastre is seen as an integrated structure of technical and legal systems which reveal land-human relations." With cadastre; establishment of a "functioning land registration system", establishment of a e-government, spatial information systems, establishment of a real estate immovable investment environment, establishment of a modern land registry system, establishment of property, elimination of disputes, prevention of tax losses, provision of regular city- (*rural and urban development, roads, dams, irrigation, expropriation, land readjustments, etc.*) of the public services related to land and property are provided.

Also, through the interpretation of the Turkish Constitutional Court; "*In Turkey, cadastre, a symbol of the country's modern identity, precise and true description of the real property areas, the first condition of zoning and space arrangements, the only means of land recovery, great power is based on the state in the taxation of real estate, a social entity that removes the factors that disrupt national solidarity is the safest guardian of investments with real estate.*"

After all; property is one of the fundamental rights for humanity. The determination of property rights for immovables is the reason for the existence of the cadastre. In fact, it appears that the cadastre has been established in many countries initially for tax purposes, and later on it is added to the basic duty of ensuring property security. However, changes over time and the global dynamics that have taken place in the relationship between man and land have changed the cadastral view and cadastral expectation to a considerable extent. Now, from the property viewpoint, it is expected that every physical and non-visible restrictive binding on everyone's property will have information on all rights and that this information will be registered and secured by the state. Today, cadastre has important tasks in achieving sustainable development goals.



2 OVERVIEW OF PROPERTY OWNERSHIP

2.1 Property Concept


Property right: (law) A right that gives the widest possible savings on an item, as limited by law or other regulatory rules. A person with a property owns the authority to use something that is in his possession, to transfer it to others, to take advantage of the product of this thing. In the broadest sense, property right; refers to the right granted to persons on movable or immovable properties.


Real or legal persons with private property will also be able to benefit from these opportunities, as they have the right to own, use and enjoy the right to property. This theoretically correct point has lost its "absolute" meaning in practice over time. As a matter of fact, in the constitution of many countries, the right of property ownership is seen to be limited in favor of the public good.

The right to property was also recognized by the United Nations Declaration of Human Rights. According to Article 17 of the Universal Declaration of Human Rights, *"Everyone has the right to own property alone as well as in association with others. No one shall be arbitrarily deprived of his property"*.


PROPERTY RIGHT...

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According to Article 17 of the Universal Declaration of Human Rights, **"Everyone has the right to own property alone as well as in association with others. No one shall be arbitrarily deprived of his property"**.



In the Turkish Constitution. Article 35 of the title of property, **"Everyone has the rights of ownership and inheritance. These rights may be restricted by law for public good purposes only. The use of the right of property can not be contrary to the benefit of the society"**.



Prof. Dr. Tahsin YOMRALIOĞLU | www.tahsinhoca.net | tahsin@itu.edu.tr | [f](https://www.facebook.com/tyomralioglu) [i](https://www.instagram.com/tyomralioglu) [in](https://www.linkedin.com/company/tyomralioglu) @tyomralioglu




Fig. Property right overviews

2.2 Historical Development of Property Right

In *feudal* times private property is not *absolute*, with acceptability. The goods on land are created for the benefit of all of mankind. But there is a useful aspect of private ownership in terms of encouraging people to work harder. However, ownership has not only the right, but also the responsibility.

Since the personal interest is not in contradiction with the public interest as compared with the liberal views of the 18th and 19th centuries, the right to free ownership will also be a harmonious and orderly source for society. In contrast, socialist thinkers who lived in the same ages greeted private property with suspicion.

Marxism, described as scientific socialism, rejects private property for many reasons. Drawing attention to the fact that the means of production remain private property in the case of collective production due to technological developments, *Marx* claims that this is a cause of the capitalist system and argues that all means of production must be excluded from private ownership.

Different opinions on private property are now copyrighted by many constitutions and as stated above, the right to property is granted to the fellow, provided that it is not contrary to public interest. On the other hand, it should be noted that the term private property is used in two relatively different meanings. The first refers to the property right recognized by real and legal persons other than the state and other public entities. In the second, it means more individual property. However, private ownership is used more in the first sense, and it is accepted that associations, trade unions and commercial companies with legal personality can also have private property.

2.3 Private Ownership View

With the most general definition, *private ownership means* that the resources of production belong to the person. In another expression, the possession of a person by himself or herself, with his own interest and, means that the commodity has no relation with anyone else. Nowadays, private property is a limited right by law and does not contain absolutism in comparison with the old periods.

There is no human right, if there is not property right...

The freedom of individuals to use their knowledge and skills to accomplish their purposes different from other individuals depends on the private property agency. If the property is not privately owned, the aims of all individuals will be controlled by the state. *Property rights are not property-related rights, property rights are the human rights of property.* In reality, property rights constitute the basis of hu-

man rights, since the most basic human right is that one has his own body. Individuals have moral rights to the products of their labor. The rights of the writers of the American Declaration of Independence, such as the right to life, liberty and happiness, are all dependent on property rights, including our own. The right to own property is also recognized in Article 17 of the United Nations Declaration of Human Rights.

- Universal Declaration of Human Rights

Has been proclaimed by the Decision of the United Nations General Assembly dated December 10, 1948 and No 217 A(III). With the Council of Ministers dated April 6, 1949 and numbered 9119, it was decided that the publication of the Universal Declaration of Human Rights in the Official Gazette should be taught and interpreted in schools and other educational establishments after publication and appropriate announcement in radio and in newspapers about this Declaration. The Decree of the Council of Ministers was published in the Official Gazette dated May 27, 1949 and numbered 7217.

Article 17: Everyone has the right to own property alone as well as in association with others. No one shall be arbitrarily deprived of his property.

Property is a Space of Freedom for Individuals ...

The unrestricted use of private property creates an area in which individuals can experience their identity and self-worth by increasing their emotions, making their own choices and determining their own destiny. Without this space, the individuals will be subject to the arbitrary will of the other persons and therefore will not be able to make certain plans for the future. The private property agency provides people on a planet with scarce resources living together without infringing on the rights of others. This unique institution makes it possible for society to exist simply by giving control over certain things to a specific person or group. In other cases, it solves only those arguments that can be solved by obeying violence and the mighty.

The main legal basis of the ownership of our country, the Constitution of the Republic of Turkey Situated in Article 35. "**Everyone has the rights to property and inheritance**" is the phrase. This right is the most important independence of the modern societies, taking them locally and distinguishing them from slave societies. Because the existence of the state of law and as a sign of independence, the right to property is spread to the people and the freedom of property is provided to the individuals.

There is no justice where property does not exist...

The property principle expresses the opposite of the community where the strong one is right. A state that wants to provide social unity among people should make a justice judge; it is not possible for justice to exist without private property. Because it ensures that our rights on our property, our bodies, our labour and our possessions are accepted; The attacking of these rights or their violation means injustice. These rights cannot be protected unless the rights of the individual to acquire, use and dispose of the property are respected.

Private Property Needed for Economic Development ...

Private ownership is the main actor in economic development because of the work and investment initiative it has created. For this reason, having confidence in property is a necessary condition for economic development. Scottish philosopher David Hume defines property laws as the engine of economic development. Hume's rules are "fulfillment of the promises" meant to mean "stability in property," "transfer based on property," and respecting contracts made. Therefore, strengthening of property rights is a key element in economic reforms that will increase economic performance. If Hume is recognized in three rules, property will be in the hands of the best rulers, not just the people whom the state transfers to its own property. By making the social work union a necessity for economic development, private ownership brings people closer to each other and shapes the work that people do, as well as the benefits of their neighbours.

Private Property Provides Benefits to Those Who Own Property Owners and Those Who Do Not Have ...

Private ownership is often misunderstood as benefiting those who have it individually. In fact, the benefit of the society in private ownership of the property is far greater than that of the individual. In order for a landlord to earn income as a farmer, he must feed the people who live in cities without land and possibly in remote cities. At the same time, if you want to keep your income in the future, you need to manage the rural area and the natural environment well. A poor farmer will not be able to earn income and will have to sell his land to someone who will manage him better. Private ownership benefits those who own it; but the profit that this institution collects is greater than the millions of people who do not have the means of shopping they are doing, making it possible to live and work. Private ownership allows individuals to build up their capital reserves and future jobs through the transfer of wealth through the community.

The Role of the State to Protect Private Property ...

In a society where private property is respected, it is not possible to transfer property from the state to the mafia. Because people who live by force cannot keep the property acquired in an unjustified way in a free society. The role of the state is not only to protect well-known objects, but also to protect private property in new areas of intellectual property in cyberspace. Private ownership is a human right that is necessary for democracy and vital to individual identity, constitutes the source of political stability, and is active in the production of wealth. The interests of property also mean the interests of civilization.

2.4 Public benefit and property ownership

After the French Revolution of 1789, the concept of common good took its place. It is a concept exist in the UK as "public interest". The Turkish Constitutional Court defined the public interest as "providing peace and prosperity for the person and the society". The use of the public benefit concept as a public interest in the constitutional judgment and the academic environment is widespread. "The concept of public benefit is one that brings with it the authority of state bodies to appreciate. As a rule, in accordance with the general scheme followed by the decisions of the European Court, whether the public interest is applied in tandem with the Convention must first be determined whether the public interest is present in the concrete case and then whether a fair equilibrium has been achieved between the general benefit and the individual. In the absence of an objective definition of public interest, the notional concept is "time and place-specific".

Public benefit is a concept that can be expressed in public service. Public service; *"Continuous and uniform activities which are carried out by the State or other public entities or their supervisors and supervisors under the control of them, to meet and satisfy public and collective needs, and to provide for the benefit of the public"*. Public benefit is the top beneficiary of the individual and community interest contest. Essentially, public interest is a judicial choice in court decisions for the benefit of the individual or community in favor of the community, the society and the state, or in the case of community, community and state interests, which is also of great benefit.

Public Benefit in Constitutional Guideline

Public benefit is a restriction in the limitation of fundamental rights and freedoms. First of all, there is an antagonism in the limitation of the right of ownership. Public restraints are the main limiting factor in limiting the right to property. Regarding the right of property ownership, it is possible to completely cut off the relation of

the right of the property with the property through the expropriation and nationalization because of the public benefit. However, Article 35 of the Constitution orders that the right to property shall be restricted and that the right of property shall not be used contrary to public interest.

In the narrow sense, the public benefit is defined as "the legal measure that determines the use of the authorities and resources at the hands of public institutions for the well-being of the public, and the legal measure used to guarantee that the limit of ownership is used and the substance of this right is not touched." Broadly speaking, public benefit refers to "all political and intellectual values that determine the purpose of public transactions and actions." From here, the first definition is a technical term, while the second one is political and ideological.

The concept of public benefit is included in the Social and Economic Rights and Assignments section of the Turkish Constitution. In Articles 43 to 48 of the Constitution, the principles related to the utilization of the public interest in our country are laid down in the materials related to the utilization of the land, the ownership of land, agriculture, animal farming and the protection of the workers in these branches of production, expropriation, nationalization and work and freedom of association. In Article 35 of the title of property, *"Everyone has the rights of ownership and inheritance. These rights may be restricted by law for public good purposes only. The use of the right of property cannot be contrary to the benefit of the society"*.

Public benefit in the Turkish Civil Code; Article 731 of the Law states that *"the restrictions arising from the law of immovable property shall be effective without being registered in the title deed registry. Removal or modification of these restrictions will depend on the formal arrangement of the contract concerned and the annotation of the title deed. The restrictions placed on the public interest cannot be removed and cannot be changed"*.

Under the Article 754 *"Public Harmonization Restrictions"* states that *"Restrictions on property rights for immovable property, in particular for building, fire, natural disasters and health-related law enforcement services; forests and roads, maritime and lake shores on the main and secondary roads, border markings and landmarks; improving or subdivision of the land, consolidating agricultural lands or building-specific lands; ancient properties, natural beauties, scenic spots, viewing spots and rare nature monuments, as well as restrictions on property rights for the preservation of lakes, mines and spring waters, are subject to the provisions of the special law"*.

Under the The 756th *"Property and Altitude"* states that *"The sources are the integral part of the estate, and their property can only be earned along with the*

ownership of the land on which they are born. The right on the resources of someone else's land is established by registration in the title deed as an easement right. Underground waters are water for public interest. Being a landowner does not result in having underground water beneath it. The provisions of the special law concerning the form and extent of utilization of landowners by underground waters are reserved".

As it can be seen, the constitution and the related articles of the Civil Code are the sources of the legislation on the protection of social life, cultural and natural assets, forests, the whole environment and residential areas, as well as disaster protection. The result of careful reading of these items can be said to be the restriction of the public interest to the interests of the public and the environment, for the rights of all persons on movable and immovable property. It would be possible to say that the laws are the public benefit principle of one of the sources of the protection of the general welfare of the people and the relations of the people with each other and their environment to the highest level and the limitation of the property rights on the immovables due to this principle.

The public benefit is mainly a matter of maintaining the existence of the community that people have formed by living together, not the person. The direct and indirect protection of the interests of the people who form the basis of society's order constitutes a public order. The inclusion of general public interests of the public interest requires the limitation of the rights of persons and their powers over their property. In democratic political processes a linear relationship is established between the interests of the public. To maximize the benefit of the majority, limiting the interests of the individual in order to ensure social justice is the basic principle of public interest.

2.5 “3R-Rule” in Property

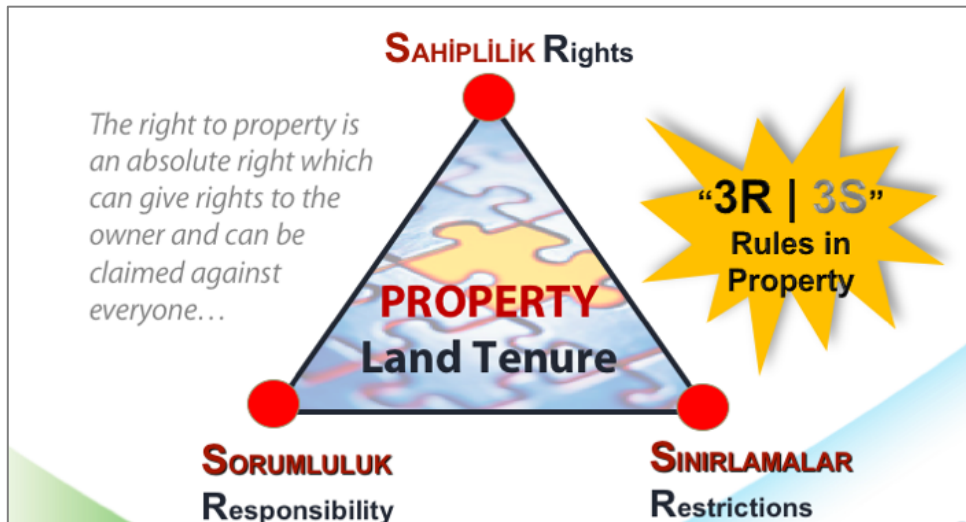
In addition to the above-mentioned concerns on property, rights in land property mainly consists of three main components. These; ***a) Rights, b) Responsibilities, and c) Restrictions.*** These basic principles can only be referred to as “Land Tenure” for an immovable when used together. The coexistence of these basic principles is known as “**3R-Rule**” in property. According to this;

The principle of "**rights**" emphasizes that everyone can have the right to ownership on a stand-alone or joint (common) immovable property, and to save and use the immovable property as he wishes. T. C. Article 35 of the Constitution points directly to the existence of the right to property. The immovable property may have the right to share property with others in a consensual manner, to inherit property, and to exercise commercial rights according to all kinds of supply and demand procedures in immovable property.

However, even if the immovable owners have the right to own property, some **"responsibilities"** arising from these rights must also be fulfilled. For example, the most important responsibility for immovables is the fulfillment of the "estate tax" or other tax duties arising from the immovable property. In addition, elements such as the liabilities arising from land use plans, the use of the property in accordance with the purposes of the owned properties, the respect for the general life rights of the neighboring immovable owners and the community, and the lack of such rights shall be included in the scope of the "responsibility" evaluated.

Another fundamental principle of property is **"restrictions"** and should be known that the right of property is infinite and not limitless. It is also possible to limit or otherwise restrict the right of land ownership. These restrictions may sometimes be through direct legislation or through schemes. As a matter of fact, Article 35 of the Constitution points out that the right of property can be restricted when public benefit is concerned. Especially in terms of immovables, while the rights on the land are determined by parcel borders, underground and aboveground rights can also be restricted by zoning plans and laws. For example, while the permitted number of floors for a parcel with the zoning plan limits the right to use for that parcel, the number of basements allowed also sets the floor depth limit. Sometimes it limits these rights directly to the law. For example, laws such as "mine law", "zoning law", "coastal law", "forest law", "pasture law", "expropriation" etc. can directly limit the right to property.

The provision, use and fulfillment of the consequences of these rights, which are known in the property as 3R rule, can only be provided by laws. For that reason, property legislation must be considered and implemented as a whole, from the Constitution up to the relevant laws and regulations. In this context, our country is primarily T.C. The Constitution, the Civil Code No. 4721 and the Cadastre Law No. 3402 are the basic laws.



2.6 Legislative infrastructure for property

The basic legal basis of property rights is Article 35 of the Constitution of the Republic of Turkey. **"Everyone has the rights of property and inheritance"** is called in the constitutional as a reference.

The basic legal basis of the Modern Title Deed Registry is the Civil Code of 4 October 1926. The Civil Code points to the title deed registration with the statement **"Possession of immovable property will become a register"** (Md.705), and Md.997 also describes the main purpose of this process with the title of **"Land register to show the rights over immovable property"**. Similarly, Article 719 of the same law states that **"the boundaries of the land property, title plans and demarcation on the field will be determined"**, and **"cadastre"** is indicated with regard to determining the parcel boundaries.

The implementation of the cadastral procedures aiming at the creation of the land register records and the registration of the boundaries of the land is ensured by the Land Registry Law No. 2644 dated 22.12.1934, and Cadastre Law No.3402 dated 21.06.1987.

According to the Cadastre Law No. 3402, the aim of the cadastre is **"to establish the ownership rights of the immovable properties in accordance with the provisions of the Turkish Civil Code and to make cadastral maps"**. As a result of these studies, the geometrical positions and legal statuses of the parcels on the supply are determined and a modern title deed is created under the responsibility of the state.

Therefore, first of all, technical measurements and mapping operations on the ground, namely called **"cadastral"** are made. Then, the other legal rights on the piece of land whose boundaries are determined, namely called **"parcel"**, are recorded and the documenting process of ownership is completed with **"title deed"**.

"Land Registry and Cadastre General Directorate (TKGM)" was established on 29.05.1936 with Law No.2997, for the purpose of carrying out cadastral transactions besides land registry transactions. Finally, the establishment and duties of the General Directorate have been rearranged with the Law No. 3045 dated 26.09.1984 on "Acceptance of Decree Law on the Establishment and Duties of the TKGM". TKGM, relating to immovable property; they question the legal and similar situations determined by the query **"who and how?"** with **"Title Deed"**. In similar, the question **"Where and How Much?"** is asked by **"cadastre"** depending on the location. Both of these activities are integrated under the umbrella of the TKGM.

3 LAND MANAGEMENT and LAND ADMINISTRATION

The term “**Land**” is a term with many meanings. For physical geographers it is a piece of earth that is a product of geological and geomorphological processes. For economists, it is a resource that is operated or protected to provide economic production and development. For lawyers, it is a volumetric field that has conceptual rights ranging from the center of the world to the infinity of the sky and the different rights that determine what can be done with it. For many, it is simply a field for human activities, where many different forms of land use are reflected.

In the present case, the land covers everything that is directly integrated with things on the earth's surface, including water-covered areas. The land includes many physical and abstract attributes, from the right to take light or the right to build on land, to the right to use and operate ground water and minerals. The land contains all the biological, chemical, and chemical factors that surround the human being and form a complex ecological system and are called the biosphere. Therefore land; "The air we breathe; the water we drink and the environment we enjoy; the land we use, the mines we use and the buildings we build on; an increasing number of crowded cities; and today is the natural environment we seek to have fun and protect for future generations."

3.1 Strategic Role of Land

From the earliest times of human settlements until the end of the 1700's, he represented land, wealth and power. With the living industrial revolution, the rise of the capital has transformed the land into a commodity that has been removed from being the main source of wealth, moreover, can be bought and sold. The reconstruction studies after World War II and the population explosion in this period revealed the necessity of effective spatial planning especially in urban areas and started to be regarded as a scarce resource. When it came to the 1970s, inadequate food production and resource shortage became evident, so that there was a need to effectively manage rural land use, not just urban. As a result, the need to see land as a “social scarce resource” and to effectively manage this resource has begun to be widespread on the international scene. In this context, gatherings and events were organized by many global organizations, especially the United Nations (UN) and the European Union (EU). Sustainable development, defined in the "Brundtland Report" published by the World Commission on Environment and Development in 1987 and described as "*meeting today's needs without ignoring the needs of future generations*" approach is widely accepted throughout the world.



The use of land with a sustainable development approach is only possible with the presence of an effective land management and management system. Healthy land policy is needed for effective land administration and management. One of the preconditions for the development of land policies in a suitable structure is to have knowledge of the quality of land.

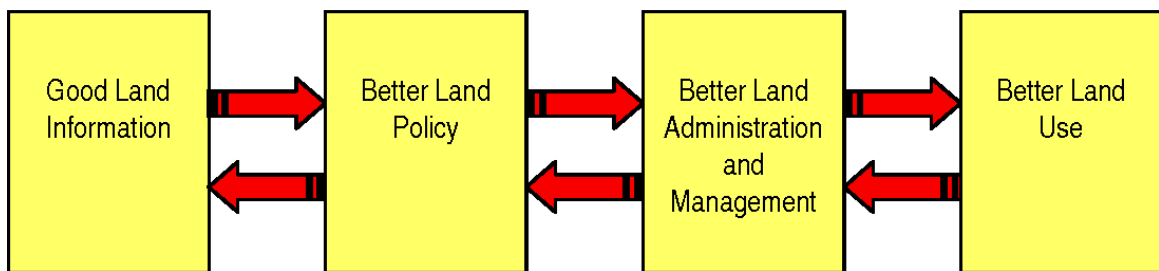


Fig. Effective land management strategy

3.2 Land Management

Land management is the process by which land resources are made useful. In other words; land management, decision on land and implementation of decisions. Decisions can be taken by individually or jointly by a group. This concerns the management of land both for present and for future generations.

On the one hand, land management may need to make key policy decisions about the nature and extent of investments on the land. On the other hand, it includes

routinely made decisions made daily by land managers, such as surveyors, valuation specialists and land registrars. Land management includes:

- a) Land appraisal and valuation;
- b) The development and management of public infrastructure and services;
- c) Establishment and implementation of land-use policies;
- d) Transfers of land property, including decisions on mortgages and investments;
- e) Management of land resources such as forest, soil or agriculture;
- f) Environmental impact assessments;
- g) All land-based activities are monitored at the time they affect land use.

Steps in land management

As in all types of management, land management requires the identification and sequencing of goals, the identification of alternative methods of success, and the search for the results of each alternative. In theory, steps in land management should include:

- a) a monitoring step where information about the environment concerned is collected (eg using remote sensing techniques to identify idle landmarks) to determine where decisions need to be taken and action should be taken;
- b) a planning step in which models are set up that allow for orientation to alternative activities;
- c) a policy-setting step in which a particular activity is selected and monitored;
- d) the step of an operation in which the selected activity is carried out (eg in the construction of a new motorway or in the implementation of some land reform programs);
- e) an extra step of monitoring the results of the transactions. However, this last step is often neglected.

This relationship between land information-politics-management-administration and use has a dynamic structure, as it is with man-land relations. In order for the countries to be able to keep up with this dynamism, it is necessary to observe the forms of land information management, land policies, land management and management systems and land use at certain time intervals. This timeframe covers a long period of change and development, such as land politics, in areas where development is slow, especially in areas such as land management, which have a shorter period.

3.3 Land Administration Systems

Among the dynamic causes of Land Administration Systems (LAS); the direct influence of these systems on rapid technological developments is the development of land policies. However, it is the main source of the land information needed for all public and private sector services, and the government wants to provide more efficient service to the citizens.

The basic components of LAS are considered as “**cadastral**” and “**land valuation**”. In addition, "surveying mapping" activities, which constitute the main source of data related to land use, are also assessed within the cadastre. In this context, cadastre studies in the world and especially in Europe seem to be constructed in order to serve the purpose of determining and taxing the values of the land at the beginning, in general terms. In other words, the first cadastral works are financial cadastre. After the Industrial Revolution, the cadastre has also undergone a change and become a system that secures ownership, as it is looked upon as a commodity bought and sold. In the restructuring period after World War II, the cadastre has become the main component supporting land administration. The development of land as a scarce source in the 1980s, and the developments in information technologies since then, have also affected the cadastre and have seen a sub-system identity that forms the basis of multi-purpose Land Information Systems (LIS) serving cadastral sustainable development purposes.

3.4 Land Management and(or) Land Administration?

*Administration and management of the words used to express different meanings in English, found that in some countries, including Turkey, that are used as synonyms two terms or similar. Indeed, “**administration**” defined in the Turkish Language Institute dictionary; (1) "Managing, manage, pulling, (2) the execution of the country affairs, the whole of the public service, (3) the place or authority from which an institution or body is administered, (4) a body that conducts the work of an institution". In similar, the provision of the “**management**” word is given as "the business of managing, turning, managing". As it can be seen, there is management role in administration definition and administration meaning in the management definition. This complexity problem also seen in the concepts of "Land Administration" and "Land Management". In this context, it is important to know the internationally accepted definitions of land management-administration so that the distinction can be made between these two concepts.*

Land Management (LM); is the decision-making process in which land resources are allocated to political and social institutions and legal and administrative arrangements, in a structure appropriate to the needs and desires of the human being. "Land management in accordance with FIG (1995); "The process by which the use and development of land resources is governed". According to the UN and FIG (1999) and UNECE (2004) expressions, "As a resource, it is related to the management of land in an environmentally and economically prospectively sustainable development context." The views that support the institutional point of view of LM do the following definition: "LM means the way in which the land and its resources are distributed, making and implementing relevant decisions."

As the definitions of administration and management can be understood from the provisions of Land Management (LM); is the administrative process in which land policies are transferred to practice, enabling land and resources to be used both by physical cities and rural landscapes, and by means of land laws and institutions, within the framework of sustainable development principles by mankind.

Land Administration (LA); the provision of necessary property, value and land use data in this process. According to UNECE (2004); "LA is the process of creating, recording and submitting ownership, value and usage information related to the land during the implementation of land management policies. "Dale and McLaughlin (1999) reported that; "(1) monitoring developments in land and immovables, (2) regulating the use and protection of land, (3) generating revenue locally through sales, leasing and taxation, and (4) resolving disputes over ownership and use of land."

The main task of the Land Administration is; maintaining and exploiting the necessary information for the creation of possession security and the support of the land market. The main activities of LA are; land tenure, land use and restrictions, documentation of addresses, change of property ownership rights, determination of rights on land, settlement of land disputes, cadastral map construction, data base activities, land valuation, protection of personal data, property rights, mortgages, and other related activities.

After all; **Land management (LM) is broader than land administration (LA).** It covers all activities related to the management of land and natural resources required for sustainable development. Land management is a process in which the resources of a country have a good influence. Land management requires interdisciplinary skills based on technical, natural and social sciences. Land policies are land rights, property, economy, land use control, regulation, monitoring, implementation and development.

Land management activities reflect the development agents of globalization and technology. They encourage the establishment of multifunctional information systems, including various land rights, land use regulations and other useful data. But the third power for change is sustainable development. A wide range of information is requested together with other related land related to environmental, social, economic and governance conditions.

3.5 Functions of land administration

The functions of the land administration consist of four parts. These; a) legal, b) financial, c) regulation, and d) knowledge management. While the first three functions of the space are the traditional trio of organizations, knowledge management is an inseparable part of these three functions. While the legal function is fulfilled by the cadastral system which forms the basis of the LA, the financial function is carried out by land valuation whereas the regulatory function is realized by the determination of the current land use which is the basis of the planning. On the other hand, the knowledge management function is part of the other three components (Fig x).

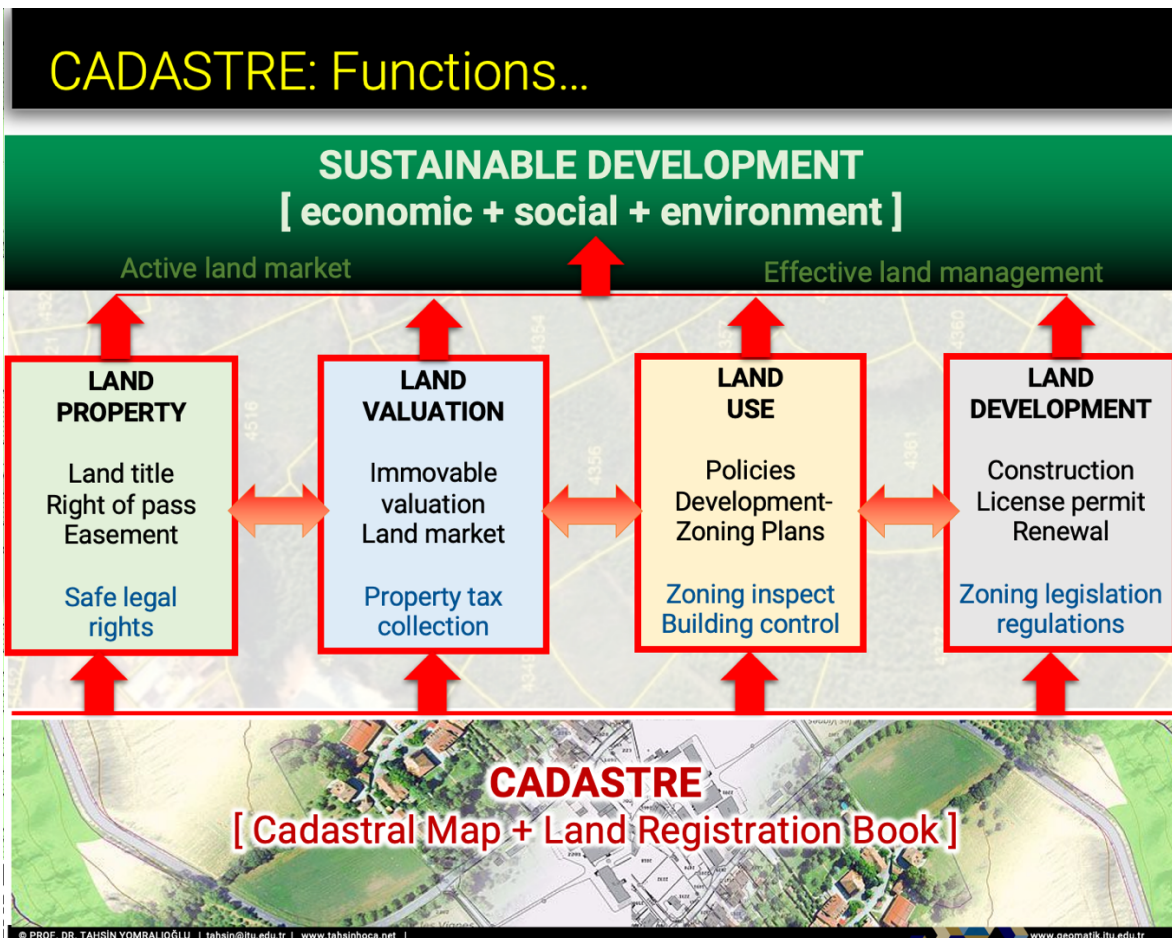


Fig x. Basic functions of land administration

When land administration policies are fulfilled, information about the land ownership, value and use of the land is examined, recorded and disseminated. This is thought to contribute to land registry, cadastral survey, mapping, financial, legal, multi-purpose cadastre and land information systems. According to McLaughlin (1999) land administration; "The process of land regulations, the development of ownership, use of land, communication and sale of land, the leasing, the combination of the income from the tax, and the resolution of the inconsistencies in land use and property".

LA is concerned with rural and urban planning or good agricultural practices only if such activities affect the compilation and maintenance of good land records. In other words, is not interested in direct physical planning, urban reconstruction, agricultural reform, or agricultural productivity improvements, but the information infrastructure that supports them. As a matter of fact, this function of the LA is called by Kaufmann (1998) as "Land administration requires safe information about the current land and its resources and their legal situation. The source of this information is the LA."

3.6 The Benefits of Land Administration System

The modern cadastre is not primarily concerned with generalized data but rather with detailed information at the individual land parcel level. As such it should service the needs both of the individual and of the community at large. Benefits arise through its application to: asset management; conveyancing; credit security; demographic analysis; development control; emergency planning and management; environmental impact assessment; housing transactions and land market analysis; land and property ownership; land and property taxation; land reform; monitoring statistical data; physical planning; property portfolio management; public communication; site location; site management and protection. Although land records are expensive to compile and to keep up to date, a good land administration system should produce benefits, many of which cannot in practice be quantified in cash terms. These are outlined below.

1. Guarantee of ownership and security of tenure

The compilation of land records and the judicial processes that must be gone through in order to bring land information onto the registers should provide formal identification and, in some systems, legal proof of ownership. The public registers should contain all essential juridical information allowing anyone viewing the system to identify third- party rights as well as the name of the landowner.

2. Support for land and property taxation

Good land records will improve efficiency and effectiveness in collecting land and property taxes by identifying landowners and providing better information on the performance of the land market, for example by identifying the current prices being paid for property and the volume of sales. Since the cadastre should provide full cover of the land, all properties can be included and none should be omitted.

3. Provide security for credit

Certainty of ownership and knowledge of all the rights that exist in the land should provide confidence for banks and financial organizations to provide funds so that landowners can invest in their land. Mortgaging land is one way to acquire capital for investing in improvements. Landowners can then construct or improve buildings and infrastructure or improve their methods and management of the land, for example by introducing new farming techniques and technologies.

4. Develop and monitor land markets

The introduction of a cheap and secure way of transferring land rights means that those who wish to deal in land can do so with speed and certainty. Those who do not wish to sell their land can be protected-no person's need be dispossessed of land unless they so wish since their rights should be guaranteed. The registers should be public so that at any time a landowner can confirm his or her rights. Those who wish to buy land can do so with confidence, knowing that the person who is trying to sell the land is the legally guaranteed owner.

5. Protect State lands

In many countries the land that is held by the State for the benefit of the community is poorly documented. This is not a problem in countries where the State owns all land, but where there is private land ownership, that which remains in the possession of the State must be properly managed. In all societies the State is a major landowner and its property must be protected for example from encroachment by farmers onto land beside roads or from attempts by squatters to settle on vacant land that is being held for future use.

6. Reduce land disputes

In many countries disputes over land and its boundaries give rise to expensive litigation and all too often lead to a breakdown in law and order. Much time is taken up by the courts in resolving these matters, leading to delays in other parts of the judicial system. Land often cannot be put onto the market or put to better use without resolution of the disputes, since no potential investor is likely to wish to be committed to developing land where a lawsuit may be pending. The process of

registering rights should prevent such disputes arising in the future, since at the time of first registration formal procedures should be followed that will resolve uncertainties.

7. Facilitate rural land reform

The distribution of land to the landless, and the consolidation and redistribution of land for more efficient use all require detailed records of the present ownership and use of the land. Compensation may need to be paid to those who lose out in such a process, or money may be taken from those who make special gains. The design of new patterns of land ownership to provide greater productivity from the land can be effective only if the existing pattern is well documented.

8. Improve urban planning and infrastructure development

As with rural land reform so urban centers need redevelopment and effective land-use planning and control. In many countries the control of development and the issuing of building permits are the responsibility of the local municipal authority. A good land administration system should permit the integration of records of land ownership, land value and land use with sociological, economic and environmental data in support of physical planning. The availability of up-to-date large-scale cadastral plans of urban areas provides the basic framework within which development schemes can be planned and assessed and acceptable designs implemented.

9. Support environmental management

Multi-purpose cadastral records can be used to record conservation areas and give details of archaeological sites and other areas of scientific or cultural interest that may need to be protected. The cadastre can be used in the preparation of environmental impact assessments and in monitoring the consequences of development and construction projects.

10. Produce statistical data

By monitoring the ownership, value and use of the land, data can be assembled for those concerned on the one hand with resource allocation and on the other with measuring the performance of development program. Both long-term strategic planning and short-term operational management require data in support of decision-making.

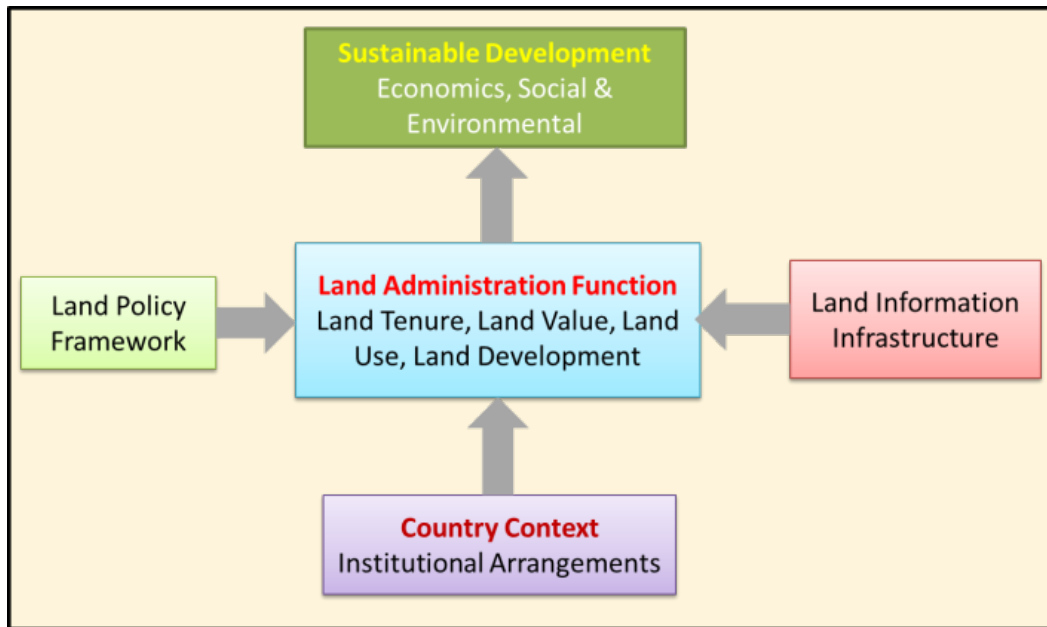


Fig x. Main functions of land administration

The sustainable development policy requires the integration of four functions. This is achieved in four different ways:

- In theory, its functions approached not as independent activities but as four parts of a coherent whole. This means that not every function is an end in itself, but the combination of the four is a way to support sustainable development.
- Processes used in the realization of the functions should continue sustainable development, and in the face of sustainable results, performance should be ideally maintained within a broad monitoring and evaluation framework.
- The information and outputs generated by the processes must be mutually shared and widely available.
- All functions should be based on basic cadastral knowledge.

Unsurprisingly, the four functions are interrelated. Relevance arises because the conceptual, economic and physical use of land and property is influential in land values. Land values are also affected by the future use of land determined by zoning, land use planning arrangements and permitting processes. And land use planning and policies will, of course, determine and regulate future land development.

Topography information should be organized to combine cadastral and terrain data and to relate the built environment (including legal and social land rights) to the natural environment (including topographical, environmental and natural resource issues).

Topography information should thus be regulated at the national, regional, federal and local level through an SDI (Spatial Data Infrastructure) based on relevant policy for data sharing, cost recovery, access to data, data models and standards.

After all, the design of adequate systems of land rent and land value should support efficient land markets that support simple and complex commodity trading. Designing adequate systems to ensure land use control and land development should lead to effective land use management. The composition of efficient land markets and effective land-use management should promote economic, social and environmentally sustainable development.

LAS also acts within an institutional framework that fulfills the duties and responsibilities of various institutions and organizations. The LAS should serve the needs of individuals, businesses and society.

Benefits arise from property, rent and credit security, efficient land transfers and facilitation of land markets, asset management support and valuation, land use planning, land development and environmental protection, and LAS guarantee to provide basic information and effective administrative processes. Designed in this way, LAS forms a backbone for the community and is necessary for good governance because it provides detailed information and reliable management of the land, from the basic level of land parcels to the level of national policy implementation.



Fig x. Hierarchic structure and levels of a land-related development process

4 DEVELOPMENT OF CADASTRE CONCEPT

4.1 Cadastral Progress in The World

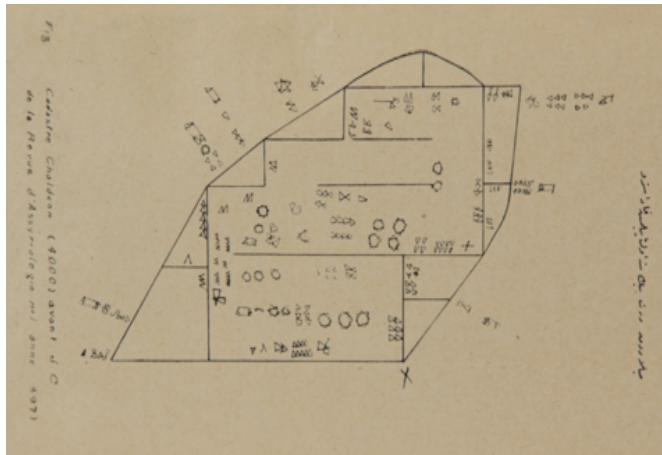
B.C. In the 1500s, the first plans drawn on the mudbrick tablets by the Egyptian Measurers are the first documents of the cadastre. In these years, the boundaries of the flooded lands were lost due to the flood and descent of the Nile. Land boundaries were frequently required to be determined and boundaries were measured. Triangles and rectangles are used in the measurement process. Thus, there have been new developments in the measurement technique and these techniques have formed the basis of today's measurement technique.



Carried out throughout the history ranging from ruins on stones and metal plates of B.C. that have survived up to the present to efforts carried out on papers as of the 17th century A.D., cadastral activities are composed of individual efforts performed in the form of a sketch on some particular lands.



In the 1700s BC, a cadastre text written on the tablet in Akad. Old Babylonian Period. Sippar (now Tel Abu Habba), South Mesopotamia, Iraq. Old Eastern Museum, Istanbul.



The plan of the Dunghi land in the south of Mesopotamia, which was written in Telloh (Iraq's Diyale province) in the 4000 BC, on the Kaldani brick of 4000 BC.

-TKGM Archive, Ankara.

Laying bare the shift in legal terms for the administration of land and tax system as well as the concept of private property and carrying a lot of weight with the historical development of cadastre and with the global history, the early cadastral activities differ from current forms of cadastral efforts. However, it is imperative to avoid comparing these activities with modern cadastral practices carried out through advanced technical capabilities, transportation opportunities, well-qualified staff and the rule of law, and take circumstances and requirements of the time into consideration.

Carried out across various times and continents throughout the human history, cadastral activities generally serve financial or legal or both financial and legal purposes. Legal-based cadastre aims at defining metes and bounds in an effort to serve purposes specified in laws on property whereas such mode of cadastre does not evaluate lands or keep such an evaluation in the background.

Financial-based cadastre outlines metes and bounds while attaching importance and priority to evaluation of lands and calculation of tax rates. At the time when the concept of private property was not advanced or limitedly administered, lands were owned by either society for common use or public purses. It was pointless and even impossible under technical capabilities of the time to carry out cadastral activities to specify legal statuses of lands in such societies.

That is why cadastral activities used to serve the purpose to collect taxes on behalf of governments, and outline and register metes and bounds. In addition to financial or legal purposes, cadastral activities can be divided as “*written cadastre*” and “*geometrical cadastre*” and analyzed in two aspects when taken into consideration in terms of circumstances and issue modes of the time.

The Golden Age in the history of land surveying began with the Napoleonic period, when it was measured according to strict standards in time known as modern Europe. This has led to lasting benefits: consistent, adaptable land allocation systems, which form the basis for efficient land tax; official land registration and trading follow-up and consequently effective land markets. These functions helped to acquire land ownership and manage land disputes.

From the end of World War II to the 1970s, land management continued its pre-war institution structure and ideas, and meticulously arranged basic concepts such as cadastral and title deed for the creation of land market. Immediately after the war, Japan and Taiwan stabilized. Subsequently, some colonial African countries, such as Kenya and Uganda, have been the focus of land-management projects and land-law reforms, mostly aimed at ensuring farmers' access to their land. Later, along with land reform and redistribution activities, the Latin American infrastructure reform in land administration was initiated.

In 1975, the World Bank Board of Directors announced its land policy approach. J. W. Bruce (Bruce et al., 2006) argued that as a bank, they do not have a real land policy, but in practice, the impact of the global impact of land policies on economic policies is reflected. Thus, the paradigm of economic development was applied to land administration activities. This approach has been valid for the next 30 years and continues to be quite effective today.

In 1980's...

The recognition of the importance of a well-defined and effective cadastral system has gained momentum in the English-dominated countries in Atlantic Ocean coastal cities (New Brunswick) in Canada. Then it is highly developed in a multi-purpose cadastral vision. A new era began in 1980 with the efforts of Prof McLaughlin in North America with the work of the National Research Council. The land administration approach then entered the implementation phase of how to build multipurpose cadasters, not why it should be built. Although a distant reality, the multi-purpose cadastral vision has served as a tool to support and guide change in the context of very well established and even rigid approaches to measurement and institutional arrangements.

In 1990's...

The collapse of the Berlin Wall in 1989 led to a Central and Eastern European-based model with a global impact on the role of ownership in an economy based on market economy. This phenomenon had a major impact on the reconstruction of opportunities and on the development of LAS theory and practice.

The Association of International Surveyors (FIG) Commission 7, responsible for cadastre, registries and land-based land rights, is the only historically defined land management tool for transition to broad and adaptable means that can meet the economic, social and environmental issues put forward through sustainable development policy, as a result of the work of the United Nations and non-governmental organizations.

In 2000's and after...

Looking at the developments in the world; Cadastre was first established in many countries for taxation purposes, and later on it was added to the basic duty of ensuring land property security. However, changes in the human-land relationship over time and global dynamics, cadastral view and expectations from cadastre have also changed significantly.

Today, the cadastre plays an important role in achieving sustainable development goals. Therefore, the content of the cadastre needs to be transformed into a multi-purpose cadastre structure, in other words, Land Information System. Today's Cadastral systems are developing in line with this basic purpose. In this context, the Cadastre and Land Administration Commission, which is part of the FIG, carries out the task of monitoring and guiding the developments in this field.

4.1.1 Different Cadastral Systems

Through the centuries, many types of Cadastral systems evolved and their differences often depend upon local cultural heritage, physical geography, land use, technology, etc. Most early societies developed rudimentary types of Cadastres to support taxation and other land administration activities.

In continental Europe, as in most countries worldwide, the responsibility for managing cadastral information has historically been divided among several government organizations and professions. Land registration has generally been the mandate for the courts and the legal profession. Mapping, parcel boundary delimitation, and maintenance of parcel data for fiscal, land use control, and land redistribution purposes have been the responsibility of the surveying profession. In regions such as North America, other professions have historically been responsible for land use planning and for land valuation and taxation.

One major consequence of the development of modern land information systems using computer technology has been the creation of closer coordination among organizations responsible for parts of the Cadastral data. In some countries, the functions of legal and fiscal land recording, surveying, and mapping have been merged into one organization. In other countries, the information needed for the different purposes has been coordinated into one information system or arranged in such a way that different systems can easily exchange information.

4.1.2 Cadastral Development in the North America

According to Europe, the cadastral system in North America is not yet fully developed. The use of the same methods of recording and mapping property relations in North America initially caused problems in many legal works belonging to the land. It is the main source of cadastral information, which is not a requirement for land surveying, but is generally not supported by standard measurement plans or maps. The cadastral works for taxation purposes were compiled and maintained separately. Thus, an accurate and up-to-date impression of property relations has not been sufficiently ensured.

In the western and western parts of Canada, the beginning of land registry systems requiring compulsory land size has led to the development of legal cadastre. Systematic land surveying systems, for example, the Public Land Measurement System in the United States and the Compulsory Land Measurement System, have created a framework for referencing parcel information, and geodetic measurements have been mandatory in the determination of ownership in both systems. However, there is still not enough intervention to keep all cadastral maps up to date. Yet, some of the new reforms that the cadastral system brought to North America are as follows;

- Development of map construction and basic spatial reference systems by air photogrammetry, expansion of geodetic networks and emergence of new measurement techniques,
- Reforming land registrations without compulsory land measurement, for example, making land registration mandatory, including parcel indices as well as buyer-seller indexes and converting land registry systems that do not rely on some land surveying into land registry systems,
- Other property rights reforms, for example; otherwise, the reduction of the claims or property lawsuits, and the restriction of the right to the ordinary right of property conversion into the registry system,
- Initiate the development of multi-agency programs for institutional, organizational reforms and land information management in implementing the changes introduced by the system.

4.1.3 Examples of Cadastral Systems in Some Countries

Germany: Provinces make laws on property cadastre. Interstate boards ensure that the ownership cadastre is in the same order. The German government manages the responsibilities for laws on land registration. The Land Registry Offices are part of the justice organization in 16 German states. Land records are also part of the local courts. Courts are responsible for registering land in their territory. The legislative power in the cadastral field is in the hands of the states. States have similar laws in the field of cadastre. The ministry responsible for cadastre varies across states. Generally, under the Ministry of Interior. In most of the states, cadastral mapping services are in a three-stage structure. These; The state level, sub-government units and local levels. Cadastral surveys outside of the state of Bavaria are carried out by licensed surveyors. Notaries carry out legal proceedings.

The Netherlands: Land registration and cadastral mapping are national tasks. Taxation is the responsibility of local authorities. A national agency has been established for land registration and cadastral mapping, which consists of the Minister, the Advisory Board and the User Panel. Currently, this agency consists of a head office and 15 regional offices. These centers keep records of land, measure borders, maintain maps and disseminate information. There is no licensed mapping system to perform cadastral measurements. All measurements are made within the agency. The private sector carries out only some special works in the agency trial.

Sweden: There is a management unit (Lantmäteriet) responsible for the geographic information, including the land acquisition and the cadastral and land registration for the official immovable and land information system. This unit is affiliated to the Ministry of Environment. There are regional representations in each state affiliated to this basic management unit and local representatives within each local government. The registration is done by a number of local courts. These

courts are updating their land records as part of the Land Information System. The Taxation Administration maintains Taxation Records and Population Registers in relation to the Land Information System. Private sector is not involved in land registration or cadastral measurements. The private sector only advises customers.

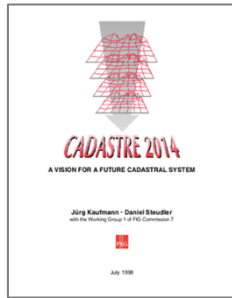
Switzerland: Cadastre-related organizations are divided into national and regional organizations. These organizations undertake different tasks. Cadastral measurements are conducted by regional measurement agencies under the General Directorate of National Cadastral Measures. There are 15 employees at the national level, 300 at the regional level and 3000 at the local level. The land registry and the related legal procedures are carried out by 350 Regional or Local Land Registry Offices, which are managed by the National Office of Land Records and Land Law. The private sector makes 80-90% of cadastral measurements. Data collection, renewal and updating processes are given to the private sector through tenders.

In order to better understand the basic characteristics of the Cadastre in the world, it is necessary to make a general evaluation of the institutional structures of these countries and their cadastral activities. In this sense, the research carried out by FIG again today is the most comprehensive source. Although the basic information for this research is more extensively available on the <http://www.cadastraltemplate.org/> website, basic information on selected countries is provided here. *For more information about the cadastral systems in some other countries in the world (see. Yomralioğlu, T., Dünya'da Kadastral Eğilimler ve Türkiye).*

4.1.4 New Cadastral Vision...

Today's property rights view; it must have information on the physical and invisible limiting and binding rights of everyone seen on the property, and that such information must be registered and secured by the state. For example, not only physical (building, garden, etc.) structures within the boundaries of rights on a parcel, but also other zoning rights which may affect the parcel directly, natural and environmental elements (landslide, flood, air pollution, soil structure, seismicity, expropriation lines etc.). It is required to register again. In other words, it is understood that property and its rights and restrictions are related to all social and economic activities and should therefore be taken into consideration.

This is the modern cadastral approach in the world. In fact, prepared by FIG's Cadastral Commission; In the “**Cadastre-2014 Vision**” report, which sets out the level of cadastre by utilizing surveys conducted with the countries of the world, “all the immovable properties subject to ownership over the ground are defined as land objects; and all kinds of land objects need to be recorded within modern cadastral systems.

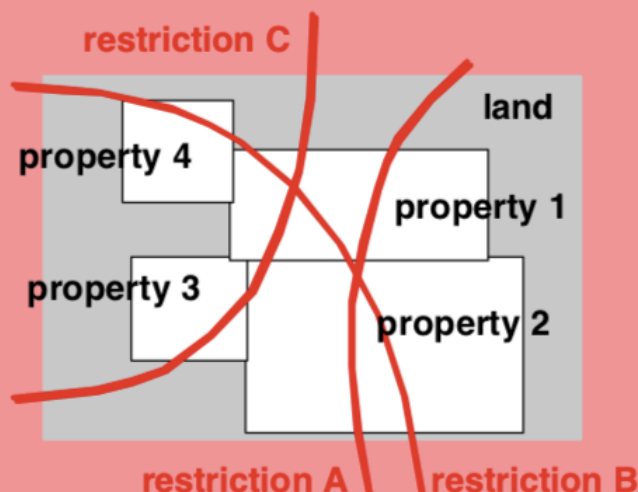


<http://www.fig.net/resources/publications/figpub/cadastre2014/index.asp>

Emphasized with the Cadastre-2104 report; in a country or region, it regulates the systematic public inventories of data on all legal land objects, which are based on a surveying measurement system. Legal land objects are systematically determined by some different representations. This land object is defined by public or private laws. The outlines of the immovable property, the verbal-written data, together with the identifier, may indicate the nature, area, value and legal rights of each individual land object, or the restrictions associated with the land objects. In addition to this verbal information defining land objects, the future Cadastre should include official records of rights on legal land objects. So, **the future Cadastre can answer questions like; where? how much? who? and how? to related land registration system.**

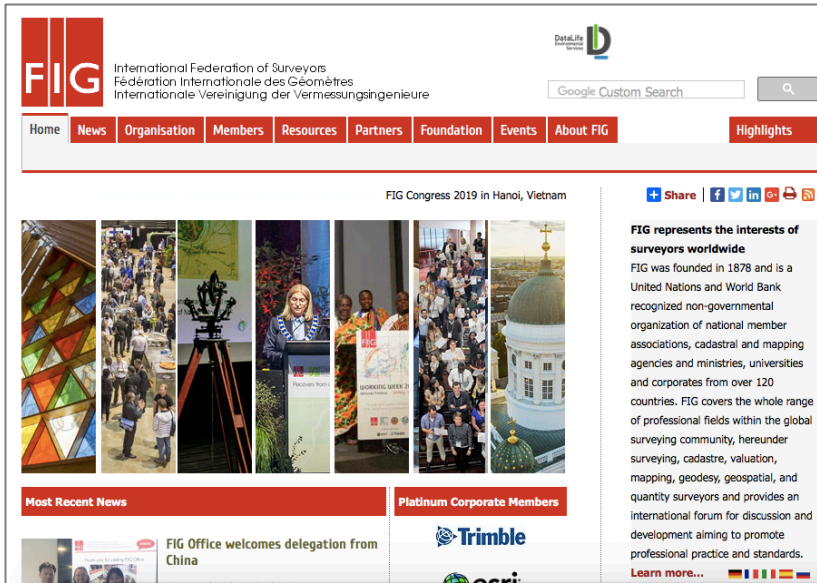
Statement 1 on Cadastre 2014

Cadastre 2014 will show the complete legal situation of land, including public rights and restrictions!



Comment: The population of the world is growing. The consumption of land is increasing. The absolute control of the individual or of legal entities of land is increasingly being restricted by public interest. To provide security of the land tenure, all facts about land must be made obvious by the cadastral system of the future.

Consequences: A new thematic model is necessary. Surveyors must take into consideration public law.



<http://www.fig.net>

4.1.5 What is FIG (Federation of International Surveyors)?

FIG is the premier international organization representing the interests of surveyors worldwide. It is a federation of the national member associations and covers the whole range of professional fields within the global surveying, geomatics, geodesy and geo-information community. It provides an international forum for discussion and development aiming to promote professional practice and standards.

FIG was founded on July 18, 1878, in Paris by delegates from seven national associations - Belgium, France, Germany, Great Britain, Italy, Spain and Switzerland - and was known as the *Fédération Internationale des Géomètres*. This has become anglicized to the International Federation of Surveyors. It is a UN-recognized non-government organization (NGO), representing more than 120 countries throughout the world, and its aim is to ensure that the disciplines of surveying and all who practice them meet the needs of the markets and communities that they serve.

The FIG vision: A modern and sustainable surveying profession in support of society, environment and economy by providing innovative, reliable and best practice solutions to our rapidly changing and complex world, acting with integrity and confidence about the usefulness of surveying, and translating these words into action.

The role of FIG: FIG supports the role of a prosperous and sustainable profession of surveyors to provide solution functionality, reliably, affordably for a complex and rapidly changing world that cannot wait, and to translate a sustainable development agenda into action. FIG supports international collaboration among its members for the progress of surveying in all its fields and applications. FIG has a close cooperation with United Nations relevant bodies, World Bank, and its sister associations and has been globally recognized as the leading international non-governmental organization on geospatial information and the management of “land”, the “sea” and the “built” environment. It is within the surveyors’ task to determine the size and shape of the earth, to map its surface and to manage it in a sustainable way.

Commission activity: Ten commissions lead FIG’s technical work. Each member association appoints a delegate to each of the commissions. Detailed information on the work of the commissions, their work plans, working groups, seminars, newsletters and publications can be found at www.fig.net/organisation/comm/. The terms of reference are as follows:

Commission 1 - Professional Practice: Perception of surveying profession; professional practice, legal aspects and organizational structures; standards and certification; code of ethics and applications; under-represented groups in surveying; students and young surveyors; information technology management and professional practice; project management, quality and best practice

Commission 2 - Professional Education: Curriculum development; learning and teaching methods and technologies; educational management and marketing; continuing professional development; networking in education and training.

Commission 3 - Spatial Information Management: Management of spatial information about land, property and marine data; spatial data infrastructure – data collection, analysis, visualization, standardization, dissemination, and support of good governance; knowledge management for SIM; business models, public-private-partnerships, professional practice and administration.

Commission 4 – Hydrography: Hydrographic surveying; hydrographic education, training and CPD; marine environment and coastal zone management; data processing and management; nautical charting and bathymetric maps – analogue and digital, including electronic navigational charts.

Commission 5 - Positioning and Measurement: The science of measurement including instrumentation, methodology and guidelines; the acquisition of accurate and reliable survey data related to the position, size and shape of natural and artificial features of the earth and its environment and including variation with time.

Commission 6 - Engineering Surveys: Acquisition, processing and management of topometric data; quality control and validation for civil engineering constructions and manufacturing of large objects; modern concepts for setting-out and machine guidance; deformation monitoring systems; automatic measuring systems, multi-sensor measuring systems; terrestrial laser systems.

Commission 7 - Cadastre and Land Management: Cadastre, land administration and land management; development of pro poor land management and land administration; development of sustainable land administration as an infrastructure for sustainable development to underpin economic growth; applications of innovative and advanced technology in cadastre and land administration; promoting the role of surveyors in land administration matters to the public and stakeholders.

Commission 8 - Spatial Planning and Development: Regional and local structure planning; urban and rural land use planning and implementation; planning policies and environmental management for sustainable development; re-engineering of mega cities; public-private partnerships; informal settlement issues in spatial development, planning and governance.

Commission 9 - Valuation and the Management of Real Estate: Valuation; investment in real estate and investment planning; real estate investment vehicles; real estate, development finance and land use feasibility planning; real estate economics and markets and market analyses; management of property and property systems; management of public sector property.

Commission 10 - Construction Economics and Management: Construction economics, including quantity surveying, building surveying, cost engineering and management; estimating and tendering; commercial management including procurement, risk management and contracts; project and programme management including planning and scheduling.

4.2 Land Registration Systems in The World

4.2.1 Approaches for Recording the Man-Land Relationship in the World

There are two basic different approaches in the world as an indicator of the property relationship between man and land. In fact, this property relationship is related to the traditional land use understanding of the countries from the past and these experiences have taken place in the existing legal structures. In terms of ownership, the definition of the relationship between any parcel and the landowner is shown simply by Henssen (1995).

This declaration can be called “**land registration or deed system (senet sistemi)**”. A legitimate right holder has a document indicating that a part of the land is the owner and has the authority to delegate this right to someone else. The land registration in deed system is **man-related** (Fig x.a).

Another documentation format is the “**land recording or title system (tapu-tescil)**” approach. In the land recording system, a deed is not the registered. As in Turkey, first of all, the rights corresponding to the land on the field surface are recorded together with the evidence and their relations with the land. A land-title document is prepared to document all this in legal terms. Land recording in title system is **land-related** (Fig x.b). *In this sense, the system known and applied in Turkey is “land recording” based on title system.*

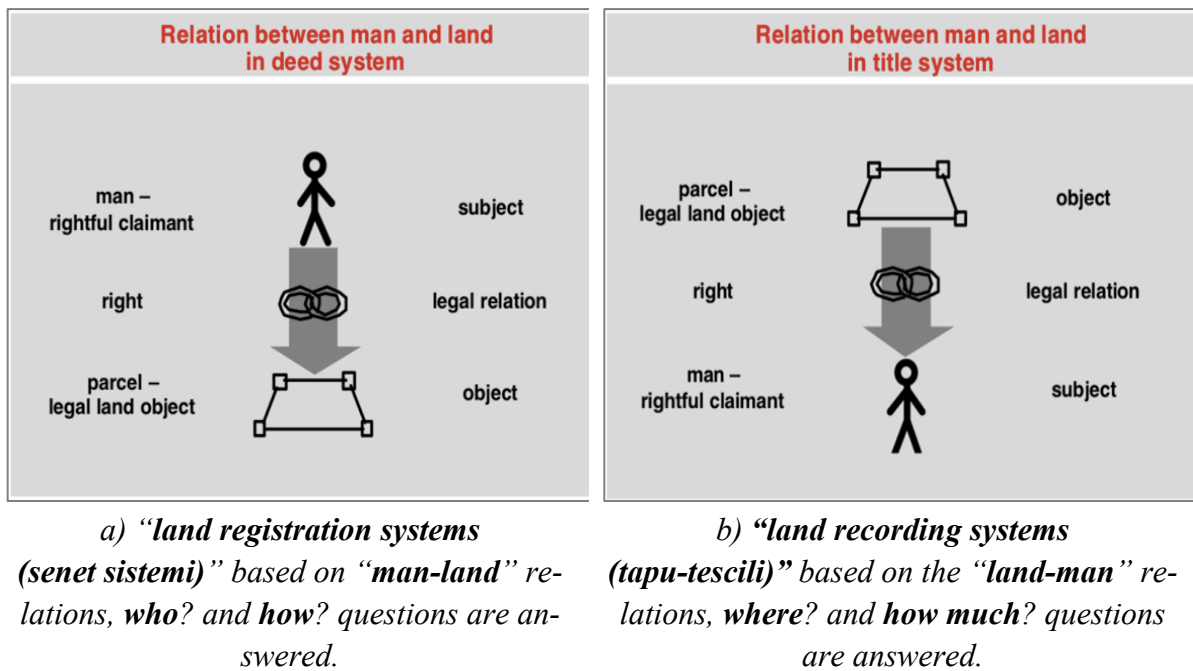


Fig x. Basic approaches of land registration systems in the world

4.2.2 Land Rights Recording Systems in the World

The three systems for recording rights in land are: *(a) private conveyancing; (b) the registration of deeds; and (c) the registration of title.*

a) In *private conveyancing*, documents agreeing to the transfer of ownership are passed between the “seller (vendor)” and “purchaser (vendee)”, usually with the guidance of a lawyer. The State merely provides; legal framework within which this process takes place. Private conveyancing is generally regarded as inefficient and potentially dangerous since it can be subject to fraud as there is no easy proof that the vendor is the true owner.

b) Under a system of *registration of deeds*, a copy of the transfer document is deposited in a deeds registry. An entry in the registry then provides evidence of the vendor’s right to sell. In parts of the United States of America, private registers are operated by insurance companies that underwrite any losses that may arise through defects in the title. *This is known as title insurance.* Under title insurance, the purchaser pays a premium to obtain the necessary guarantee. If fraud takes place and a purchaser of land finds that the title is invalid, the insurance company will pay compensation. The system does not however support general land management.

If there is a national *deeds registration* system, the registry is under the control of the State. A copy of all agreements that affect the ownership and possession of the land must be registered at the registry offices and one copy of all documents is retained. Each document will normally have been checked by a notary or authorized lawyer and its validity ascertained. Inspection of the register will show how the vendor obtained the property and the conditions under which it was acquired. While such registries do not actually guarantee title, they provide the most important evidence of ownership that can be assumed to be correct unless proved otherwise in the courts.

c) An ideal system would reflect perfectly the legal position on the ground. Therefore, an alternative to the registration of documents is the *registration of title* to land. In this system each land parcel is identified on a map and the rights associated with it are recorded on the register. In addition, the name of the owner is recorded. When the whole of the land is subject to transfer, only the name of the owner need be changed. When part of the land is transferred, the plans must be amended and new documents issued. Although; copy of the certificate of title for each land parcel is held by the landowner. Under such a system the ownership of land can be guaranteed. Anyone who is dispossessed of land through the functioning of the registers will be compensated even though the mistake was not made by the registry but rather was a fraud.

4.2.3 Land Registration and Cadastral Mapping Systems in the World

While "land registration" and "cadastre" are complementary to each other in these definitions, the terms "land recording" or "land documents" in other words generally perceive all of them as parts of a whole. As a matter of fact, there are two basic land registration systems that are accepted in the world. In terms of our country, it may be difficult to understand the land registry system in particular. The term "land recording" as used herein is considered as "recording of title deed and maps" and "land registration" as "deed registration only".

The system, which is named as “**land recording**”, is based on the principle of "cadastre + registration to the title" as it is practiced in our country and it has a connection with the cadastral maps and other related documents. In practice, land boundaries are first identified, demarcated and measured, and registered with the title of the parcel with the property rights on it. Countries like Turkey, Germany, France, Switzerland are based on the Civic Law legal system. Land recording system is applied in these countries and this approach is called “**modern cadastre**” in the world.

However, in the land recording system, contrary to the practice in our country, the cadastre part is not a requirement, there is no parcel boundary measurement (except Torrens system in Australia). Contracts made only with notary by lawyers are valid. Therefore, a land belonging to a person is registered in the register book according to the approved contract. This system is applied in the British colonial countries such as the United Kingdom, USA, Canada, Australia and many other countries outside Europe. However, it should be noted that today these countries are seeking to pass the modern cadastre system.

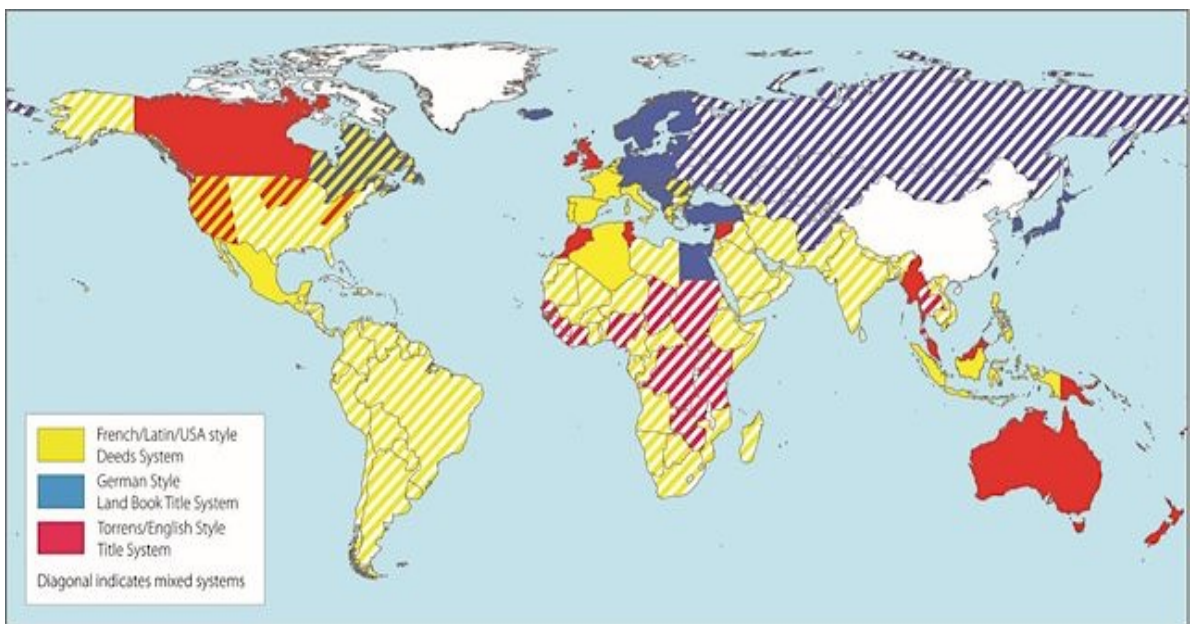


Fig. Land registration systems around the World

Around the world, there are different categories of title registration systems, which do have the same principles but differ mainly in procedures. This classification is rather arbitrary, but it is largely geographical and tends to reflect differences in land law rather than differences in registration principles.

1) English System (England, Ireland, some Canadian provinces, Nigeria); used Ordinance Survey large scale map. In England there is no single general cadastre record and no cadastral surveys are made. The issue concerns the geo-co-ordinates of the properties. There is no government record of legal boundaries of properties and therefore no official geometric description of the property. The Ordnance Survey maps boundaries and the features that comprise them. Since 1841 it has been required to show boundaries. However, it has no legal power to fix *private* boundaries.

Land Registry maps, which identify the location of a property, demarcate a “general boundary” and do not determine the exact line of the boundary. Other evidence than the map is required to determine the exact boundary and this may involve common law rules as to how boundaries are to be interpreted to demarcate areas under different ownership. For example, how the boundary is constructed may enable the line of ownership demarcation to be identified using common law rules.

In England, the idea of general borders does not cause a lot of disputes because the law contains a doctrine of adverse possession, which terminates claims after a certain time. For example, someone can take some piece of land to his usage and if no-one claims it within a set number of years (usually 12), then the occupier becomes the new owner of the land

2) German/Swiss System (Germany, Austria, Switzerland, Egypt, Turkey, Sweden, Denmark); Parcel based cadastral map is basic. German approach connects the land register and cadastre firmly together. The foundation of land ownership is the title which is granted by author. A deed is not enough to prove the ownership. The land register also documents other tenures and mortgages. Changes to the cadastre need legal surveys and contracts made by owners are not registered without a legal survey.

3) Torrens System (Australia, New Zealand, some provinces of Canada, some parts of the USA, Morocco, Tunisia, Syria); used temporary plan based on cadastral survey where registered titles. The Torrens approach follows the same principles as the German approach, but the history of the Torrens system is much shorter. The Torrens system was created to support the land market and the original focus was to create a system without the dual function of supporting deeds, titles and tenure. In Australia, utilizes a Torrens cadastral system. Originally, an English sys-

tem of deeds registration for land transfers was employed during the period of colonization since 1788. In 1850 Robert Torrens introduced a more effective system to support land exchange.

All states of Australia had adopted the Torrens System by 1874, however this has since become both expensive and complicated. Australia has two governmental organizations that administer the cadastre. The Crown Lands Administration takes care of public lands, and the Land Registry takes care of private lands. These two organizations are going to integrate into one agency, which will be responsible for the up-to-date maintenance of the cadastral map. The Land Registry maintains the title registry, however, because every state has their own authors to maintain the cadastral system, there are eight different cadastres maintained in Australia. Although these are all based on the Torrens system, the means of titling and registration differ in each case.

The cadastre includes the information which pertains to land parcels. They are divided into two components: a textual component identifies the information held by the Land Registry, such as an owner's rights, restrictions and responsibilities, easements and mortgages. A spatial component (the cadastral map) shows the dimensions of a parcel corresponding to a registered title and unique identifiers. Cadastral maps account for 90 % of fixed and 10 % of general boundaries (which are based on natural or man-made features). Additional information such as legal information, valuations and other related activities which are involved in the land administration process are also retained in the cadastre.



4.2.4 Overview of Cadastral Surveying

In order to be able to guarantee the accuracy of boundary surveys and to apply quality controls to the work of the cadastral surveyor, it is common for survey regulations to be introduced. These often prescribe the manner in which surveys are to be carried out as well as the standards that must be reached. Survey regulations may also prescribe the necessary qualifications for grant of a license to undertake cadastral surveys.

Within the European Union there has been pressure for those who provide any form of service for official bodies within the Union to be registered under quality assurance. Such a process could be extended to license cadastral survey companies. Quality assurance requires all operational procedures to be documented so that at each stage in the preparation of a product or service, someone can be held responsible for the quality of the work. It is part of the overall process of total quality management that should ensure that what is done is fit for its purpose and meets the needs of clients.

In some countries survey regulations have not permitted the use of aerial survey techniques. The methods of survey are prescribed in regulations while the final standard of the product is not defined. Ideally, the law should interfere as little as possible in the choice of method of survey to be used. It should focus on the product rather than the process and should:

- Define the relationship between physical and legal boundaries;
- Permit flexibility in reconciling the possession of land with its ownership;
- Include legislation to protect officially emplaced survey monuments from damage and to provide rights of access to surveyors so that they can make full use of these monuments;
- Indicate acceptable survey standards without prescribing the methods whereby these must be achieved.

From a legal perspective it is necessary to prescribe the qualifications of those who may conduct cadastral surveys. It is also necessary to establish the legal liability of the surveyor for work undertaken and for the consequences in the short and the long term of any errors in measurement. In many countries the State guarantees the quality of work as far as the general public is concerned but may reserve the right to sue the surveyor in cases of negligence. Sometimes the responsibility remains forever with the surveyor. In either case, the licensed surveyor should hold professional indemnity assurance to protect the ordinary landowner.

4.3 Development of Cadastre in Turkey

4.3.1 Land Ownership in Old Turks

It is understood that the first Turkish tribes did not recognize private property in the land. More herds groups properties have been carried. This is due to the fact that the first Turkish tribes did not live stable in Central Asia.

In Mongols, land belong to Han and his inheritors. The Han distributes the land of a certain size, whose annual income is meaningful, (in the name of *timar*), in return for the boys and for certain military duties.

The Seljuk land ownership system was in general a synthesis of the political organization of the Turks and the understanding of Islamic land ownership. Depending on military duties, collecting taxes on a land. The Sultan, who is the owner of the entire territory of the Empire, also owns a certain amount of land called “has” together with all its revenues. The land outside the Has land was divided into small pieces and distributed to the commander and soldiers in exchange for the task. In the Seljuk, all the land of the country is divided into three main groups. These;

Has land: The land completely belongs the Sultan only. The taxes collected from the pieces processed by the farmers are deposited in the treasury.

İkta land: For the members of the army, in the time of war, the army is given to a number of soldiers. These landowners are authorized to collect only a certain amount of taxes from farmers.

Haraci land: In the conquered areas, they are landed in the hands of non-Muslim princes, with high tax rates (up to half of the product).

After the Malazgirt War in 1071, the İktâ system continued in the Anatolian Seljuks after the Great Seljuk Empire. The land belonging to the state and later joined to the state land was conquered as a salary for the soldiers named as *sipahi*. Sipahiler resides in the villages where their incomes are left to them and when necessary they join the service of the emperor and go to war.

4.3.2 Land Property Systems in The Ottoman

There are various views on the origins and formation of the Ottoman property system that lasted for centuries. The common view emerged in the form of the theocratic monarchy as a continuation of the Anatolian Seljuk State and developed based on the absolute authority of the sultan. It is known that the Ottoman Empire was influenced by the institutional structure of the old Turkish and Islamic states or the Iranian Mongols.

The forms of land ownership appear to be influenced by Islamic territorial law, as well as by the property shaped in the Seljuk state, in addition to its distinct differences ¹.

The Ottoman Empire attributed the wasteland property of the land to a certain system (*miri* land as a kind of nationalization). Accordingly, at the beginning of the land that uses the land has become a state-bound civil servant. This policy was applied in the most systematic way during the reign of Sultan Mehmet the Conqueror. The system ensured that the Ottoman Empire had a strong army on the other hand, it prevented the landowners from developing as feudal lords.

The land ownership system developed in the Ottomans is called “dirlik”. In this system, the wasteland ownership of the land belongs to the state; owners have the right to receive a certain amount of tax from farmers who are operating the land. On the other hand, the owner of the resistance, in time of war, must propel troops to the war in direct proportion to his income. In the Dirlik system, land was divided into three according to their income:

- 1) **Has land:** land with annual income more than 100 thousand *akçe* (=the Ottoman money unit). The sultans, vezirs, the land given to the beylerbeyi and sancak beys.
- 2) **Zeamet:** The annual income is between 20 thousand and 100 thousand *akçe*. Land was given to the regimental gentlemen and first-rank civil servants.
- 3) **Tımar:** The annual income is between 3 thousand and 20 thousand *akçe*. The lands of this size were also given to the sipahis.

The Sultan had the right to give and to get back the tımar land in some circumstances. At Sipahi, for each 3 thousand *akcelik* income, was forced to give a fully equipped soldier to the war. In the last years of Suleiman the Magnificent, a weakening is observed in the Miri land system. The owners who are not owned by the owners are started to be distributed to the bidders by auction. They received annual tax in exchange for land, or they would receive land by paying a few years in advance tax. This method is called "iltizam".

The reason why the lands of Miri are left to people in exchange for cash is to ensure that the timed sipahas lose their power in the army and in turn create the necessary financial resources for a permanent and salaried army. Later, they were sold land to people who were called “Ayan” (= those who came to favorite persons in the cities and villages during the Ottomans), provide that the person who had acquired

¹ Köktürk, E., (2000), “Türkiye kadastrasının Tarihsel Gelişimi”, HKMO.

this right for a life. Miri land ownership system started to change with the farming system and to develop private land ownership.

4.3.3 Land Registration System in the Ottoman

In the Ottoman State, it is known that the first land registry records were made in the time of Orhan Gazi. However, there is not much information about this period. In the Ottoman Empire, during the period of Sultan Süleyman the Magnificent in 1534-1634, the first land was written (**yazım=tahrir**). In this writing process, a land information system was first implemented in a simple sense rather than the application of tax cadastre. According to this, all the cities, towns and villages within the borders of the Ottoman Empire in that period, land, animal varieties, major agricultural products, forest, grove, pastures, highlands and winters, which the village and the town belongs to, the land was recorded. These transactions were investigated by the Divan officials of the time and recorded in the books.

As a result of these studies that lasted a century, the books called **Kuyud-u Kadime** (Eski Kayıtlar), which had **2322** volumes, were created. Nowadays, these books are legal evidence and are used in the determination of Miri and Vakif lands, rather than private property. These written works continued until 1847.

In 1847, it was tried to give the title deed from the *defterhane*, but it was not successful. In 1872-1873, the so-called “inspection (=yoklama)” was recorded. These records include the type, location, boundaries, area of the land, reasons of acquisition and owners of the land were written in a book. This process continued until 1909. After this date, the title deeds were started to be arranged in the regions.

Tapu Tahrir Books



*As a requirement of the Timar system in the 15th and 16th centuries in the Ottoman state, counts were made to determine the sources of income in the region. In this process called **Tahrir**, taxpayers living in cities, towns, villages and farms were visited by officers, and if they were exempt from tax, which tax they were exempt from; In addition, landed and landless peasants, married and single households, occupation groups, academic members, old and disabled people were registered separately. Each village's pasture, forest, grove, plateau, pasture, according to the genus, crops grown and the amount of tax payable in the year were transferred to the book.*



Fig. Kuyud-u Kadime records where are stored in the TKGM archive of Ankara.



Fig. Endowment of Sultan Mehmed II the Conqueror in Arabic of Hagia Sophia Mosque Written on 65,30 meter Long Gazelle Skin H.867 (1462 A.D.) Source: TKGM Archieve, Ankara

End Note: SERVER DEDE's STORY...

Server Efendi, a bookkeeper supervisor who was very attached to his position, would not allow notebooks to be taken out of records. Towards the end of the 18th century, it was reported that there was a possibility of conflict between the two towns in Anatolia due to the inability to share the pasture, and the Sultan Mahmud the First (1730-1754) had requested the lands register books but had never encountered an answer.

Server Efendi, according to the law of Fatih Sultan Mehmet, any book was not allowed to remove from the Defterhane at night. So, I am an amnesty. I couldn't pull the book out at night. Then the Sultan, Server Grandfather had executed. The grave is also inside the Defterhane building. Today, there is an understanding in the TKGM organization for the sake of law if it is not afraid to give its head. Commitment to the law, honesty and courage are the most prominent features. Article 100 of the Land Registry Regulation prohibits the removal of land registers from the office. Therefore, in the TKGM legislation, the Grandfather's understanding of the trust-based state still exists.



Istanbul Land Registry and Cadastre II. Regional Headquarters Building, 1881.



Server Efendi grave within II Regional Directorate Building of TKGM in Istanbul.

4.3.4 The Ottoman Land Code of 1858

In the Ottoman Empire, until the 1839 Tanzimat Edict, there is no modernization effort in the modern sense. The Tanzimat period is a period in which the property system in the land is handled within the framework of Western law. From the Tanzimat to the period from 1839 to 1858, preparations were made to change the rules of land ownership according to the West's private property. The “**Land Code (Arazi Kanunnamesi)**”, which regulates the new property system, is the first detailed law governing territorial law. This law, published in 1858, detailed the forms of property in the land and showed the rules of each type of property. According to the law, the territory of the country is divided into five groups:

- 1) *Land of freehold property (memluk- mülk arazileri)*
- 2) *Land of crown (miri- devlet arazileri)*
- 3) *Land of endowment (mevkufe- vakıf arazileri)*
- 4) *Land of abandoned (metruk- kamunun kullanımına bırakılmış araziler)*
- 5) *Land of Dead (mevat- ölü araziler)*

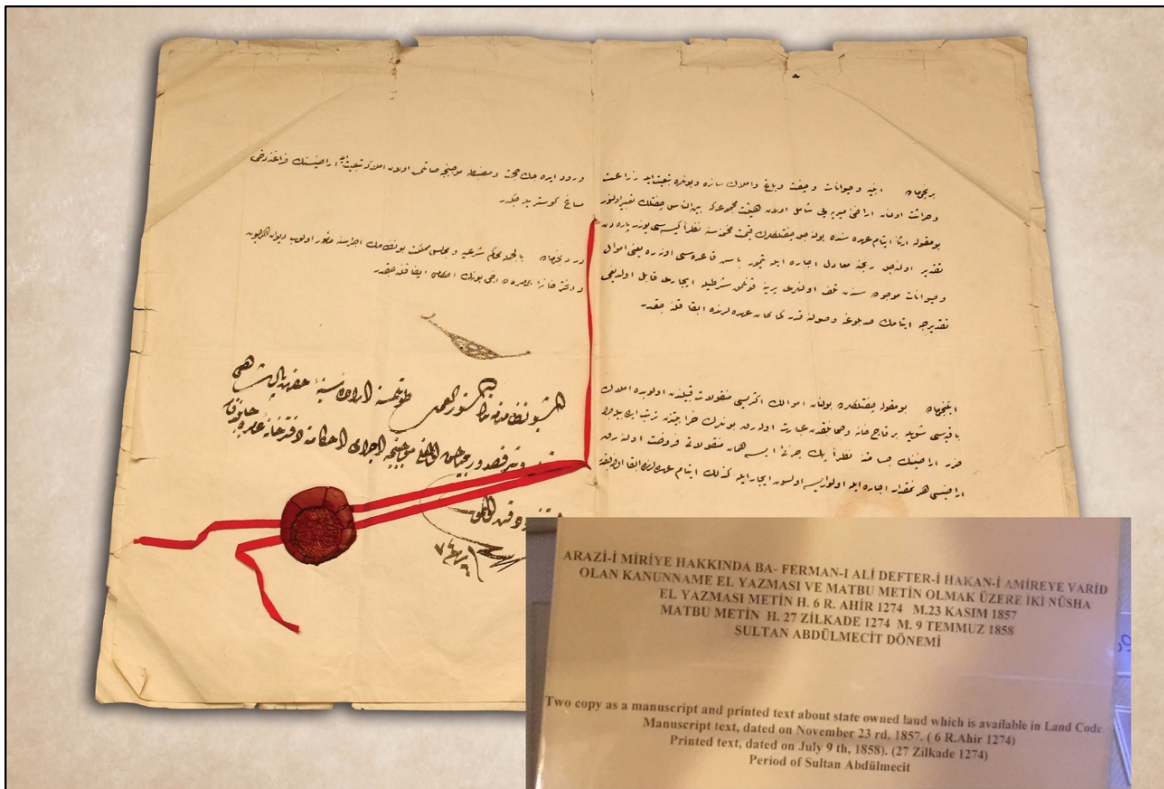


Fig. The original copy of the manuscript of the land code, *TKGM Archive, Ankara*.

According to the Land Code, the uncovered property of the land of miri remained in the state again. The state transferred the right to use these lands to people by means of a special contract called “tefviz”. In the Tefviz system, the naked ownership of miri land remains in the state, and the right to use is only transferred to private individuals for a certain price and indefinitely. The landowner shall pay a

price under the name of “tapu ve muacella”. This price can be nearly to the value of the land itself. The holder of the right to savings could transfer this right to others and this process was called “ferağ”. When the owner of the right dies, a private property subject, passed to his inheritors. The land groups by the land code and their scope are:

1) Land of freehold property (mülk arazileri): The land is a type of freehold land ownership which gives the person who owns it, in the widest sense, the right to use and the absolute right of land ownership. The owner of the land could use the power of large savings, such as selling the land, donating, making the foundation and will of the will, provided that it was within the limits set by the law. In the death of the landowner, he would pass to his heirs. If the landlord did not have the heir and the manor did not leave a will, the land would transfer to the state and the land would become the state (miri) land.

2) Land of crown (miri): According to Article 3 of the Land Code, miri land is the type of land which belongs to the state and which can be given to certain persons with the right of saving. The largest part of the territory of the country has formed with this land type. This type of land, arable land and meadows, woodlands, pastures and threshing places. Miri land can be transfer to others.

3) Land of endowment (vakıf): The foundation is the allocation of a good for charity. According to Article 4 of the Land Code, the foundation land is divided into two parts: a) Sahih foundations: This type of foundation is the foundation for the land to be allocated for a charity without the time limit of the owner. b) Gayrisahih foundations: In these foundations, the land which is the subject of the foundation is land miri. The foundation is established when the person who has the authority to save land is assigned to a charity service.

4) Land of abandoned (metruk): The state land dedicated to the benefit of the public or the people of a particular village or town use such as marketplace, road, pasture, square. Places which are counted from land cannot be bought, sold, cannot be changed, cannot be the subject of private ownership and savings. The state can regulate the use of this land.

5) Land of Dead (mevat): Dead land, arable land, barren, empty and unused places. Land that is not saved by anyone and is not allocated for any purpose. According to land law, the person who revives the dead land and makes it suitable for agriculture will have the right to save the land.

4.3.5 Cadastre in the Republican Period of Turkey

It was imperative to carry out cadastral projects in a more systematic fashion to cover the entire land of the Empire under modern conditions just like counterparts in Europe. This required a legal basis to regulate the scope of cadastre. Having taken office as the Minister of the Ottoman Imperial Registry, **Mahmud Es’ad Efendi** was commissioned to introduce a regulation.

Called the father of the very first cadastral law in Turkey “the founder of the modern cadastral law”, Mahmud Es’ad Efendi and his committee drafted the “**Law on the Registry and Restriction of Real Property**” that was entered into force on **February 18, 1913**. In Turkey, based on this Law, for the first time in cadastral activities started in Çumra district center and villages of Konya province; however, it was not possible to continue the implementation because of the beginning of I World War.²



**Mahmud Esad
Efendi (1855/56-
1918)**

*Author, Lawyer,
Professor, States-
man Who Laid the
Foundations of
Cadastre in Turkey*

² Toker, N. K., (2015) “Kadastro Mevzuatı Ders Notları”, TKGM, Ankara.

Immediately after the foundation of the Republic, **the General Directorate of Land Registry was established in 1924**, and two consecutive laws were put into effect in 1925. These laws are *Law No. 657 General Directorate of Public and Mapping Administration* and *Law No. 658 “Cadastral Law”*. With the addition of some new cadastral units, today the institution has been transformed into ***the General Directorate of Land Registry and Cadastre (TKGM)***.

After the enactment of **the Cadastral Law No. 658 dated 1925**, cadastral works were started in Ankara, İstanbul, İzmir, Bursa and Konya. Between 1925 and 1936, the General Directorate of Mapping supported the cadastral works by producing maps with 1/500, 1/1000 and 1/2000 scale in Ankara, İstanbul, Kocaeli and Malatya.

When the Civil Code came into force in 1926, most of the immovable property had changed hands without worshiped or outdated or external sales. Before and after the enforcement of the Civil Code, there was a wide disparity between the acted situation and the legal situation on the immovables and this caused great injustice in the social structure. ***The Law on Cadastre and Land Registry Law No. 2613*** was put into force on 15/December/1934 in order to legalize the acts in the immovables, to admit the immovable properties and to make maps based on cadastre.

With the Law on Cadastral and Land Registry Law No. 2613, which applied in both the cities and the villages until 1950. With this law, it was understood that the cadastral problem of the country would not be solved at the desired speed. Then, ***in 1950, the Land Registry Law (Tapulama Kanunu) of 5602*** entered into force for the cadastral of the immovables for outside the municipal boundaries.

In order to overcome the disruptions seen in the Law no. 5602 over a period of more than ten years, ***the Law No. 509 were introduced in 1964 and then in 1966 the Law No. 766 were put into force***. Thus, since 1950, Law No. 2613 was implemented in the cadastral works for the immovables that were within the municipalities only. In 1987, when the Cadastre Law No. 3402 has been applied the system changed again.

After the experiences gained, the Law No. 766 was merged with the Law No. 2613. Nowadays, on ***October 10, 1987, the Cadastral Law No. 3402*** was put into force. Law No. 3402 was modified by Law No. 5304 in 2005, Law No. 5831 and Law No. 5841 in 2009, Law No 6302 in 2012 and Law No 6495 in 2013.

With the 3402 Law; it has been tried to accelerate the cadastral activities, not to cause unnecessary objections, to collect the evidence in a short time, to finalize the cases as soon as possible, to eliminate injustice and imbalances in practice.

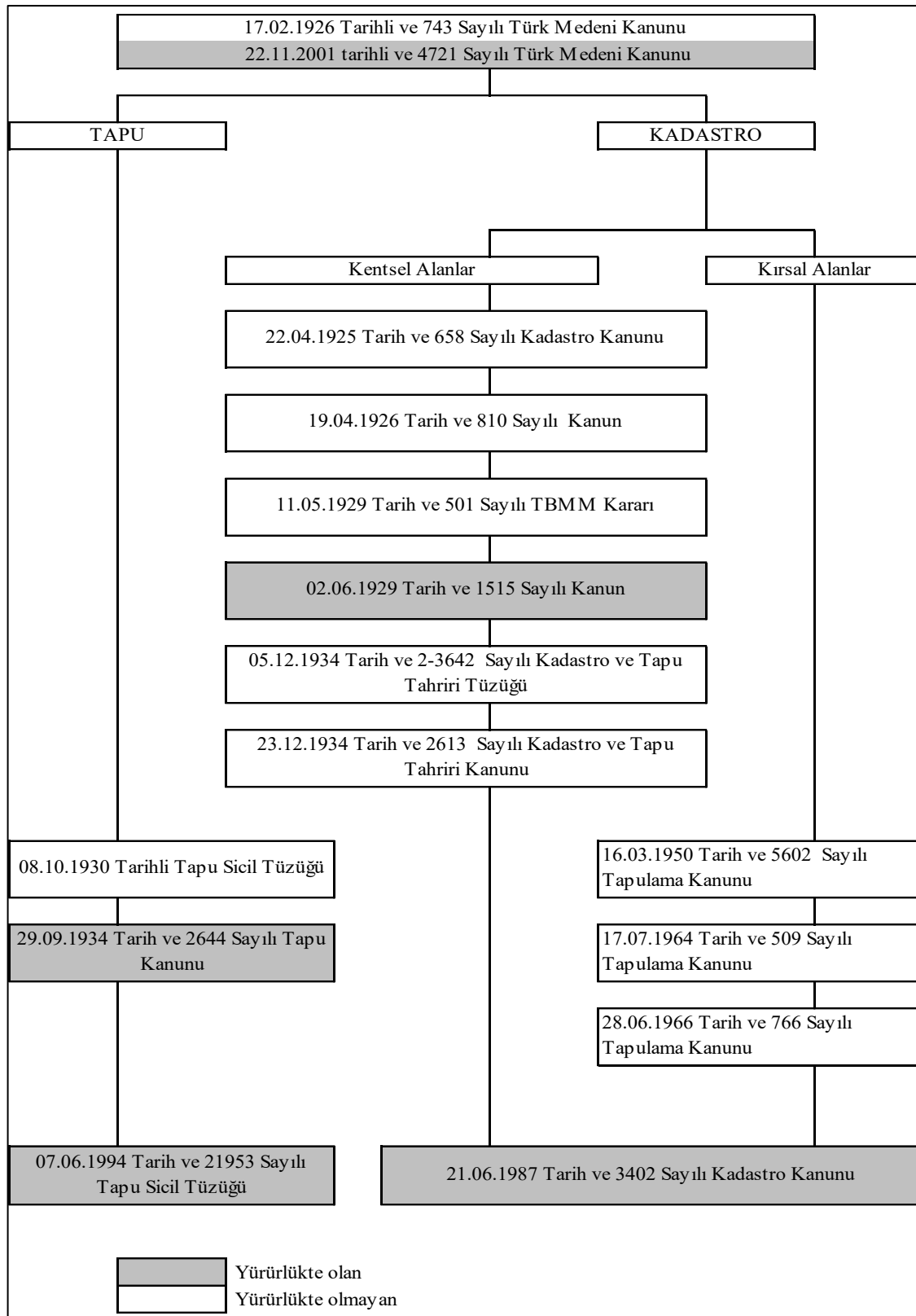


Fig x. The main legislation stages of Turkish cadastral system

4.4 Basic Concepts on Land Tenure and Cadastre

Although similar concepts have been used mainly in the process from the past to the present day, the contents of these concepts may change depending on new developments. As a matter of fact, the definitions of land, cadastre, land registration and land recording of Henssen (1995) are based on the definitions of “Cadastre 2014” prepared by the FIG. It should also be taken into consideration that these definitions are generally accepted definitions for the present structure and future cadastral systems, as well as for the interpretation that these definitions should be extended to some dimensions. Accordingly, the basic concepts used in the cadastre are as follows;

- **Land:** water, soil, rocks, minerals, and hydrocarbons are described as an area of the surface of the sphere with air above and above it. The land includes everything related to a fixed area or point of the ground, including water-covered areas.
- **Cadastre:** is a systematically regulated public inventory of property-related data of a country or region that has been bordering on a measure. Such properties are systematically defined by nomenclature with some distinctive features. The shape and parcel numbers of the property are normally displayed on large-scale maps. These maps are integrated with records showing the property, size, value and legal rights of each parcel. **Where** is these definitions parcel? and how much? answers.
- **Land Registration:** is the official registration of property rights on the land in the form of a deed or title deed. This means that there is an official record of the rights of the land. Or it is a bill containing changes in the legal status of the defined units of the land. **Who** is involved in a land-lease parcel? and how? answers to questions.
- **Land Recording:** Similar to continuously interacting systems, cadastre and land registry are often complementary. Land records reveal the principles of person - rights relations. However, cadastre reveals rights – land object relations. In other words: **who** is the land register? and how? to answer questions, **where** is the cadastre? and how much? to answer questions.

4.4.1 Some Concepts on Land Tenure

Land tenure is concerned with the rights, restrictions, and responsibilities people have with respect to the land. From a legal perspective, land may be defined as any portion of the earth to which rights of ownership, stewardship, or use may be exercised. Thus, the land may include, for example, the surface area of the earth, buildings and permanently fixed improvements, surface and subsurface resources

including water, and in some instances even well-defined units of air space (e.g. for power easements). Often the land and the buildings on the land are referred to as real estate and the various rights associated with land are called real property.

Any type of real property can be recorded in a Cadastre if the right or restriction can be associated with a definite unit of land. Different types of rights may be shown on different cadastral maps or layers of map data. Thus, for example, mineral rights may be shown on a separate map, even perhaps at a smaller scale than the surface rights.

The most important types of land tenure or real property identified in most Cadastal systems can be characterized as follows:

a) **Ownership** usually means the exclusive right to use the parcel and enjoy the yield from the land and improvements. It also includes the right to transfer the parcel to another person, to mortgage the property and to lease it. All of these rights may be more or less restricted by legislation.

It is common today that the legal rights of the landowner are restricted to using the parcel of land in a manner that is beneficial and appropriate from a community perspective. Restrictions may also include measures to protect the environment. Ownership of the land usually includes ownership of any buildings on the land, but in some jurisdictions land and buildings may be owned separately.

b) A **lease** gives the lessee or grantee the right to use the parcel (or part of a larger parcel) for a limited time, in accordance with the regulations stipulated not only in legislation but also in the contract with the lessor. The lessor may be a private landowner or a government authority. The time span of a lease varies from very short periods (e.g. several months) to periods of up to 99 years or longer.

Leasehold tenure is usually not transferable to a third party without the consent of the owner. It is not usually possible to use leaseholds as collateral for loans, unless the lease is for a considerable period. A lessee of land may own a building erected on that land and the building may be used as collateral. Leaseholds for buildings and land can also differ in time span.

c) An **easement** is a limited right for an owner of one parcel to use or prevent use of some kind on a neighboring parcel. The right is usually connected to the parcel and exists in principle as long as the parcel exists. Special easements or rights-of-way may also exist for such uses as construction and access to utility lines. There may also be traditional public rights-of-way over certain parcels to provide access to rivers, the coast, roads, etc.

d) A **mortgage** is a limited right in which real property is pledged to secure money. If the property owner does not live up to the terms of the contract (e.g. does not meet monthly payments on the loan), then the lender has the right to recover any

losses incurred by taking possession of the property. There may be more than one mortgage affecting a property and the right of recovery for losses will depend on the priority given to each mortgage.

In some jurisdictions, the lender actually acquires the title or ownership of the property at the time the mortgage contract is signed. In this case the property owner has the right of possession and use but the full ownership only transfers back when all the terms of the contract have been met (e.g., all payments have been met). In other jurisdictions, the lender only receives the right to repossess the property if the property owner defaults on the mortgage (e.g., does not make the payments required).

e) **Communal or group rights** are important in many countries, especially where land resources have been abundant and the land use of a group covers an extensive area. In such cases, the right to use the land and resources belongs to a group such as a family, a community, a clan, or a band, rather than individuals in the group. Such rights are often found in customary tenure systems, but not exclusively.

4.4.2 The View of Boundary Systems

In a legal sense, a boundary is a surface which defines where one landowner's property ends and the next begins. Generally, this surface is vertical and may be likened to a bead curtain suspended from the sky so that anyone passing through it from one side to the other passes from one set of property rights into another. The boundary surface intersects the ground along the legal boundary line; stepping over this line is equivalent to passing through the bead curtain.

A legal boundary is an infinitesimally thin surface extending from the center of the Earth to the infinite in the sky and is essentially an abstract concept. In the case of strata titles, such as in high-rise buildings, the boundary surface may be horizontal. In practice, most people mark the limits of their property on the surface of the Earth either with linear features, such as fences or hedges, or with point features, such as wooden pegs, iron bars or concrete markers. These physical objects may also be referred to as the boundary, though they may not follow the same line in space as the legal limit. In most legal systems, a fence is an item of defense, a guard against intrusion; it is not necessarily a property delimiter.

a) Fixed boundaries: Within a registration system, boundaries are often referred to as either “fixed” or “general”. To some a fixed boundary (sometimes referred to as a specific boundary) is one which has been accurately surveyed so that any lost corner monument can be replaced precisely from the measurements. To others, the term “fixed boundary” is used to describe a boundary corner point which becomes fixed in space when agreement is reached at the time of alienation of the land. The location of the legal boundary cannot then be changed without some document of

transfer. The surveyor's measurements may provide useful evidence of the boundary's location but the boundary is fixed whether or not there has been a survey. This is the principle which is adopted under the so-called Torrens system.



An advantage of fixed boundaries is that landowners can have confidence in where their property limits lie since these are formally recognized within the system. Where boundaries cannot be referred to visible and permanent

topographic features such as fences, walls, buildings or ditches, well surveyed fixed boundaries may have an impact in reducing future disputes. Precise surveys of all new boundaries will also reduce the amount of additional survey work required at a later stage if and when this is needed for particular projects such as the erection of buildings, expropriations, etc.

b) General boundaries: In the case of general boundaries, the precise line of the legal boundary between adjoining parcels is left undetermined as to whether it is one side of a hedge or fence or the other or down the middle. The ownership of the land can be guaranteed up to the bounding feature, the ownership of which is left uncertain. There is no need for a precise survey, although a reasonably accurate topographic plan is needed. General boundaries are most appropriate where the development of the landscape is mature, for example in urban areas and in rural areas that have been cultivated for a long time so that the pattern of land use is well established.



Under the system of general boundaries, the ownership of a plot of land can be registered without the neighbors being consulted and having to agree the precise location of the legal boundary lines. This reduces the number of disputes in the short term but may give rise to problems in the longer term.

The approach is often used where adjudication of title is undertaken sporadically with titles being brought onto the register only when dealings take place. A general boundary may also be an indefinite boundary, such as one which is uncertain and variable like the edge of a forest or the line of high tide in coastal regions.

4.4.3 Land Parcel Information

Land registers have two main components: a *textual description* of each property; and a *graphic representation* or map often containing dimensional information. The latter is sometimes stored separately away from the text registers. The law should determine the extent to which information held on the registers is guaranteed.

The law should establish whether marks on the ground take precedence over measurements recorded in the registers in the re-establishment of boundaries or, if there is disagreement, whether the information shown on the plans must be followed. The law should also establish the types of data that are held definitively on the registers and for which there is no need to look elsewhere. Thus, the name of the owner, the type of tenure and the existence of mortgages should be guaranteed to prevent a purchaser from unknowingly buying a property that is already pledged as collateral.

Increasingly as registers are computerized and linked into wide area networks, the ownership and protection of the data within the registers become important. The law needs to lay down rights of access to the data, who is authorized to change entries on the registers, and who may use the information in ways or for purposes other than those for which it was provided. Many countries have laws on data protection while some have a freedom of information act. The balance between the rights of the citizen to privacy and the responsibilities of the State to manage land in the best interests of the community can be in conflict.



4.5 Definition of Cadastre

Etymology: The word *cadastre* came into English through French from Late Latin *capitastrum*, a register of the poll tax, and the Greek *katástikhon*, a list or register, from *kata stikhon*—literally, “down the line”, in the sense of “line by line” along the directions and distances between the corners mentioned and marked by monuments in the metes and bounds. The word forms the adjective *cadastral*, used in public administration, primarily for ownership and taxation purposes. Other languages have kept the original *t* sound in the second syllable (examples: Italian *catasto*, German *Kataster*, Slovak *kataster*, Czech *katastr*, Spanish *catastro*).

A **cadastre** (also spelled **cadaster**) is a comprehensive land recording of the real estate or real property's metes-and-bounds of a country. In most countries, legal systems have developed around the original administrative systems and use the cadastre to define the dimensions and location of land parcels described in legal documentation. The cadastre is a fundamental source of data in disputes and lawsuits between landowners. A cadastre commonly includes details of the land ownership, the land tenure and the precise location of a legal land.

A Cadastre is normally a parcel based, and up-to-date land information system containing a record of interests in land (e.g. rights, restrictions and responsibilities). It usually includes a geometric description of land parcels linked to other records describing the nature of the interests, the ownership or control of those interests, and often the value of the parcel and its improvements. It may be established for fiscal purposes (e.g. valuation and equitable taxation), legal purposes (conveyancing), to assist in the management of land and land use (e.g. for planning and other administrative purposes), and enables sustainable development and environmental protection.

In land, each parcel is given a unique code or parcel identifier. Examples of these codes include addresses, co-ordinates, or lot numbers shown on a survey plan or map. Graphical indices of these parcels, known as cadastral maps, show the relative location of all parcels in a given region.

A cadastral map is a map that shows the boundaries and ownership of land parcels. Some cadastral maps show additional details, such as survey district names, unique identifying numbers for parcels, certificate of title numbers, positions of existing structures, section or lot numbers and their respective areas, adjoining and adjacent street names, selected boundary dimensions and references to prior maps.

Cadastral maps commonly range from scales of 1:10,000 to 1:500. Large scale diagrams or maps showing more precise parcel dimensions and features (e.g. buildings, irrigation units, etc.) can be compiled for each parcel based on ground surveys or remote sensing and aerial photography.

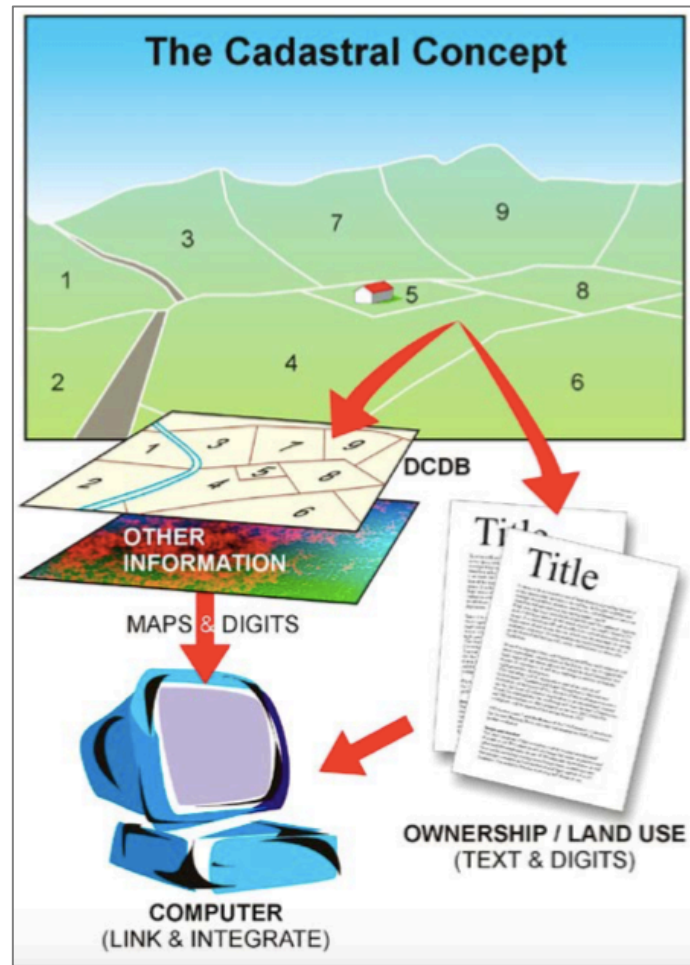


Fig x. A general concept of cadastre with map and land parcel relationship

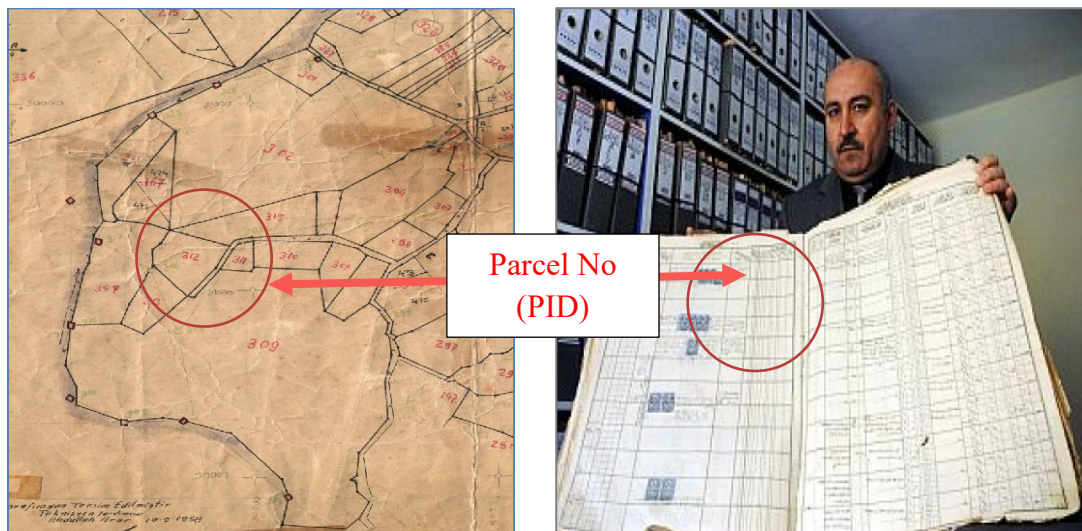


Fig x. A relation cadastral map and land registration book with parcel number (PID).

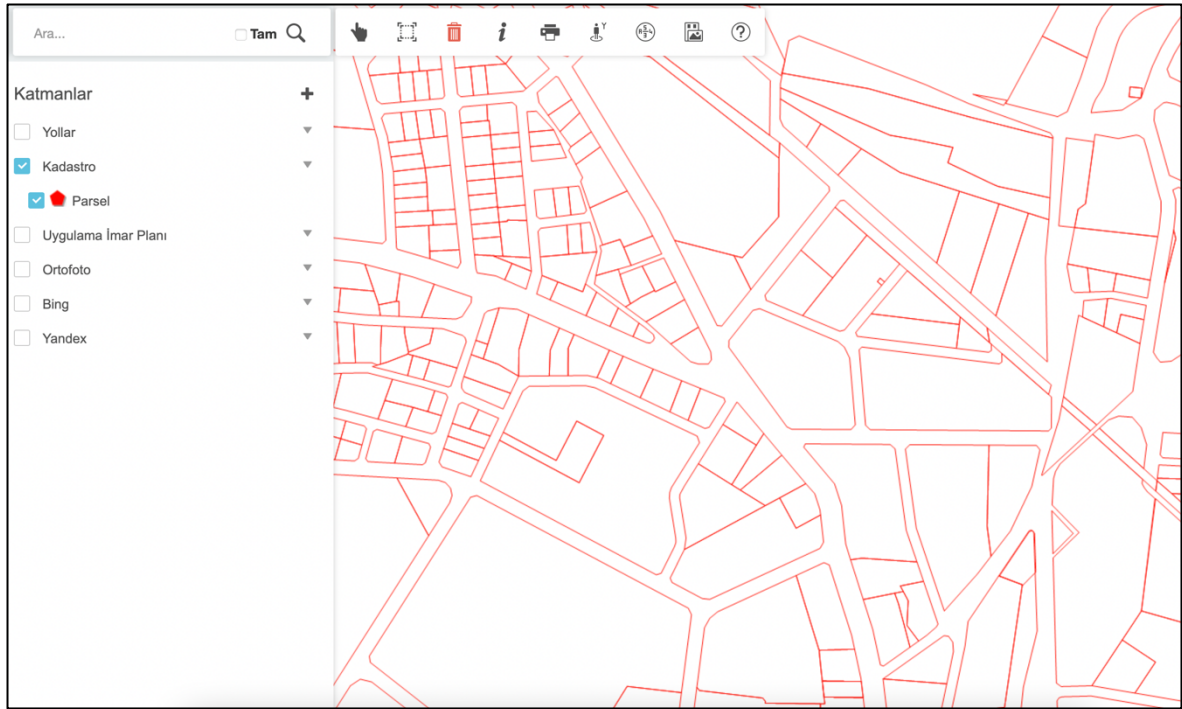


Fig x. A cadastral map example with land parcels (digital)



Fig x. An old fashion cadastral map example with land parcels (graphical)

The Cadastre is a land information system, usually managed by one or more government agencies. Traditionally the Cadastre was designed to assist in land taxation, real estate conveyancing, and land redistribution. The Cadastre is the primary means of providing information about property rights. More specifically, the Cadastre provides the private and public sector with:

- information identifying those people who have interests in parcels of land;
- information about those interests (e.g., nature and duration of rights, restrictions, and responsibilities);
- information about the parcels (e.g., their location, size, improvements, value).

The Cadastre forms part of the base data required in any public land information system. Since information about land parcels and land holdings is often needed by many different users, having a unified, standard Cadastre for each jurisdiction helps to avoid duplication and assists in the efficient exchange of information. The Cadastre is usually created and managed through a government organization. In some countries, Cadasters may be the responsibility of local governments; in others it is a state or national responsibility.

Other information can also be connected to land parcels through the unique parcel identifiers and through cadastral index maps. Such information may be of importance to specific user groups and includes:

- buildings and other improvements
- agricultural data (land capability classifications, land use)
- forestry data
- utilities (e.g., water, electricity, communications)
- fisheries (noting individuals holding rights in inland and coastal waters)
- environmental quality (particularly for site-specific analysis and monitoring)
- demography (population statistics, consumer marketing data, etc.)

The Cadastre plays an important role in the regulation of land use. Land use regulations stipulate conditions for the initial establishment of a parcel (e.g. subdivision or amalgamation); the use to which the land will be put; parcel size; and the necessary access to water and sewerage, roads, etc. In land development, the Cadastre forms an essential part of the information required by the private developer, land owners, and the public authorities to ensure that benefits are maximized and costs (economic, social, and environmental) are minimized.

4.6 Purpose and Scope of Cadastre

Cadastre is an essential formal process in Turkey. In this sense Cadastre, It is the whole of the process of issuing the title deed documents to the right holders by registering the legal status of the immovable properties within the borders of the country on the land and map and by registering it in the land registry in accordance with the Turkish Civil Code as a result of the finalization of the transactions.

These duties were given to the General Directorate of Land Registry and Cadastre (TKGM) under the law. The main task of TKGM; To determine the basic principles for the realization of the land registry, to determine the legal and technical status of the real estates and to keep them up to date. All these activities are carried out under the Cadastre Law No. 3402.

According to the Cadastre Law No. 3402, **the aim of the cadastre is to establish the property rights of immovable property and to perform cadastral maps in accordance with the provisions of the Turkish Civil Code.** As a result of these studies, the geometric positions and legal conditions of the parcels on the supply are determined and a modern title deed is created under the responsibility of the state. Therefore, "**cadastre**" is carried out with technical measurement and mapping procedures on the ground, then the other legal rights on the "**parcel**" with the boundaries determined, by registering "**title deed**" and the certification process of the property is completed.

“**Cadastre**” shows the legal and similar situations determined by the questions “**Who and how?**” for real estate. “**Title Deed**” answers “**Where and how much?**” questions with the position, is seen as a unified whole the technical situation under one roof of activities.

The Cadastre helps to provide those involved in land transactions with relevant information and helps to improve the efficiency of those transactions and security of tenure in general. It provides governments at all levels with complete inventories of land holdings for taxation and regulation. But today, the information is also increasingly used by both private and public sectors in land development, urban and rural planning, land management, and environmental monitoring.

4.7 Components of Cadastre

Information in the textual or attribute files of the Cadastre, such as land value, ownership, or use, can be accessed by the unique parcel codes shown on the cadastral map, thus creating a complete Cadastre. Examples of the functional data of general interest to a wide user community, that is usually considered part of the Cadastre, include:

- **Land parcels** (e.g., location, boundaries, co-ordinates)
- **Land tenure** (e.g., property rights, ownership, leases)
- **Land value** (e.g., quality, economic value, tax value, value of improvements)

However, in order to be able to set a fitting cadastre structure, *at least three basic components must exist and be linked with each other*. These are;

- a) Cadastral parcel,
- b) Cadastral records,
- c) Cadastral parcel number (PID).

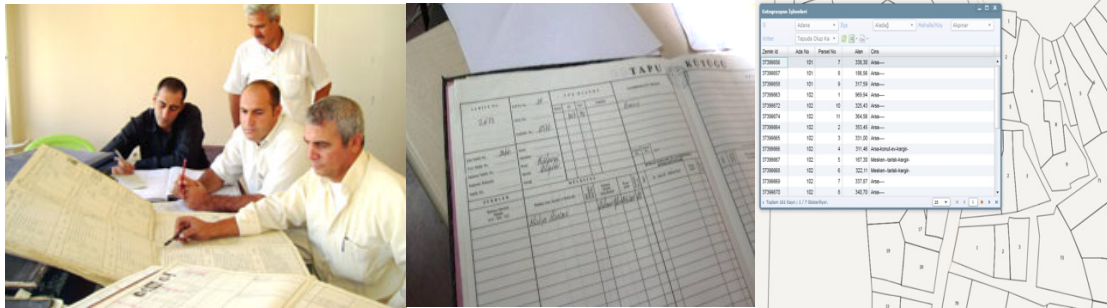
a) Cadastral parcel

The cadastral parcel is a volumetric bounded area of land, where homogeneous relations or property rights are assumed to exist. In the three-dimensional structure of the earth, a parcel covers the rights of the down and upper use in addition to the rights above the ground. As long as the rights are spread to all three dimensions of the parcel as homogeneous, the relationship of property is directly related to the spatial definition (location of the parcel). How to determine the structure of the parcel in a particular cadastral system is determined by the institutions responsible for the cadastral legislation in the country.

b) Cadastral records

Cadastral records may consist of one or more graphical and textual parts. The integrity of a cadastral system is provided by a descriptive code (**PID**) that is singular for each parcel in a given region; all parcels are linearly linked to the cadastral map. The map layers establish the relationship of the property relationship to the other parcels, a coordinate system and other graphical information in the system (eg roads or zone boundaries). This graphical representation, which is accepted as a legal record for the definition of the property or as an index only to other legal records, depends on the objectives of the cadastral system, the standards for the construction and maintenance of the cadastral system and the institutional environment in which the transactions are made.

In addition to the cadastral map, a significant cadastral record is a land registration book. The map, which can display the boundaries of the parcel graphically, cannot show many other property rights. For this reason, these rights are registered in the title-deed registry. In the land registry; *There are legal information including parcel and block number, location, size, owner, share status, legal rights, reason of obtaining, annotation, mortgage and similar restrictive rights.*



A CADASTRE PARCEL...?

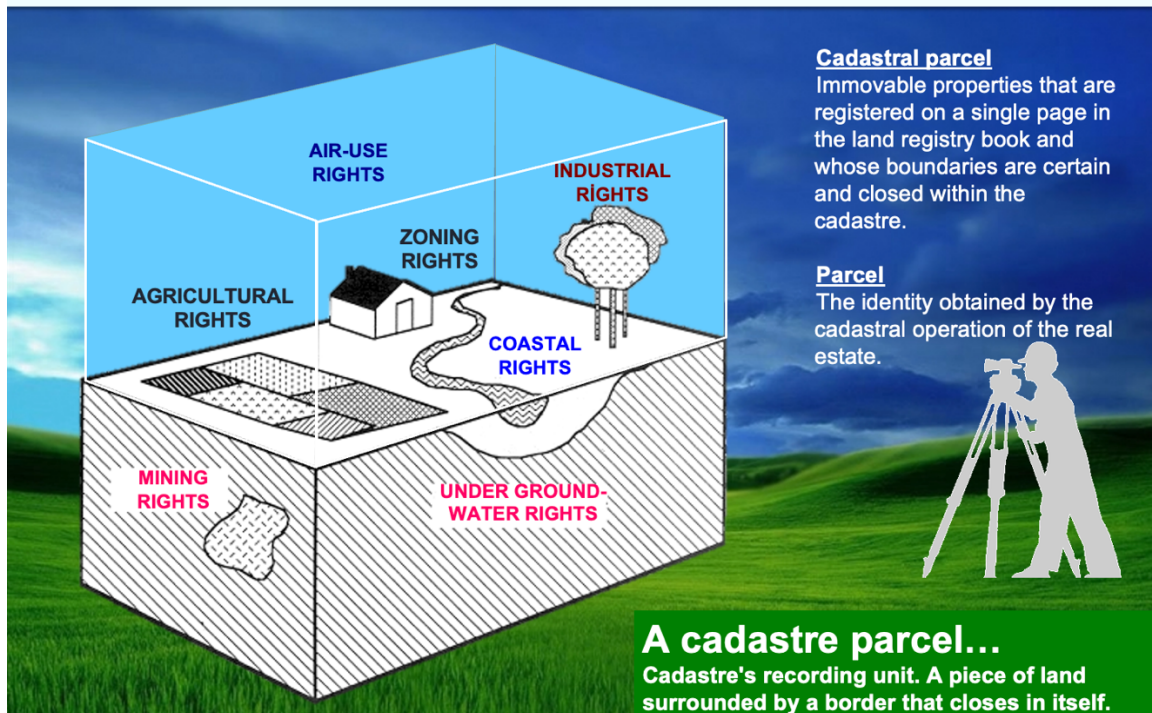


Fig. A land parcel and its related property rights



İli	State	Türkiye Cumhuriyeti Republic of Turkey  TAPU SENEDİ Title Deed		Fotoğraf Photo		
İlçesi	Country					
Mahallesi	District					
Köyü	Village					
Sokağı	Street					
Mevkii	Site					
Satış Bedeli		Pafta No.	Ada No.	Parsel No.	Yüzölçümü	
Sales Price		Map Section	Site No	Plot	ha	m ²
					dm ²	
				Measurements		
Niteliği	Description and Position					
Sınırı	Boundary Limit					
Edinme Sebebi	Details of the Sale and Acquisition					
Sahibi	Property Owner					
Geldisi	Yevmiye No.	Cilt No.	Sahife No.	Sıra No.	Tarihi	Arşivleme Gittisi
Cilt No.	Volume	Registration	Details of the Title Deed			Cilt No.
Sahife no.	Page No	 Signature and Stamp of Approval				Sahife No.
Sıra No.	Row No					Sıra No.
Tarih	Date					Tarih
NOT: * Mülkiyetin gayri aynı haklar ile sınırlı kısıtlı mülk müracaat edilmelidir. ** Tebligat Kanunu Hükümleri gereğince bu belgeyi ilgili Tapu Sicil Müdürlüğüne bildirilecektir.						
Saray Matbaacılık, Ankara - 2007				Döner Sermaye İşletmesi tarafından bastırılmıştır.		
				Stok No 129		

Fig x. An example of Turkish title deed for a parcel

c) Cadastre parcel number (PID)

The relationship between attribute information (land registers) in the written records and spatial information (cadastral maps) in graphical records; the parcel codes, which serve as the access and connection mechanism and which are singular for each parcel, are set up with parcel numbers (PID). Not only the cadaster’s own records, but also the relations of property information with other spatial map layers can only be linked with parcel numbers.

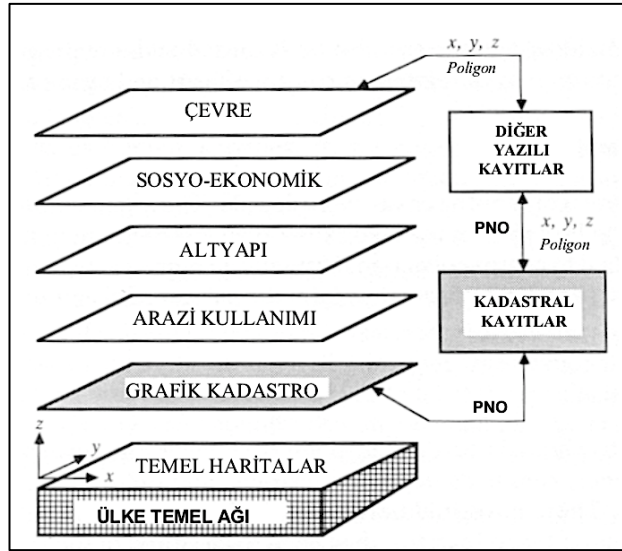
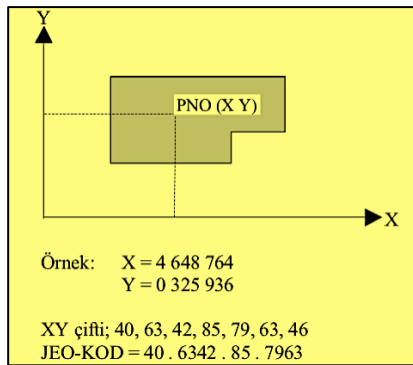


Fig. Linkage mechanism of cadastral parcel with other spatial map layers via PID

The parcel number representation may be different in countries that they choose it according to their cadastral systems. For example, the parcel number used to describe any parcel in Turkey; **province name, district name, village/neighborhood name, map sheet no, block number and parcel no**. As regards the display of PIDs; examples such as sequential numbers, parcel/block and sheet numbers, coordinates of the parcel center (*called as geocodes*) and / or landowners' names, address of the parcel, postal code, street and street name.

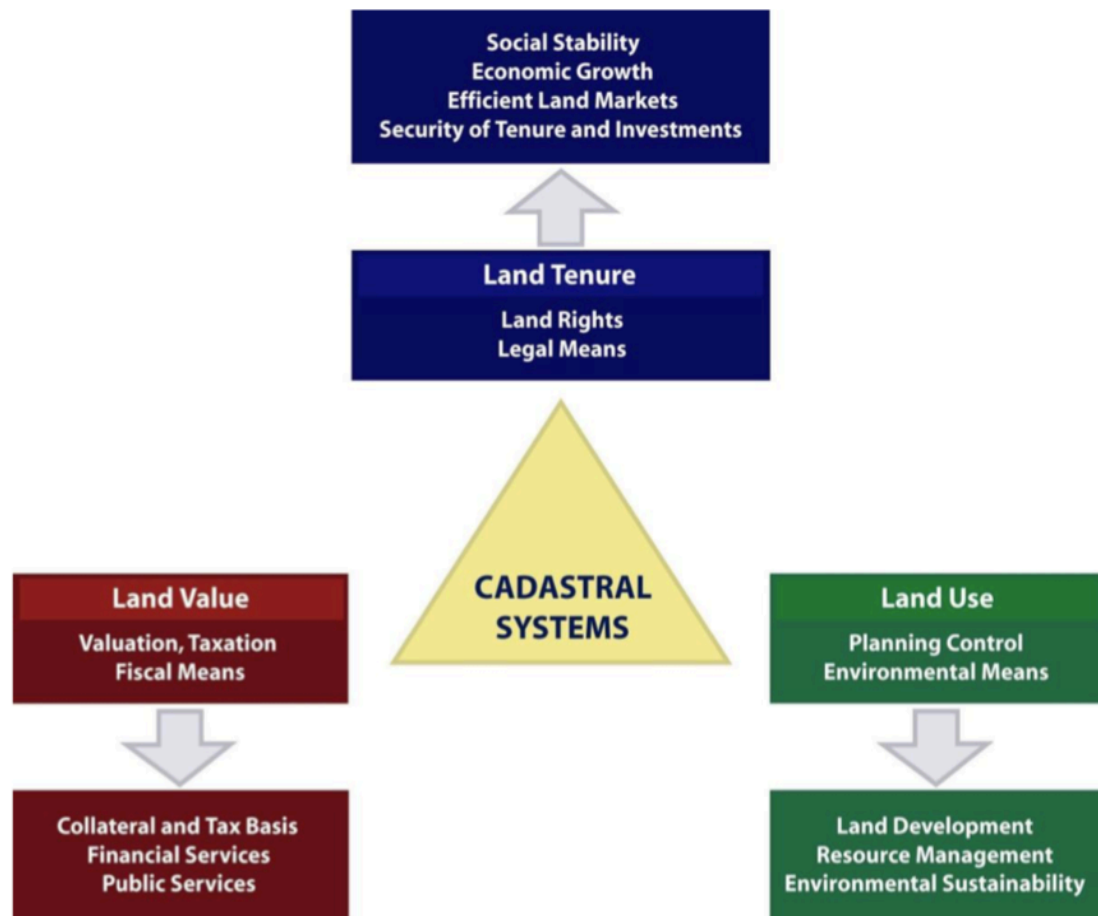


According to the GEOKOD system, the coordinate values of the geometric center of that parcel are taken as the reference of each parcel. These coordinates can be either latitude-longitude values or values in the country coordinate system. The geometric center of the parcel can be taken as a reference or any location within the bounded area of the parcel may be taken as basis. The geocode system consists of only numbers and has a very useful structure in terms of computer technology and database design and informs the user about the location of the parcel in the coordinate system.

4.8 Functions of Cadastre

As societies evolved and property transactions became important, Cadastral records began to take on a greater legal role. Today, Cadastres often serve many functions and multiple users. Cadastral functions may be classified in many ways, e.g. by:

- primary function (e.g. supporting taxation, conveyancing, land distribution, or multipurpose land management activities);
- the types of rights recorded (e.g. private ownership, public use and rights, mineral leases);
- the degree of state responsibility in ensuring the accuracy and reliability of the data (e.g. complete state mandate, shared public and private responsibility);
- location and jurisdiction (e.g. urban and rural Cadastres; centralized and decentralized Cadastres);
- the many ways in which information about the parcels is collected (e.g. ground surveys tied to geodetic control, uncoordinated ground surveys and measurements, aerial photography, digitizing existing historical records, etc.)



All of these factors help to determine the required resolution and scale of graphical data (such as cadastral maps), the type and characteristics of data recorded in both the graphical and attribute files, and the organizational and professional responsibility for managing the data. Other factors that will influence the format and management of the Cadastre include:

- history, culture, and traditional land tenure arrangements.
- size; population distribution; physical and economic geography.
- level of technology; traditional public administration arrangements.
- land and property law arrangements; land policy priorities for the jurisdiction.

4.9 Benefits of Cadastre

4.9.1 Needs for Cadastre

The cadastre is the basis for the sound execution and finalization of all kinds of investment and engineering projects. The importance of the cadastre and the necessities of its realization are directly related to the importance of the services that need it. Some activities where cadastral information is required for such services are as follows;

- change of ownership, pledge transactions and investment decisions,
- land valuation or scoring,
- development of new services / uses / facilities related to land acquisition,
- accuracy of borders and dispute of landowners,
- development of policies and plans related to land,
- monitor existing or proposed land changes by planners and resource managers to minimize disputes related to the use of real estate.

Cadastre is an important element that institutions need as well as regulating property rights of individuals. Cadastre is always needed in the implementation of many complex services from land reforms to zoning plan applications, to the determination of treasury and forest lands, to the maintenance of infrastructure and superstructure facilities, to taxation of real estates. Therefore, cadastre benefits to individuals and society are quite high. It is possible to summarize these as follows.

4.9.2 The benefits of cadastre to individuals

- a) As a result of the trust of the cadastre, the danger of the disposal of the real estate disappears, and the existence of official records of property rights increases the investment value of land or properties.
- b) Possibility of obtaining funds for financial investments as a result of legal assurance, credit supply from banks and similar institutions depends only on the provision of cadastral documents and documenting ownership.

- c) With the cadastral system, land purchase becomes cheaper, easier, faster and safer. After all, the use of the land becomes operational. Change of unregistered land is often expensive, precarious and takes a long time.
- d) The laws developed reduce the level of assurance, property and border disputes and reduce savings in cases in the judiciary, both in individuals and in the state. As a result of all this develops good neighborly relations.
- e) As a result of the effects of the cadastre on individuals, the highest possible benefits are obtained by obtaining the highest possible benefits from the immovable or property and higher values are achieved. Mainly, the increase in the total national production is ensured and the development of the economy is ensured. Thus, the formation of real estate investment partners and participation in the economy such as a security are provided.

4.9.3 Cadastre benefits to society

- a) Cadastre helps administrations to establish and implement an effective and equitable real estate tax system. Thus, the level of social welfare increases as tax revenues, which have an important place in the development of the state, will be collected in a healthy and fair manner.
- b) Encourages the improvement of land used or not in urban areas by the owners. In particular, depending on the tax increases, the owners of the immovable properties are looking for new market conditions in order to save their immovable properties from the situation and make them more efficient. This also contributes to the economic development of immovables.
- c) It supports the implementation of land policies by providing proprietary information to developments in productive land use and planning such as agricultural reform, land consolidation, land re-arrangements.
- d) By providing cadastral maps, it provides support information for other investment services activities and contributes to planned development. In particular, it will form the basis for a system of geographic information systems or similar systems to be developed, with significant property information.



4.10 Types of cadastre

When the developments from the emergence of the cadastre to the present day, three basic approaches are seen in cadastral systems. These approaches reveal the types of cadastre. These;

- a) **Fiscal cadastre;** aims at taxation and valuation of immovables.
- b) **Legal cadastre;** aims to regulate land ownership concepts and records in accordance with legal regulations.
- c) **Multipurpose cadastre;** is a cadastre that can cover both fiscal and legal cadastre and may include other land information on the basis of parcels.

4.10.1 Fiscal cadastre

The fiscal cadastre (*also called as tax-based cadastre*) is subject to the evaluation of each parcel for tax purposes and the inventory of the parcels. The first occurrence of the cadastre was for tax collection purposes. In 1807, Napoleon's instructions to a commission headed by the mathematician Delambre set forth the first realistic implementation of fiscal cadastre. According to this, approximately one hundred million parcels would be classified and classified according to land use and their income and production capacities would be determined. According to the owners of these parcels will be made necessary records of inventory made. This process took 40 years to complete. This approach then led to the development of many cadastral systems in Europe. (<http://cadastre.pagesperso-orange.fr/expo.htm>).

There are three basic steps in the realization of the tax cadastre. The first of them; determination of all parcels that may be subject to assessment separately. Then each parcel is classified according to usage types and its values are determined. In the last stage, the tax amounts of each parcel are collected from the related parties based on the determined values. The taxpayer may not be the owner of the parcel. However, the user is obliged to pay taxes.



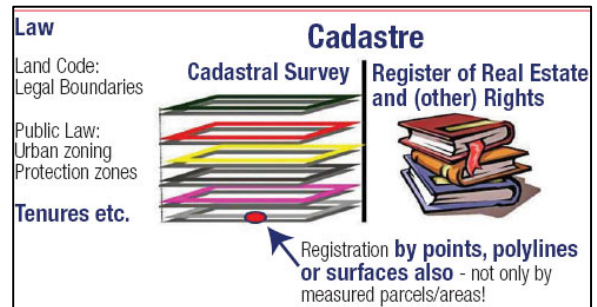
Jean-Baptiste Delambre,
mathématicien et membre
de l'Académie des sciences
Daniel Menet/IGN/Galerie
observatoire de Paris

The taxes collected from the immovables are very important in the development of the principles. In this respect, the parcel detection and immovable assessment subject to the tax system must have a dynamic structure. In terms of income generation, although some institutions, especially municipalities, give priority to creating an information system in Turkey, the fact that the cadastral structure is not fully prepared and the problems in evaluating the parcels cannot be overcome cause many systems to fail at the beginning. Therefore, the solution should be searched at the facility in a short term rather than in the long term as a permanent and updatable property infrastructure system.



4.10.2 Legal cadastre

Legal or legal cadastre is based on parcel registration system. In this system, the conditions and how the cadastre should be done are determined by law. The most distinctive feature of the legal cadastre is to measure the parcel boundaries in the field, as well as to record the rights and property information on the parcel. Therefore, the cadastral sheet and the title deed registry are considered as a whole. As a result of the cadastral activities carried out according to the law, the title deed issued to the owners is a legal document and the property rights are under state guarantee.



The main function of the legal cadastre is to determine the size of the territory of the country, to determine and register *the possession rights* (=zilyetlik hakları) belonging to the public and private property and to establish the immovable law in the country. In our country, the land registry and cadastre procedures, which were previously made under the name of different legislations, were revised in 1987 with the Cadastre Law no. 3402. The General Directorate of Land Registry and Cadastre (TKGM) is a public institution responsible for the cadastral offices and the land registry offices in the provincial offices and provincial offices.

4.10.3 Multipurpose cadastre

Multipurpose Cadastre is a system that collects and shares information on parcel basis, including tax and legal cadastre, as well as other services requiring property information. The classical cadastral concept that emerged at the beginning was transformed into multi-purpose cadastre concept by being affected by other developments in 1970s. This concept was later influenced by the developments in information technology in the 1980s and began to be called as parcel-based information system and nowadays it is also known as land information system.

In the multi-purpose cadastre including the main objectives of the land information system; taxation of the land and the establishment of an effective system for the collection of these taxes, thus accelerating the investments in the land, contributing to the developments in rural and urban areas in particular, providing support to the planning activities to be done in the public interest by producing large scale property maps and records, land use, agriculture. It is essential to create statistical information on the land.

In the transition to the land information system with a multi-purpose cadastral system, a national surface reference network should first be established and other basic maps should be produced based on this network. Large scale cadastral map layers to be produced should be established to establish standards that will ensure the exchange of information with other map sectors as well as written records within themselves.

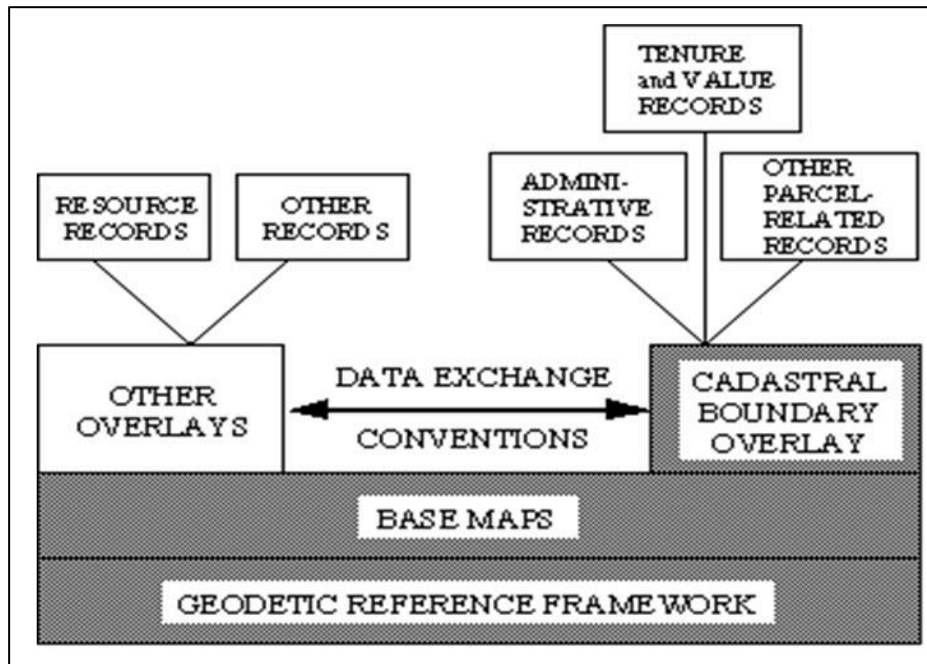


Fig x. Working principle of multi-purpose cadastre.

4.11 The Role of the Surveyor

The role of the surveyor (surveying/geomatics engineering) differs with the purpose of the Cadastre and with different types of organizations. Although there are other activities involved in managing the Cadastre, such as title recording that is usually the responsibility of legal experts, the surveyor may be responsible for:

a) **Cadastral surveying:** This is the definition, identification, demarcation, measuring and mapping of new or changed legal parcel boundaries. It usually includes the process of re-establishing lost boundaries and sometimes resolving disputes over boundaries or other interests in real property. There are always specific regulations regarding training and experience for surveyors wishing to carry out cadastral surveys because they have a professional responsibility to society. Cadastral surveys are carried out by governmental officials and private surveyors or by a combination of both.

b) **Survey recording:** This process includes the checking or examination of the results of the cadastral survey and the entry of the information in registration books and on cadastral index maps. A unique parcel identifier is allocated to each parcel. The examination can check on land policy matters (for instance, does the subdivision contribute to a suitable land use?); legal matters (such as the right of the applicant to conduct certain land activities); and technical matters (for instance, have the survey regulations been obeyed?). To lower examination costs, government authorities are putting more emphasis on quality assurance and more responsibility on practicing surveyors for the accuracy of their field data and survey plans.

c) **Land valuation:** Where the Cadastre is used as a tool for ensuring implementation of a certain land policy, valuation of land and buildings is often an integral part of the role of the surveyor. The most common example is valuation for taxation. But valuation is also important in processes such as expropriation of land and land consolidation where a systematic survey of all properties may be carried out to establish relative values for compensating affected property owners. Subdivision and consolidation surveys may also include establishing the construction and maintenance costs of roads and other joint facilities in order to distribute the costs among the new land holders.

d) **Land-use planning:** When the Cadastre includes initial land allocation, subdivision or consolidation, the land use planning aspect becomes an important part of the cadastral surveyor's role. As a professional, the surveyor is responsible for protecting the interests of the community and this may involve public consultation and mediation processes. The result may be a new land use plan, where economic, environmental and traditional points of view, reach conciliation.

e) **Database management:** Information technology has created a demand for specialists in database design and management. As this is an important component in a modern Cadastre, experts are needed to manage and operate large databases, for graphical information as well as textual information. Surveyors play an important role in this field of activity and education in computer systems is an integral component of today's education and training programs for surveyors.

f) **Dispute resolution:** In some countries, but mainly in Northern Europe, cadastral surveying has special legal significance, where the surveyor makes decisions concerning land matters which are legally binding. These can be questions such as: should a land division be permitted, taking into account the interests of both private developers and the general public?; should a transfer of land between owners be permitted?; who should be compensated for expropriated lands?; and what is the correct legal interpretation of old documents? Consequently, the role of the surveyor has developed from being an independent expert on a committee or in a court, to being the actual first court instead.



5 LEGISLATIVE STRUCTURE OF CADASTRE

5.1 The Constitution and Civil Law

Legal basis for property acquisition in Turkey is phrased in the Constitution of the Republic of Turkey, Article 35 **“Everyone has the right to ownership and inheritance rights.”** The legal basis of the Modern Land Registry is the Civil Code of 4 October 1926 (Amended: Law No. 4721 dated 22/11/2001). Article 705 of the Civil Code indicates that **“The acquisition of land ownership can only be with registration.”** Article 997 also explains the main purpose of this process with the phrase **“Land registry is kept showing the rights on the real estates.”** According to Article 719 of the same law, **“the boundaries of the immovable property shall be determined by the land markings and deed plans.”** With this statement, **“cadastre”** is indicated for the determination of boundaries. The establishment of land registry records and the determination of the boundaries of the land and the registration of the cadastral operations to be carried out based on 22/12/1934 dated 2644 numbered Land Registry Law and 21/06/1987 dated 3402 numbered Cadastre Law.

5.2 The Cadastre Law No. 3402

The aim of the Cadastre Law no. 3402 (modified by Law no.5304) is to accomplish; ***“based on the cadastral or topographical cadastral map that referenced to the national coordinate system, determining the boundaries of the immovable property on the map and land, and to create their legal rights with land titling and registration system as indicated in the Civil Code Numbered 4721, and construct the infrastructure of land information system.”***

Within the scope of the Law, the places that fall within the administrative boundaries of the central district and other districts of each province represent the cadastral zones. The cadastral zones shall be determined by the suggesting of the General Directorate of Land Registry and Cadastre and the approval of the Minister. In this context, the regions where cadastre will be started are announced at least one month in advance in the Official Gazette, Radio or TV, in the regional center and in the province where it is connected, and in the local newspaper, if any, and also by conventional means.

5.3 Other Laws Related to Cadastre

In addition to the basic legal provisions mentioned above and directly related to the cadastral, there are of course some other procedures for land and property management. Because the property is a phenomenon in which many activities take place on the land, it is directly related to many other legal structures.

Especially in Turkey, zoning, soil-land use, preservation of natural heritage, underground and aboveground resources management and so on need to be based on basic laws which constitute the legal basis of the country, and they demand cadastre and land registry information directly or indirectly. According to this;

- **Forest Law No. 6831 (31.08.1956):** Forest cadastral works were excluded from traditional cadastral works and left in the task of General Directorate of Forestry. However, the relationship between the two institutions arises during the Cadastral studies in the villages adjacent to the forests. In many villages there are problems with forest cadastral works. Solving these problems will be possible by transferring forest cadastral works to TKGM.
- **Zoning Law No. 3194 (03.05.1985):** These are the land-use plans that reflect the rules established for the settlements to be habitable. These plans determine the provisions of drawn rules and written law rules regarding the use and utilization of land. For these transactions, it is only possible to register properties under the modern cadastre in the land registry system under the guaranty of the government.
- **Expropriation Law No. 2942 (04.11.1983):** is a method used for the acquisition of the immovables that the state requires for the tasks that the state is obligatory. It is based on well-functioning Cadastral assets, which are recorded in an effective and fair expropriation process.
- **Real Estate Tax Law No. 1319 (29.07.1970):** One of the main objectives of the universal cadastral activities, which is identical to its name, is to collect taxes on immovables. The territory of the country, which can be evaluated in two parts as rural and urban, should be recorded as technologically based. With the support of good cadastral information, it will be possible to collect taxes much more than the immovable taxes collected in a way to provide public justice.
- **Soil Conservation and Land Use Law No. 5403 (03.07.2005):** Article 8 of the Law provides for the classification of agricultural lands and determination of the size of the land parcels, determination of the minimum parcel sizes, and restrictions on inheritance and disposals in order to ensure economic and productivity in agricultural activities. So, there is a need for good cadastral procedures.
- **Pasture Law No. 4342 (25.02.1998):** is a law for livestock. Pastures have been used out of purpose and most of them have been occupied until the law is passed. With this law, agriculture directorates and cadastral directorates, although two different institutions, required simultaneous co-operation. The law is aimed at determining the ownership of the pastures and there is a cadastre in the transactions.
- **Coastal Law No. 3621 (04.04.1990).** The coastal areas are considered as non-registered areas in cadastral terms. On the other hand, the determination of the coastal line is the main process for revealing our coasts. However, Turkey is

determined largely turned on three sides of that line our coasts. On the contrary, because of the incomplete cadastral work in our coastal areas, there are very big problems with social focus on the property. That is to say, after the cadastral studies, it was understood that the coastal line had many properties in contact with the coast. Thousands of disputes were filed in the judiciary. The problem is that the cadastre and coastal legislation cannot be integrated. In addition, the cadastral work on the coastal cadastral organization, on the other hand for the determination of the coastal line works of the directorate of public works. Problems arise due to different institutional views. As a result, coastal law is directly property oriented.

- **Mining Law No. 3213 (04.06.1985):** Cadastral studies of the region where the mine is the subject are of great importance for the determination of our mineral assets and to measure the bounded area with the parcels and owners on the land surface. Thus, it can be a result of multipurpose Cadastral studies to find out where the depth of the mine area, to what depth is allocated and which parcels are related, and to be able to register the property rights of the mine sites under state security and control.



5.4 Principles of Land Registry

The land title (in somehow also called as *deed*) shows the owner of a certain part of the land or an independent flat section built on it. It is a public document issued by the land title registry office. In a sense, the land title is like a summary of the registry with the important features of the land parcel on which it is based.

The deed word is derived from the old Turkish expression “tapuk” which sense “trustworthy” meaning in Turkish.

The basic duties of TKGM with the Organization Act No. 6083 is initiated as — to keep the land registry records under the responsibility of the state in a regular manner, to do land registration works with all kinds of contractual and non-contracted titles related to the immovables, ensuring that the changes on the assets are monitored, audited and archived, and carrying out cadastre of the country, following the changes, ensuring the renewal and updating of the land plans and carrying out the control and inspection services related to them.

Principles of Land Registry

According to the Article 4 of the Land Registry Regulation- Land registration term is the recording process kept under the responsibility of the State to show the status of the real property and rights. The registration and clarity principles are essential. Thus, the land registry was defined in the simplest form.

According to the Article 705 of the Turkish Civil Code; **“The possession of immovable property can only be with its registration”.**

In cases of inheritance, court order, forced execution, occupation, nationalization and other conditions stipulated in the law, the property is acquired before registration. However, *in these cases the owner's ability to make ownership transactions depends on the ownership being registered in the land registry.* Thus, the acquisition of immovable property (inheritance, court decision, forced execution, occupation, expropriation, etc.) is subject to registration except for the exception. This fact shows the existence of the principle of the necessity of registration.

According to Article 1020 of the Turkish Civil Code; **-the land registry is open to everyone.** Anyone who is interested, *“the relevant page and documents in the land title registry may be seen in front of land registry officer or be given examples of them. No one can claim that he/she does not know a record in the land registry.”*

The State is responsible for keeping land records. This principle constitutes the direction of the record with confidence. According to Article 1007 of the Turkish Civil Code; *“the State is responsible for all damages resulting from the land registry, and the State penalize to the officials who have a defect due to the damage. The lawsuits regarding the responsibility of the state are done in the court where the land registry is located.”* The responsibility of the State is kept in under these principles.

As a result, the principles of the land registry systems.

- 1) **Registration principle,**
- 2) **The principle of openness,**
- 3) **Principle Responsibility of the State.**

It can be collected as three titles.

Land registry keeping-out

Article 5: The administrative boundaries of each district are a land registry region. The land registry is organized separately for each neighborhood or village within the region. TKGM may establish more than one directorate in the districts where transactions and population density are high.

The main rule in keeping the land registry is to take the district administrative borders as the basis. In other words, every district in the central structure is generally a land registry region. Land registries are arranged separately for each neighborhood or village within the region. In the event that neighborhood borders change or new neighborhoods are formed in time, the records in the previous neighborhoods are transferred to the new neighborhood registers.

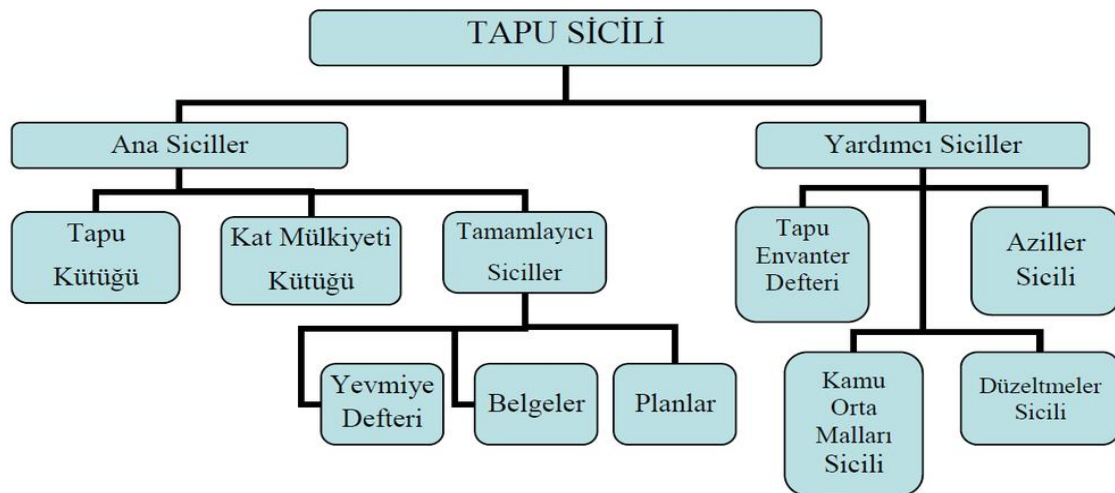
The title deed registration consists of the following main and auxiliary records:

A) Main records

- *Land Registry Book,*
- *Floor ownership index,*
- *Instantly demand book,*
- *Plan,*
- *Official documents (official deed, court order etc.).*

B) Auxiliary records

- *Ownership records,*
- *Registry of minorities,*
- *Corrections record,*
- *Registry of public goods.*



5.5 General Directorate of Land Registry and Cadastre

In Turkey, the duty of identification and registration of property rights for immovables has been granted to TKGM within the scope of laws. For this purpose, the immovable property subject to ownership is systematically displayed with descriptive signs on large scale maps and they form a whole with the relevant records. Land Registry; the legal status of all immovable property, all rights and documents related to it, and the necessary measurements and information to determine its position on field.



The General Directorate of Land Registry and Cadastre (GDLRC=TKGM) was established on 29.05.1936 with the law no. 2997. After, 26.09.1984 days and Law numbered 3045 on “the Amendment of the Decree Law on the Establishment and Duties of the TKGM” were organized. Finally, according to the provisions of Article 480 of the Presidential Decree No. 4, dated 15.07.2018, their duties have been re-organized.

In accordance with Article 478 of the Presidential Decree, the main task of TKGM is; *“to plan, execute, renew and update cadastral works of immovables in order to determine the rights to property, to establish land registers, to save them by archiving, to make maps, to determine production standards and to ensure archiving.”*

In fact, according to 480th article of the Presidential Decree, some duties of TKGM are as follows:

- a) To ensure that the land registry records are kept under the responsibility of the state, to perform all kinds of contractual and unregistered deeds and registration works related to the immovables, to monitor the changes on the registers, to audit, to protect the records and documents by archiving.
- b) To carry out the cadastre of the country, to follow the amendments, to ensure the revision and updating of the land plans and to carry out the control and test services related to them.
- c) Geodetic infrastructure, aerial photography, 1/5000 and higher scaled photogrammetric and ground map production services for making large scale cadastral and topographical maps, or having them constructed, controlled, supervised and identified the basic principles.
- d) To create spatial information system infrastructure and map production monitoring center, to enable real and legal persons, public institutions and institutions to benefit from the data, and to carry out the tasks related to geographical information systems.

- e) For foreigners, to make operations related to land registry and cadastre in the country of legal entities, the Republic of Turkey national real and rights related to immovable properties abroad of legal persons and protect its interests, to participate in interstate estate negotiations.
- f) To plan and carry out joint projects in cooperation with other countries and international organizations on matters related to their field of duty.
- g) To license the surveying and cadastral engineering offices in accordance with the provisions of the Law on Cadastre Engineers and Offices licensed under license No. 5368 dated 16/6/2005 and to determine and supervise the operating procedures and principles of these offices.
- h) To regulate, to license and to determine the procedures and principles of such land-related activities.

Works of GDLRC

GDLRC, the most important land management institution of Turkey; is an architect of dynamic chain of service which includes preparing source data for all kinds of planning and organization on the ground and underground, providing spatial dimension data and displaying topographic structure, producing data that can meet the information need required for economy law, statistic, management, planning and various different scientific researches as well as all kinds of contractual transactions related to land registry and register of immovable properties, to follow-up, and control changes on the registers, to ensure the protection of archive records and documents.

GDLRC is serving 20 million citizens every year as well as producing required basic data for many offices and institutions. Stability of economy and politics in the country has been reflected to GDLRC and many projects have accomplished within this framework since 2003 till today. It would be seen that every single project will contribute to the development of Turkey in the short, medium and long term. Cadastral works of 12.319 units, equals to %24, have been completed within the framework of the “Completion of Establishment Cadastre Project” in last decade (2003-2013), while only 39.376 parcel units (equals to %76) had been completed in 80 years (1923-2003). The Projects provided 85 million dollars savings in the budget as well as providing 70 million dollars fee and tax income.

Administrative Structure of GDLRC

GDLRC, which is the determiner and executer of real property and ownership, affiliated to the Ministry of Environment and Urban Planning. Senior management consist of General Director, Deputies of General Director and Board of Land Registry and Cadastre. Consultation and control units which directly affiliated to the

General Director, home service units and supplementary service units which hierarchically affiliated to General Director are form backbone of central management. Additively, GDLRC has efficient provincial structure with 22 regional directorates, 91 cadastre directorates and 957 land registry directorates all around the country. There are more than 17.000 personals in GDLRC with its professional teams in land registry and cadastre fields.

Missions of GDLRC

- Record, update and service of land register
- Establishment and renovation of legal cadastre
- Photogrammetric and geodetic map production
- Establishment of land information system
- Cooperation with international organizations
- Identify, control operating principles of licensed surveying engineering offices
- Real estate brokerage activities

Vision of GDLRC

GDLRC aims that carrying out its duty more effective and more rapid while fact of property exists. Establishing a multipurpose cadastre by developing finished legal cadastre; create more sophisticated information system by analyzing existing systems, modernization of land registry and cadastre and improving all services are some of GDLRC medium-term targets. GDLRC's main purpose is; being the leader organization which design and direct real estate politics in Turkey and international actor in land registry and cadastre sectors in its own zone.

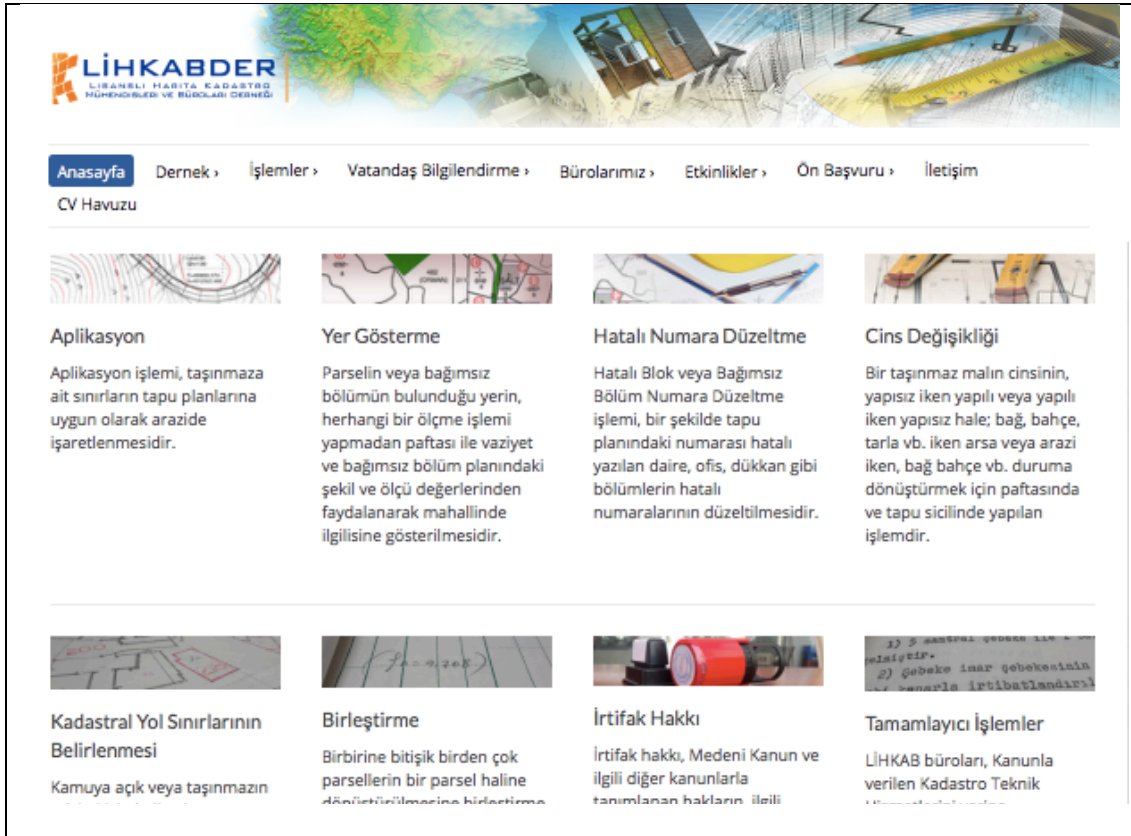
5.6 LİHKAB- Licensed Surveying Engineering Office

The “Cadastre 2014” report of FIG Commission 7 which was published in 1998 established a common language for the matter and helped the idea of private sector involvement in cadaster gain ground. Statement 5 says: “*Cadastre 2014 will be highly privatized! Public and private sector are working closely together!*” Today different jurisdictions have different systems in terms of who performs the cadastal works in a country. In this sense, private surveyor's role carried out by LİHKAB in Turkey.

“Licensed Surveyors and Surveying Offices (LOSC=LİHKAB)” have emerged in Turkey based on the *Act concerning Licensed Surveying and Cadastre Engineers and Offices 2005*. According to this the GDLRC could then transfer its application power over chosen private surveyors and their offices by giving a “license” that recognize licensed surveyors as civil servants in some respects that is backed by the law.

According to the Act, licensing requires certain conditions for the applicants which are: being registered in the Chamber (CSCE), work experience of 5 years as a surveying engineer in the public or private sector, succeeding in the licensing examination and some additional conditions. Licensing exam can be in written only or written and oral together. After succeeding in the exams and fulfilling other requirements, surveyors can receive their licenses and open their LOSCs in pre-determined locations in the country.






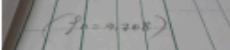

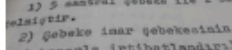
Today there are 195 LOSCs situated in all over the country (TKGM, 2015). Service requests to directorates of cadastre are immediately directed to the LOSCs. The LOSCs can only provide services that are defined in the regulation of LOSCs, which are restricted to boundary surveys, consolidation of parcels, establishment of easements and changing land-use types at the moment. Besides, the LOSCs are forbidden from carrying out any other type of commercial activity. The licensing and operation process of LOSCs in Turkey is shown below Figures. (<http://www.lihkabder.org.tr>)



LİHKABDER
LİSANSLI HARİTA KADASTRO
MÜHÜRÜSÜ VE BÜROLARI DERNEĞİ

Anasayfa Dernek İşlemler Vatandaş Bilgilendirme Bürolarımız Etkinlikler Ön Başvuru İletişim

CV Havuzu

 <p>Aplikasyon</p> <p>Aplikasyon işlemi, taşınmazın ait sınırların tapu planlarına uygun olarak arazide işaretlenmesidir.</p>	 <p>Yer Gösterme</p> <p>Parselin veya bağımsız bölümün bulunduğu yerin, herhangi bir ölçme işlemi yapmadan paftası ile vaziyet ve bağımsız bölüm planındaki şekil ve ölçü değerlerinden faydalanarak mahallinde ilgisine gösterilmesidir.</p>	 <p>Hatalı Numara Düzeltme</p> <p>Hatalı Blok veya Bağımsız Bölüm Numara Düzeltme işlemi, bir şekilde tapu planındaki numarası hatalı yazılan daire, ofis, dükkan gibi bölümlerin hatalı numaralarının düzeltilmesidir.</p>	 <p>Cins Değişikliği</p> <p>Bir taşınmaz malın cinsinin, yapısız iken yapı veya yapı iken yapısız hale; bağ, bahçe, tarla vb. iken arsa veya arazi iken, bağ bahçe vb. duruma dönüştürmek için paftasında ve tapu sicilinde yapılan işlemidir.</p>
 <p>Kadastral Yol Sınırlarının Belirlenmesi</p> <p>Kamuya açık veya taşınmazın...</p>	 <p>Birleştirme</p> <p>Birbirine bitişik birden çok parsellerin bir parsel haline dönüştürülmesine birleştirme...</p>	 <p>İrtifak Hakkı</p> <p>İrtifak hakkı, Medeni Kanun ve ilgili diğer kanunlarla tanımlanan hakların ilgilili...</p>	 <p>Tamamlayıcı İşlemler</p> <p>LİHKAB büroları, Kanunla verilen Kadastro Teknik...</p>

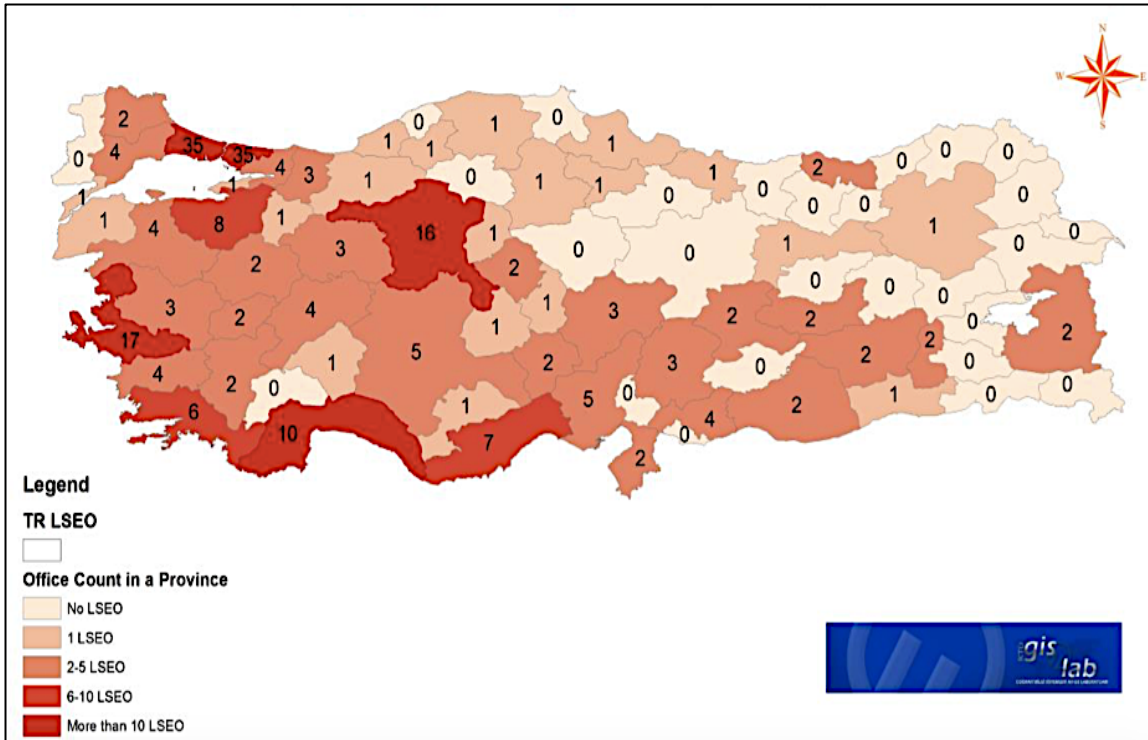


Fig. Licensed Surveying Engineering Office (LSEO) Distributions Map of Turkey (2015)

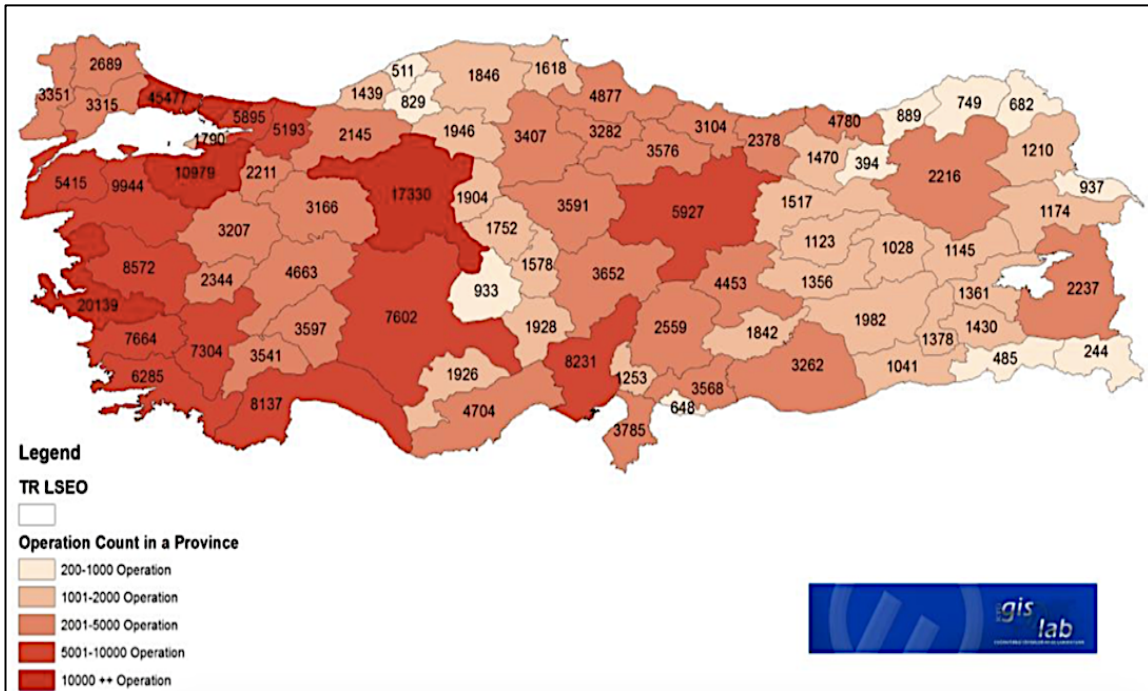
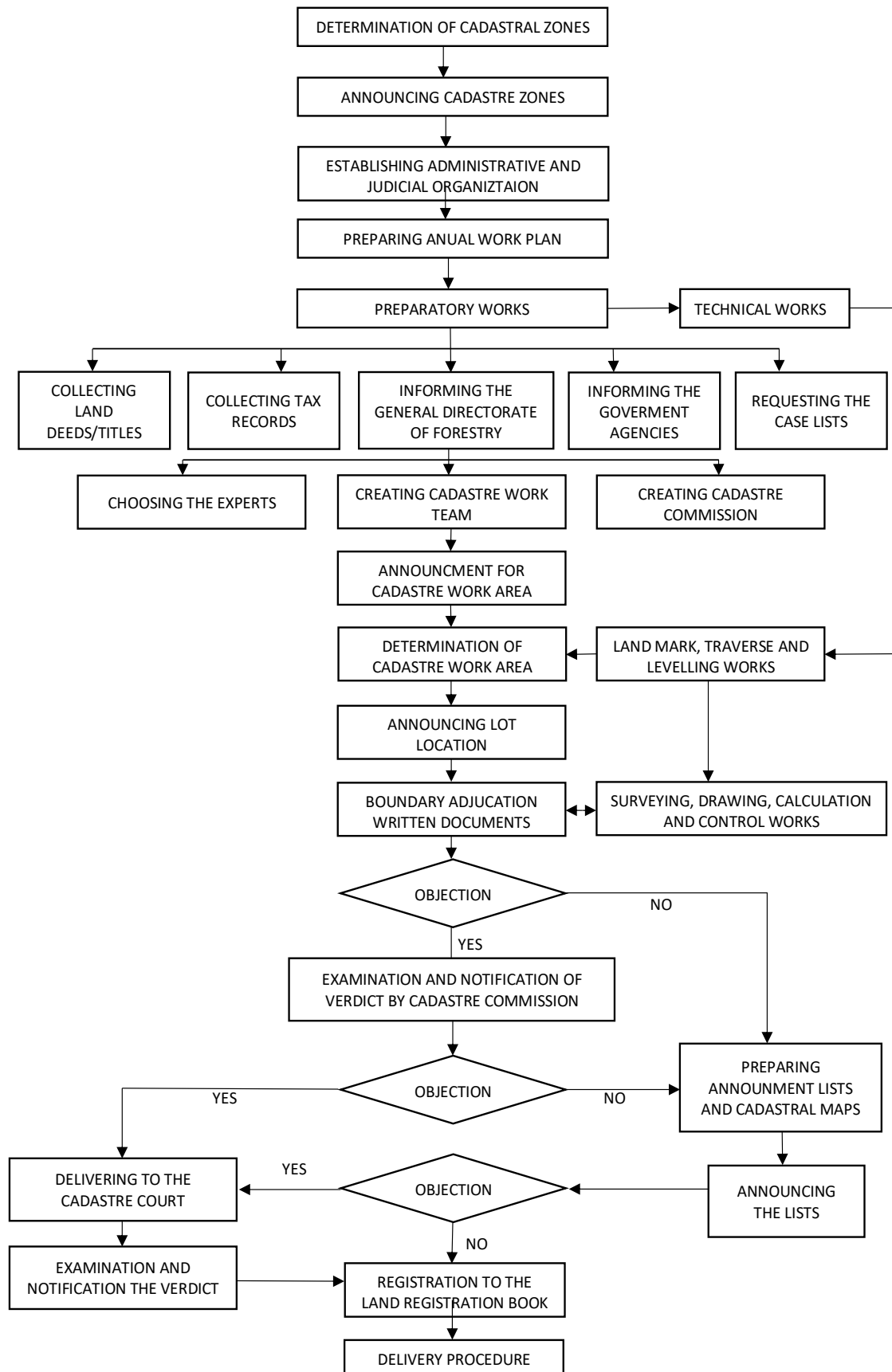


Fig. Licensed Surveying Engineering Office (LSEO) Operation Count Map of Turkey (2015)

6 CONSTRUCTION OF CADASTRE



6.1 Start of cadastral works and establishment of teams

6.1.1 Purpose of the Cadastral Law (3402/Art.1)

The purpose of Article 1 of the Cadastre Law no. 3402 (modified by Law no.5304) is to accomplish; *“based on the cadastral or topographical cadastral map that referenced to the national coordinate system, determining the boundaries of the immovable property on the map and land, and to create their legal rights with land titling and registration system as indicated in the Civil Code Numbered 4721, and construct the infrastructure of land information system.”*

With this definition, considering the technological developments and needs of the period, the technical studies that will indicate the boundaries of the immovables and on the map are handled in the whole country and also; new dimensions have been introduced for the maps to be produced.

It is aimed with this new phrase of *“creation of infrastructure of land information system”* that new contemporary urbanism maps can be produced and the data obtained from the cadastre can be used in all other related sectors.

According to the national coordinate system of the country, while the cadastral or topographic cadastral map of the state determining the owners of the immovable property, determining the rights on it, renewing the old deeds and connecting the deeds to the land titles by the Turkish Civil Code achieved to create the land recording system. Thus, the differences between the acted situation and the legal situation on the immovables before the Civil Code are legalized and updated.

6.1.2 Determination and declaration of cadastral zones (3402/Art. 2)

Cadastral Region: The administrative district of each province and other districts the remaining areas within the boundaries of the cadastre constitute the regions.

Determination of Cadastre Regions: The regions to be opened to the cadastre, it is determined by the proposal of the General Directorate of Cadastre and the approval of the Minister to which it is attached.

Declaration: Cadastral zones will broadcast at least a month in advance in the Official newspaper, Radio or Television, in the district center and in the province where the region is connected, also announced by the local newspaper, if any, and also by the other customary ways.

6.1.3 Establishment of cadastral working team (3402/Art.3)

Cadastral team; at least two cadastral technicians, neighborhood or village headman (*muhtar*) and three experts. If the headman is not able to participate in the activities for any reason, his/her proxy can participate in the legal works.

3402 numbered Cadastral Law with the provisions of Article 4 amended by Law No. 5304, while demarcating and defining the forests, at least one senior forest engineer to be assigned to the cadastre team by the General Directorate of Forestry; and a senior agricultural engineer to be appointed by agriculture directorates must be involved in the team.

In case the technical works of cadastre are carried out by private sector; the cadastre team may be formed by a cadastral technician instead of two cadastral technicians. It is also possible for the cadastral team to appoint a control officer instead of a cadastral technician.



6.1.4 Creation of expert delegation

The expert delegation of the cadastral team- the cadastral manager's written upon request; a person is elected by council; *in village* by the village association, *in city* by the city council. If a team will serve in the field of study, six experts will be selected for each additional team, including three more experts, if more than one team will be assigned to the work area.

The experts should be selected within 15 days from the notification date of the cadastral office. In case the experts cannot be elected during this period or if the experts have not been able to provide sufficient information due to the change in the administrative border, the same number of experts from that village or neighborhood or from the village or neighborhood is selected by the civil authority at the request of the cadastral director. In short, the experts are elected by the village association, city council or civilian authority.

Qualifications to be searched for experts are;

- *Being a Turkish citizen,*
- *40 years old,*
- *To have the right to use civil rights,*
- *To reside in that neighborhood or village for at least 10 years,*
- *To be not convicted of a disgraceful crime,*
- *To know Turkish reading-writing language.*

The expert may be selected from among the illiterate persons provided that the village headman or the mayor informs the cadastral office that there are not enough literate people in that village or neighborhood.

If the Court of Cadastre has not yet been established, the Court of Justice (Sulh Hukuk Mahkemesi) shall appoint and pledges expert delegetas. The minutes of the pledge issued to the court are sent to the Cadastre Directorate. A copy of the minutes of the pledge is kept in the cadastre directorate office and in the team file.

Not Applicable to the Expert's Information:

- The expert; in determining the immovable property belonging to him, his wife, the procedure and the upper-lower linkages, his brother, his brother's children, the procedure and the upper-lower linkages of his wife,
- If there is any dispute between one of the claimants and the expert,
- If there is relation between the claimant and the expert as described in paragraph (a),
- In the determination to be made in the name of the municipality legal entity, the municipal council or the council, in the determination of the village legal entity, the experts acting as members of the village council,

In case of any above situation the experts are not consulted and are replaced by other experts. These cases are subject to the expert of the team, the cadastral technicians, muhtar, and the people who will join the team instead.

6.1.5 Formation and Duties of Cadastre Commission

Cadastral Commission; The Commission shall meet under the chairmanship of the cadastral director or the deputy director. The Commission is a cadastral member and consists of three persons, the control engineer or the control officer, depending on the content of the objection. The cadastral commission assembles with the participation of all members and makes the determination by majority vote.

In examining the objections about the forest; a senior forest engineer commissioned by the provincial organization of the General Directorate of Forestry will take part in the commission. It is also compulsory for an agricultural engineer to be appointed by the agriculture directorates to be involved in the cadastral commission.

The duties of the cadastral commission; are explained in Articles 7, 8, 9 and 36 of the Cadastre Law No. 3402. Furthermore, as explained in the last paragraph of Article 7 of the Pasture Law (Mera Kanunu) No. 4342; if the boundaries of common areas such as pastures and highlands in the villages and neighborhoods where the cadastre will be constructed are determined by the Pasture Commissions within the period of 4 months specified in the law. If this is not done, this task is carried out by the cadastral commissions. According to this;

- a) To examine the objections to be made up to the date of the preparation of the minutes and the minutes of the cadastre team in the working area.
- b) To examine the cadastral records to be sent during the limitation and determination of immovable properties, as there is a disagreement between the cadastre technicians and the forest or agricultural engineer.
- c) Examination of the cadastral records to be sent due to differences of opinion between the cadastre technicians and the control staff or because of the ownership of the property, the shares of the owners or the changes in the boundary and surface area of the immovable.
- d) Examination of the cadastral records related to the immovable properties that are determined due to claiming rights on the places not subject to cadastre,
- e) To examine the cadastral records of the immovables which are not appointed due to the fact that the records and documents they have based on the same force and nature are not determined and sent to the cadastral commission for resolution.
- f) To determine the basis of immovable real estates, which do not have a real estate tax value, to be based on cadastral fees and trial expenses,
- g) To determine and document the boundaries of the properties of the medium properties such as pastures, highlands reported by pasture commissions.

6.2 Determination of the working area

6.2.1 Working area and announcement (3402/Art.4)

Cadastral Work Area: Each neighborhood within the municipality and each village outside these borders is a separate as working area.

Announcement of Cadastral Workspace: to start cadastre in the working areas, it is announced 15 days before in the *district center, in the working area, neighboring village, neighborhood and municipalities* by the typical broadcast ways. The announcement records are kept also.

Since this announcement was made, *local civilian authority, local cadastral and law courts, land registry, financial institutions, foundations administration, special provincial administration, and if relevant, information is given to the local units of the forest administration and other public institutions and organizations.* In case of immovable properties within the boundaries of the neighborhood, it is requested to send information, documents and maps related to them to be evaluated during the demarcation and determination. In addition, the articles written to the Finance and Forestry organizations are also indicated that they may have a representative during the works.

In addition to the information that will be taken from the headmen and experts about the border area of the workplaces and the villages and neighborhoods, it is also necessary to examine the decisions of the district division, the administrative boundary decisions and changes, if any, the finalized court decisions and forest maps and other related administrative units (*Governorate, District Governorate and Special Administration*) research should be done.

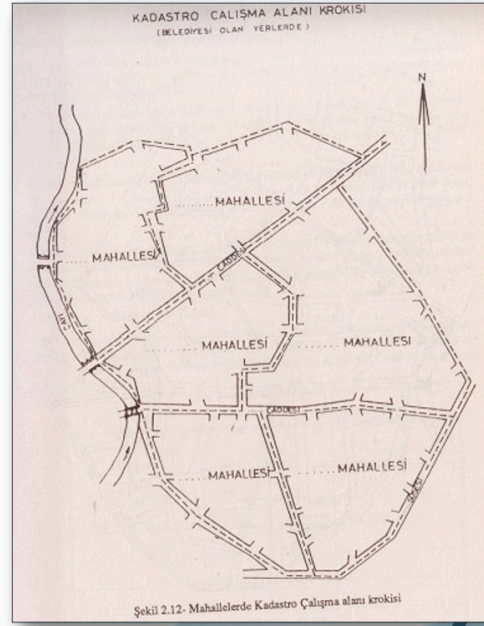
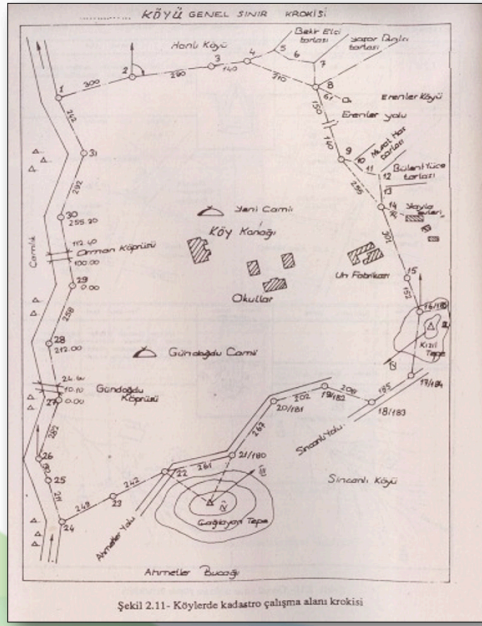
Determination of Cadastral Study Area Boundary.

- *Administrative boundary decisions,*
- *Final court decisions on administrative boundary,*
- *Final forest boundaries / cadastral maps,*
- *Neighborhood section plots,*
- *Deed and tax records of the immovables in the border,*
- *Any other relevant information and documents are taken.*

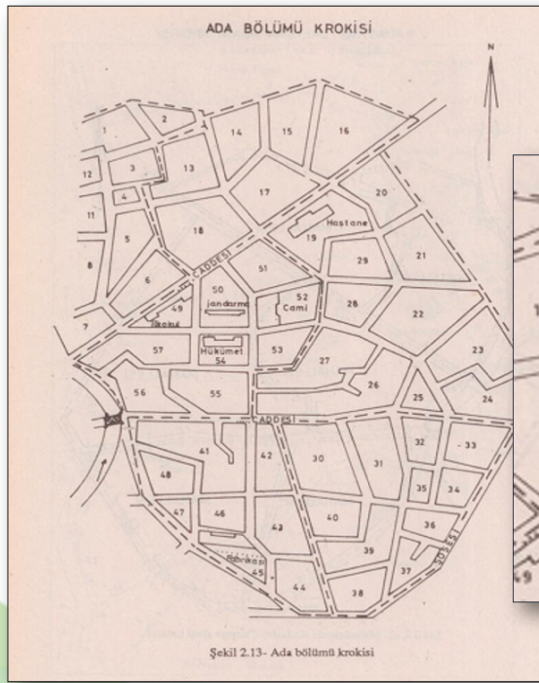
6.2.2 Cadastral island partitions and drawing (3402/Art.6)

Cadastre Technicians: after determining the boundaries of the cadastral work area, they shall arrange the sketch of the cadastral island sections and announce the commencement of working on the island at least 7 days in the village or neighborhood headmen.

In announcement; cadastral island, location, neighborhood and street names clearly shown. In addition, if the owners of the immovable property within the boundaries of the island where the cadastre will be started, who have claimed rights on these immovable properties, show their boundaries at the beginning of their immovable properties and report their allegations; It is stated that the activities that can be done during the continuation of the activities in the study area and the objections that are not based on the document will not be accepted.



Cadastral island partitions and drawing (3402 / Art.6)



Cadastral island sections



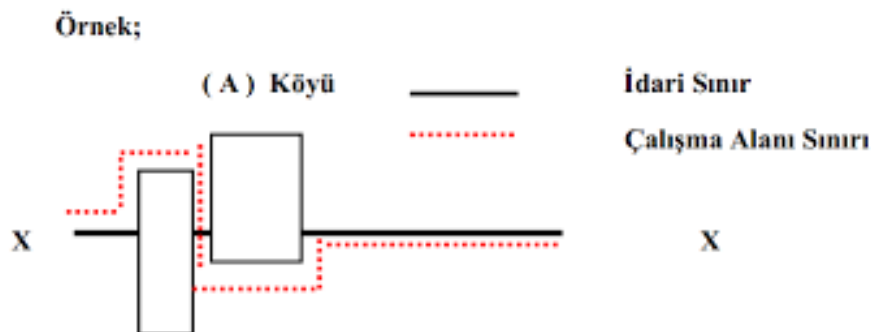
6.2.3 Announcement of working area boundary and objection

After the cadastral work area border plan has been prepared, a copy of the cadastral works will be sent to the presenters by means of a minute to be prepared, and then by the mayor who is not present and by a letter to the village and neighborhood headmen. In addition, the work area border plan is announced in the study area and in the neighboring village and neighborhood headmen. It is stated in the notices and announcements that the border area of the work area can be applied to the cadastral office within 7 days from the date of notification and announcement. Within 7 days from the date of notification and notification to the work area bounded;

- *The headman and mayors of the working area and the neighboring working areas,*
- *Real and legal persons with immovables at the working area boundary,*
- *The local administration of the forest administration may appeal the cadastral office.*

Examination of the Appeals: If it is understood that the appellant is authorized to appeal and that the appeal is made in a timely manner, the Cadastre Manager shall examine the objection within 7 days and decide and send a copy of the decision to the parties. The decision of the Cadastral Manager may be appealed to the Cadastral Court within 7 days of the date of notification. The Cadastral Court will appeal within 15 days. Since this decision of the Cadastral Court is definite, the work area boundary is adapted to the decision of the cadastral court.

Changing at the Administrative Boundary: After the cadastral record has been issued for the first parcel in the working area, the change to the local border of the neighborhood or village does not stop the cadastre. Cadastral studies continue according to the plans and principles of the study program. However, after the studies are completed and the result of the suspension announcement is finalized, the records of the immovables are transferred to the title deeds of the village and the neighborhood where they are located according to the change in the territorial boundary.



6.3 Obtaining of documents

6.3.1 Searching of land deed records

The registration of the land title and maps and their application during the cadastral works are explained with the circular numbered 1509 dated 01.08.1991.

A team to be assigned by the cadastral director will scan the old records at the land registry office and find the land registry records belonging to the immovables in the working area where the cadastre will be started. These registration samples are sorted by date order and the workspace is transferred to the registry.

In the records taken with the samples, the phrase "*cadastre*" is written with a red ink pen in the "description" section. If the sample is registered, the shares are completed. All rights such as rights and obligations, precautionary measures, foreclosures, mortgages and foundations are recorded.

If the records are linked to the maps, samples of these maps shall be taken, and the date and number of the title deed record shall be contacted by writing the letter (H), which means there is a map that the title of the deed record is taken to the area of the workspace registry.

After the completion of the process of finding the records of the land registers, it is re-checked and the records taken in the workspace registry are written and signed by the registrants and the inspectors, indicating that there are no other records to be issued.

In case of request for the same or individual rights facility on the registration or registration of the land due to reasons such as the transfer and sale of the land at the title deed office of the real estate, after the samples of the land registry records are made, the request shall be received by the title deed of the cadastral office from the cadastral directorate. After the demand is met, a copy of the title deed or mortgage document issued as a result of the circulation is sent to the cadastral office in the form of a letter. The requests for precautionary measures or foreclosures are firstly met on the record of records and the cadastral office is informed as a result.

The records belonging to the study area cannot be completed due to the absence of a share in the workplace or the absence of an old manuscript, and the village and neighborhood name, facility date (in months and years) and sequence numbers are notified to the Directorate of Archives (Archive Department).

6.3.2 Obtaining of tax records (3402 / Art.5)

In Article 14, paragraph 3 of the Cadastre Law No. 3402; Tax records that were issued on 31 / December / 1981 or earlier were considered as proof a document recognizing credibility. Records of tax incentives for possession;

1. *Until 31 December / 1971, the records of the special administration established according to the Land Registry Law No. 2901,*
2. *1 / January / 1972 to 31 / Dec / 1981 on the Real-Estate (Emlak) Tax Law No. 1319 and the amendments of the real estate tax declarations given to the tax offices by the immovable property;*

It is divided into two. In addition, in paragraph 5 of Article 36 of the Law on Cadastre No. 3402,

"Cadastral real estate, tax based on the last declaration period based on the Law no. 492 on the amount shown in the tariffs (No. 4), cadastral charges are accrued in the rates shown in the tariff" is included.

For this reason, the examples of special administration destruction record up to 31 December / 1971, from private administration directorates, from the General Directorate of State Archives, to the tax returns of the tax authorities of the year 1981, from the municipalities, the property tax declaration for the last declaration period, samples are taken from municipalities.

Of these, the records of real estate tax and special property tax declarations for the year 1981 shall be evaluated in the delimitation and determination in accordance with Article 14 of the Law no.3402. As the values of the real estate tax for the immovables within the boundaries of the municipality are re-determined by the municipalities on the basis of the re-evaluation rates for each year, it is sufficient to obtain the base tax for the immovables within the boundaries of the municipalities from that year.

6.3.3 Obtaining case lists

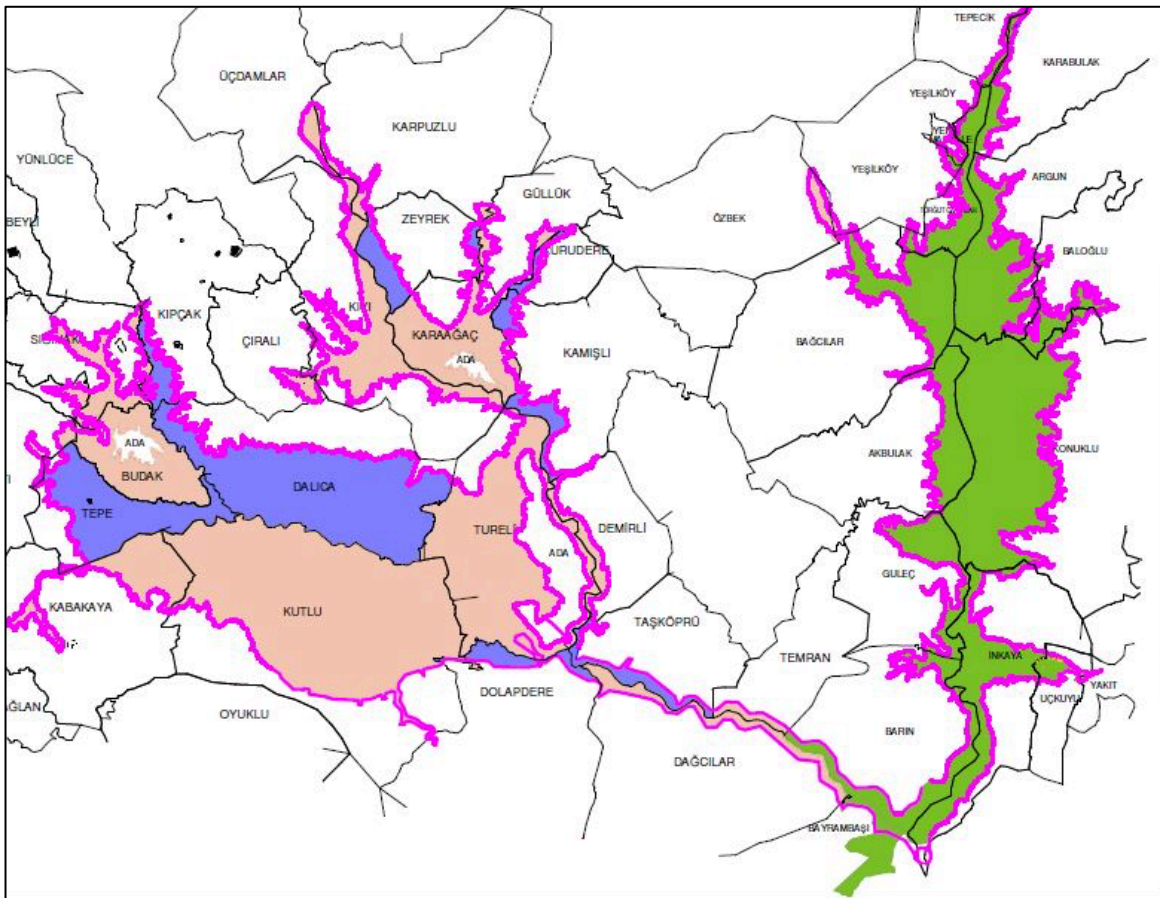
The defendant immovables: In the Article 25 of the Cadastre Law no. 3402, it is stated that the immovable properties subject to similar lawsuits related to land ownership and limited rights of real estate, registration or annulment of the title deed, other rights to be shown in the declarations, the cadastre regarding the boundary and size disputes and the title deed.

Receiving of case lists: Prior to the start of the cadastral work, the cadastral court will issue a letter sent to the local court of first instance (asliye) and the court of justice (sulh). If there are cases in which the circumstance is ongoing or has been decided by the courts, but has not yet been finalized, the relevant case lists shall

be sent to the cadastral court. In the case lists, the main number of the case, the name and surname of the plaintiff and the defendant, their addresses, the subject of the case, the position and boundaries of the immovable property subject to the case, the type, date and number of the documents based on the case, if any, are specified.

6.3.4 Obtaining maps created by other organizations

For the purposes of limitation and determination, one sample of the maps and documents made by the municipalities, highways, DSI, TEDAŞ, BOTAŞ and Forestry Administration is taken from these institutions.



6.4 Identification of immovable properties

Determination of Immovable Property Registered in the Deed (KK. Md.13)

Immovable property registered in the deed:

A) If there is a “possession (zilyet)” on registrar or heirs are found;

- a) On behalf of the registrar,
- b) If the registrar is dead, on behalf of his heirs,
- c) If the heirs cannot be appointed, on behalf of the registrar by writing that he is dead,

B) If there is a “possession (zilyet)” other than the registrar or heirs;

- a) In the name of the registration or heirs in the presence of a cadastral technician,
- b) In the name of the zilyet, if the immovable property is obtained by deed from the registrar or its heirs or representatives by means of deeds, which they prove by their declaration or any document or with the words of an expert or witness, and also in the name of the zilyet, if there is a non-contentious, non-stop and possessive mention for at least ten years,
- c) If the registrant died twenty years ago or his or her “gaip” was convicted or the title deed record did not determine who the owner was, it is determined on behalf of the person who has been in the name of the owner for twenty years without contention and continuously.

Determination of Immovable Property Not Registered in the Deed (KK. Md.14)

Immovable property that is not registered in the deed and is located within the same working area and whose total area is up to 40 acres in watery soil and up to 100 acres (including 40 and 100 acres) in dry soil is determined in the name of the person who has been proving it in the capacity of the owner for at least 20 years without problems and without interruption.

The separation of aqueous or dry land is made in accordance with the provisions of the Land Protection and Land Use Act.

In accordance with the third paragraph of Article 7 of the Pasture Law No. 4342, the subject expert Agricultural Engineer is included in the Cadastral Commissions in the transactions to be carried out in accordance with the provisions of the Law No. 3402.

Limitation and Determination of Defendant Immovable Property

Before the cadastral report is issued, the case lists are checked, and the property is investigated as a defendant. Although it is not on the list of cases, this matter is investigated if it is declared by the claimders or experts that the property is the defendant.

— *If the case is for property;* the area of the real estate is calculated by limiting, measuring, and reversing. The claims of the parties and the documents submitted are evaluated and the results are explained in the reason for obtaining the cadastral report. However, the estate is not appointed for an owner.

— *If the case is for the border and the area;* the claims and documents of the parties are evaluated, and the property of the real estate is determined. However, conflicting boundaries are not inked in the cross and the area is not calculated.

— *If the case is for both property and border and area;* the owner is not appointed, the disputed boundaries are not inked, and the surface area is not calculated.

The subject of the case, the file number and the name of the court are explained in the reason for obtaining the cadastral report column. In addition, after the word (defendant) is written in red pen in the upper right corner of the minutes that are defendants, the name and main number of the court are written to ensure that the report is easily merged with the case file.

Transfer of Defendant Minutes to Cadastral Court: Cadastral minutes and samples of the defendant's real estates delivered to the cadastral manager by cadastral technicians are taken out and copies or samples of the attachments are taken, and the originals are sent to the Cadastral Court within 7 days, and the local Law Court where the case is being heard is informed that the cadastral report has been determined and sent to the cadastral court.

Unclaimed places under the provisions and savings of the state

The rocks, hills, mountains, resources that come out of them, unclaimed places that are not suitable for agriculture, public waters such as sea, lake and river are not subject to restriction and registration, so they are not subject to cadastral. However, due to article 18/1 of the Law No. 3402, these places that will not be subject to cadastralization, places that may be made agricultural land in the future, places where economic benefits can be obtained, should be limited during cadastral studies, and determined on behalf of the Treasury.

6.5 Limitation of immovable properties

With the Cadastral Law No. 3402, cadastral technicians are assigned the task of determining the limits and legal status of the real estates to be cadastralized. However, due to the provision of Article 4 of the Law No. 3402, which has been changed by Law No. 5304, the cadastral team is joined by the forest and agricultural engineer/engineer in the limitation and determination of forests (*circular no. 2014/4 of TKGM*).

Due to article 7 of the Pasture Law No. 4342, the limitation of public common property qualified real estate is carried out by pasture commissions and by the cadastral commission (*circular no. 2004/16*) in case of passage of the 4-month period stipulated in the Pasture Law.



Figure x. Demarcation of parcel corner point on land

Cadastral technicians in the cadastral team; on the day and time specified in the island announcement, they will go to the island where they will start limiting and determination studies together with the headman and experts, and if there are people who have saved the real estate here, if there are other persons who claim the same real estate, they will listen to their claims, and they will submit the documents and deeds and tax records, by taking advantage of the information of the headman and experts and others present if necessary, they determine the limits of the real estate. If the records and documents applied are connected to the map and of a geometric nature, the boundaries of the real estate are determined according to this map.

If there is a border dispute in adjacent (Border) real estate and the owners cannot agree on the same border points, the boundaries in dispute (*except for defendant immovable assets*) and deed maps, if any, are determined by cadastral technicians

by applying them to the ground and taking advantage of the information and declarations of other persons present with experts.

If a lawsuit is filed in local law courts due to border dispute, the defendant is left in pencil and not inked in the cross-field, and also a separate sketch showing the boundaries that still exist on the ground and the limits that the parties claim is added to the cadastral report.

While determining the boundaries of the real estates that have been dismantled by seeing the performance in the deed, the subdivision sketches and the deed records created after the execution are evaluated together in order not to cause any errors and loss of parcels.

For immovables with boundaries set, a limiting and measurement sketch is edited.

Cadastral technicians determine their legal status by evaluating the information they will receive from the residents and experts of the real estate they limit, the persons who are present (persons who own the property, and those who claim the same property), and the people they apply to testify, if any. They write this information and their own thoughts in the reason for obtaining the cadastral report, which they will organize separately for each real estate.

If there are in-kind and personal rights and deeds such as foundation attachment, mortgage, foreclosure, injunctive relief and altitude right on the land registry, these are written in the relevant columns of the cadastral report.

The cadastral minutes are signed by the headman and the experts, as well as by the persons and cadastral technicians who have applied for information and testimony, if any. In addition, the date is put at the end of the description made in the reason for acquisition column and signed by the headman and experts in their own handwriting with the words "I read" without leaving a blank line.

If there is a difference of opinion between cadastral technicians in determining the boundaries and ownership of the real estate, the cause of the dispute is explained in the cadastral report. In addition, if the dispute is for the border, the disputed boundaries are not inked and the area is not calculated, if the dispute is for the property, the owner of the property is not appointed, and the cadastral report is submitted to the cadastral manager within 7 days from the date of is issued for the settlement of the dispute in the cadastral commission.

Preparation of the demarcation sketches

The deed drill is carried out by the immovable cadastral manager or assistant, control engineer and cadastral member who requested the demarcation process and the title deed limits, and savings limits are determined on the ground. The specified

boundary points are marked on the ground and the examination report and demarcation sketch are edited by cadastral elements and delivered to the relevant one in exchange for signatures.

Demarcation sketch: It is a north-oriented sketch that shows the boundaries and breeds of immovable goods, natural and artificial facilities within the boundaries of immovable property on an approximate scale, altitude rights and uncertain boundaries in reference dimensions and is organized before measurement works in cadastral studies and oriented in the north direction.

As long as there are in the bounding sketches, each island is drawn on a single sketch. In each limitation sketch, all parcels of an island are given numbers in order from the north-west of the island, starting at 1 o'clock. The coordinates of the parcel corner points are calculated, and the area is determined from these coordinates. The demarcation sketch is opened according to the ground control points system used in the extent for immovable goods to be made. Subsequent changes to the newly opened pad are monitored in the full sheet system. In the same location, a list of limitations of multiple adjacent immovable properties belonging to one or more owners can be made together.

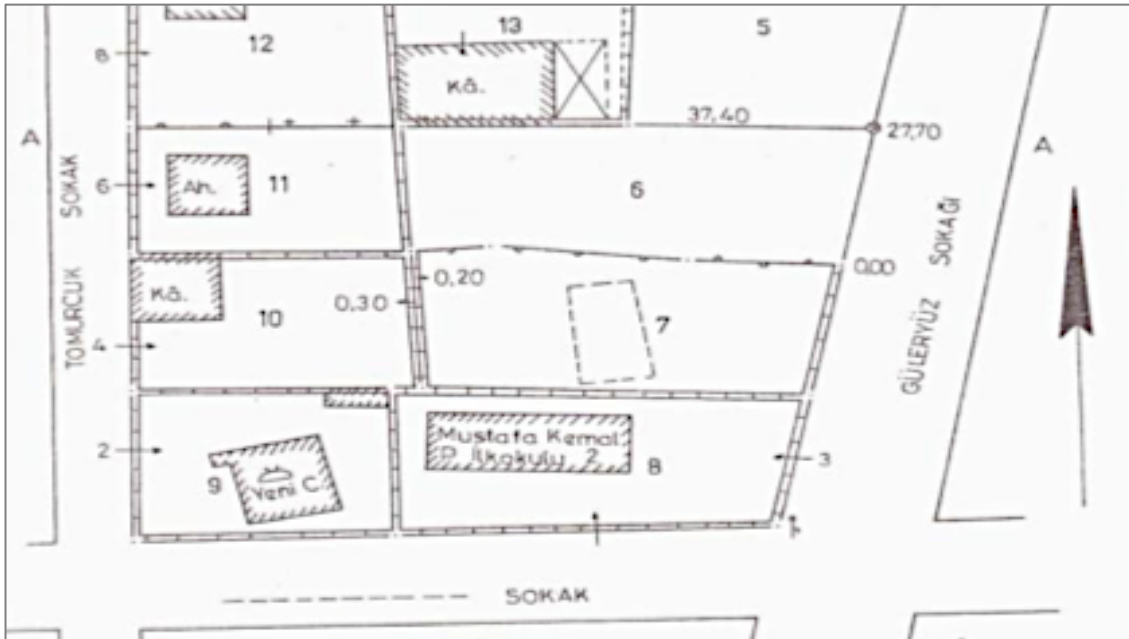


Fig x. Example of a demarcation (*sınırlandırma*) sketch in a residential area

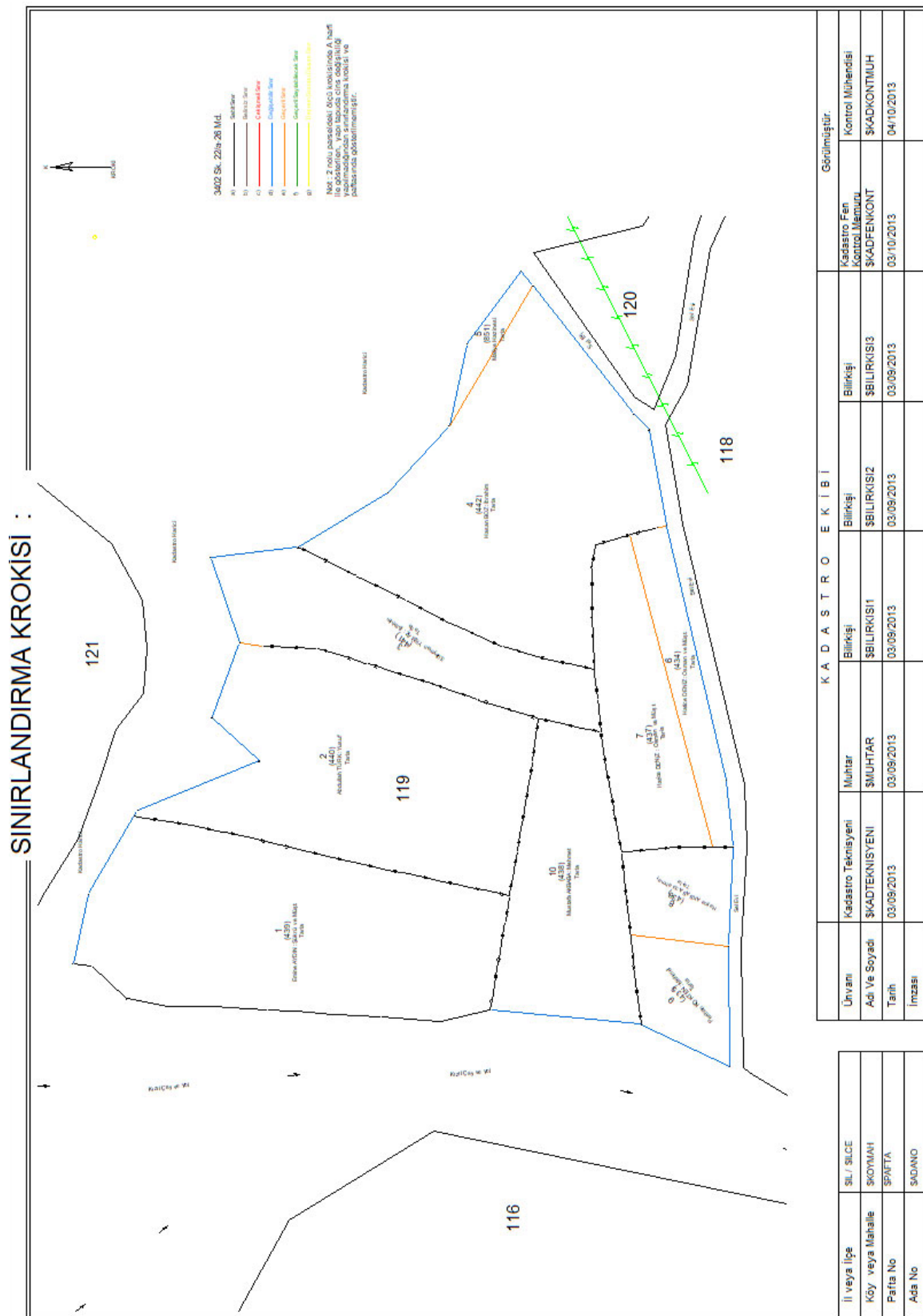


Fig. Example of a demarcation /limitation (*sınırlandırma*) sketch in a rural area

6.6 Creation and control of cadastral reports

Cadastral report is a document showing how the geometric and legal status of the immovable property made cadastral is determined. The cadastral report is issued separately for each immovable property. In determining the boundaries of immovable property, documents such as title deeds, tax records and sketches are used. Cadastral technicians make determinations according to the information and documents provided by the headman and experts, and the information and documents provided by the immovable owner are considered in the determination at the same time. In cases where the information is inadequate, other people's information may also be consulted based on the documents.

Technicians: After evaluating all the information obtained from the headman, experts and other interested people and determining the geometric and legal status of the immovable property, he explains his thoughts in the "*Reason for Acquisition*" column of the cadastral report.

If cadastral technicians cannot reach a conclusion with the information and statements of the headman and experts, they will consult the information of other persons and the reason is clearly stated in the report. However, the findings made contrary to the information and declarations of the headman and experts should be based on records and documents. In case of opposition of the headman and experts to the determination made in this way, their signatures are obtained by writing "Disagree evil". If the headman and the experts refrain from signing, this issue is indicated in an appropriate place of the report and signed by others present.

In the Property column; the name, surname, father's name, share, population registration information and address information of the immovable owner or owners are written. It is signed by cadastral team and other relevant and witnesses who make statements by writing their first and last names. The edited minutes are signed by the cadastral technician. The headman, expert and other interested parties whose information is applied are made to sign the "I Read" sign in their own handwriting without leaving a blank line at the end of the "Reason for Acquisition" article.

Review and Approval of the Report by the Control Officer

Control elements: the cadastral team completes or corrects the technical, legal, administrative deficiencies and inaccuracies detected on the minutes and the documents that complete them and, if necessary, in the examination of the land. They sign the corresponding column in the report by showing the transactions made in the control book.

Control engineering can go to the land registry directorate and local institutions related to the permission of the cadastral director to complete the information and documents they deem incomplete or necessary during the inspection.

If there is a difference of opinion between the control engineer, engineer and control officers and cadastral technicians, or if the corrections requested as a result of the control affect the rights of the relevant people, the situation is written in the control book and sent to the cadastral commission together with the minutes.

If there are objections to limitations and determinations, the name, surname, father's name, summary of the objection and the nature and date of the document submitted as the basis of the objection are written in the relevant column. Before the end of the studies in the field of application, all the columns of the minutes are examined by the cadastral member, if any, the deficiencies seen are completed by the relevant technicians and signed by stating in the relevant column of the report where this examination is carried out.

6.7 Creation and finalization of land registry records

Editing and advertising of announcement sheets

After the cadastral works are completed, the ownership status of the immovable property and the status of other in-kind rights on the immovable property are announced to the beneficiaries once again before the issuance of the deed registers. Thus, it is announced to the beneficiaries in order to prevent errors related to possible limitation and cadastral detection during cadastral. This announcement is called an announcement sheet (*askı cetvelleri*).

The cadastral director organizes the suspension announcement rulers based on neighbourhood or village based on the cadastral minutes issued as a result of limitation and determination. In addition, it prepares enough copies of the paper samples of the cadastral work area to be announced in the workplace of the village or neighbourhood headman where the immovable property is in a suitable place of the cadastral directorate and sent to the relevant places. The prepared announcement sheets are submitted for approval by the cadastral commission. After the review of the Commission, it is signed and approved by the members (cadastral director, cadastral member and control engineer or science control officer).

Cadastral director: In a suitable place of the cadastral directorate, in the working place of the village or neighbourhood headman where the immovable goods are located, and if there is a municipal organization, only a sample of the bulletin table is announced in the appropriate place of the headman on the same day and declares them for 30 days. A report is issued that the announcement is made separately for the places advertised.

Finalization of the documents

After the 30-day announcement period expires, it is determined first by correspondence with the cadastral court whether there are immovable assets that have been filed against their limitations and determinations in the cadastral court during the announcement period. During this period, the cadastral minutes of the real estate's whose limitations and determinations are not prosecuted in the cadastral court are finalized.

The date of the suspension announcement is written in the date section of the relevant column left blank on the back page of the cadastral documents, the date of the announcement, the issue of whether a lawsuit has been filed within the suspension notice period, and the empty part below this column is written the date of the day following the end of the suspension announcement. Cadastral documents, which are not prosecuted for limitations and determinations during the announcement period, are approved and finalized by the cadastral manager. (47/D Article:25)

<p style="text-align: center;">ASK I CETVELİ İLÂNI</p> <p style="text-align: center;">..... KADASTRO MÜDÜRLÜĞÜNDEN</p> <p>..... İLİ İLÇESİNİN MAHALLESİ/KÖYÜ KADASTRO ÇALIŞMA ALANI SINIRLARI İÇİNDE BULUNAN TAŞINMAZ MALLARIN, 3402 SAYILI KADASTRO KANUNU HÜKÜMLERİNE GÖRE YAPILAN TAHDİT VE TESPİTLERİ İLE BU TAŞINMAZ MALLARA TAHAKKUK ETTİRİLEN KADASTRO HARÇLARI VE KADASTRO KOMİSYONUNA YAPILMIŞ OLAN İTİRAZLARIN SONUÇLARI EKLİ CETVELDE, SINIRLARI İŞE PAFTA OZALIT KOPYALARINDA GÖSTERİLMİŞTİR.</p> <p>BU CETVELLER İLE TAŞINMAZ MALLARIN KONUMLARINI GÖSTERİR PAFTA OZALIT KOPYALARININ İNCELENEREK, CETVELLERDE YAZILI TAŞINMAZ MALLAR ÜZERİNDE MÜLKİYET VE MÜLKİYETTEN GAYRİ AYNI VE ŞAHSİ HAK İDDİASINDA BULUNANLAR İLE SINIRLARININ TESPİTİNDE HATA OLDUĞUNU İDDİA EDENLERİN, İLAN MÜDDETİ OLAN İLE TARİHLERİ ARASINDA KADASTRO MAHKEMESİNDE DAVA AÇMALARI VE DAVA AÇILDIĞINA DAİR MAHKEMEDEN ALINACAK BELGENİN MÜDÜRLÜĞÜMÜZE İBRAZ EDİLMESİ, DAVA AÇILMAYAN TAŞINMAZ MALLARA İLİŞKİN KADASTRO İŞLEMLERİNİN KESİNLEŞTİRİLECEĞİ,</p> <p>3402 SAYILI KANUNUNUN 11'İNCİ MADDESİ UYARINCA DUYURULUR.</p> <p style="text-align: center;">..... KADASTRO MÜDÜRÜ</p>
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Registration procedures

The finalized cadastral documents and the finalized decisions of the cadastral court are registered within 3 months by showing the date of finalization to the deed registers to be issued for that work area as the registration date. Registration is made in order of name and parcel number.

Due to the fact that the cadastral is the defendant first or the lawsuit is filed during the suspension announcement, the deed log pages of the real estate's whose cadastral minutes have been sent to the cadastral court are left blank. The name of the court where the case is heard, and the file number of the case are written in the declarations house of the deed log page (article 47/D:26)

Since “public-common-owned (kamu-orta-malı)” immovables such as pastures, highlands, barracks, public pastures and meadows, blends and fairgrounds, which are listed in Article 16/B of the Law No. 3402, are not subject to registration, they are recorded in the —Private Register Book (*Public Common-Goods Register*) when their cadaster are finalized.

During the suspension announcement period, samples of cadastral minutes of the real estates that are sued for limitations and determinations are taken out and their authenticity is confirmed by the cadastral manager and stored in a file in the directorate. The originals are sent to the cadastral court to be added to the case file along with the examples of the paper.

Cadastral minutes (placed in a folder in order of island and parcel) and deed logs of the defendant real estate’s whose surrogates are detained due to the fact that they are finalized and registered with the cadastral court are transferred to the land registry office depending on a ruler.

The second copies of the deed logs and their plots are sent to the regional directorates in the places where the archive is established, otherwise to the General Directorate.

In the registrations to be made because of the announcement, the "*Cadastre* statement *is* written in the Reason of *Acquisition* column of the title registry, and the Date of Determination is written in the Registration *Date* column. Since the journal (yevmiye defteri) is not kept in the cadastral directorates, the column for the writing of the journal's general journal is left blank.

Archive operations

With the "Document, File and Archiving Circular" no. 1713 published in 2010 of TKGM, the services seen by the Central and Provincial organizations, the records, evaluations, filing principles and procedures of the documents and documents related to their transactions were regulated.

Accordingly, to carry out the documents and archiving services of the General Directorate; unit archives are created in the central agency units and regional directorates, land registry and cadastral directorates. Unit supervisors are responsible for keeping their archives accurate, orderly and up-to-date and for the execution of archive services in accordance with the legislation.

Technical information and some general principles for archiving documents

- Technical documents are sorted and archived in the island folder as subfolders for each workspace on an island basis.

- Successive island folders and subfiles are created on an island-by-island basis without discriminating neighborhoods within the municipal boundaries.
- Cadastral studies on an island basis are re-classified and archived in the form of an island folder, an auxiliary technical documents folder, and modifications are monitored through these folders.
- In cadastral studies performed by photogrammetric method, the paper copies are sorted like limitation sketches because they are used as demarcation sketches.
- Map sheet originals and archive information and documents cannot be taken out of the official building without the permission of the Administration. In cases where it is mandatory to take archive information and documents out, it is mandatory to register in the archive entry and exit book held by the relevant Directorate in accordance with this Circular.

7 UPDATING AND RENEWING IN CADASTRE

7.1 Technical applications and geometric updates within the cadastral scope

Map (plan) example: The exact example taken from the registered map of the parcel. It is also commonly called cadastral sketch (çap).

Showing the parcel on site (yer gösterme): The location of the immovable property is shown to the relevant owner by using the map sheet without any measurement process.

Application (aplikasyon): The process of re-specifying parcel corner points on the registered map on the ground. It is also called a re-sketch (röperli kroki) among the people.

Type change (cins değişikliği): The conversion of the type of an immovable property when it is deconstructed (land) or structured (built). When the vineyard is a garden, a field, the return to land is provided. These transactions are carried out on the map and in the land registry book.

Right of easement (irtifak hakkı) or leave (terkin): The right of easement; gives the owner the authority to use and benefit from someone else's property for a specified purpose. The rights defined by the civil law and other relevant laws are the procedures that must be shown on the maps and documents of the relevant immovable property and must be registered or leave.

Consolidation (tevhid) operations: The process of converting multiple merge parcels into a parcel.

Subdivision (ifraz) maps: The subdivision process is, in its simplest definition, the division of an immovable property into two or more parts. The division process is carried out under the responsibility of a self-employed surveying engineer in accordance with Article 2 of the registered map and plans regulation (BÖHHBÜY).

Give-up to road (yola terk) maps: During the implementation of the zoning plans, it is the process of giving up (leaving) all or part of the parcel in accordance with the zoning plan rules (road, green area, park) by the owners of immovable property in order to create the new zoning parcels. It is a kind of land donation process. At the request of the relevant one, registration is carried out after the municipality is attached to the council decision in accordance with articles 15 and 16 of the zoning law. Give-up is carried out under the responsibility of a self-employed surveying engineer in accordance with Article 2 of the registered map and plans regulation.

Road replacement (yoldan ihdas) maps: the roads closed due to the zoning plans because presently is a cadastral road are processed in accordance with the purpose

of the zoning plan. At the request of the relevant one, registration is carried out after the municipality is attached to the council decision in accordance with articles 15 and 16 of the zoning law. These operations are carried out under the responsibility of a self-employed surveying engineer in accordance with Article 2 of the map and plans regulation.

Demarcation (sınırlandırma) maps: To determine the boundaries of an immovable property on the ground, registered in the deed but not yet cadastral, the demarcation maps made by the relevant persons are made under the responsibility of a self-employed surveying engineer.

Zoning plan (imar planı) maps: In accordance with Article 18 of the Zoning Law No. 3194, the cadastral parcels with and without buildings within the areas of the municipality is authorized to consolidate the land or divide them into new parcels in accordance with the redevelopment plan, re-distribute them to the beneficiaries in a way that is shared or non-shared, and to carry out the title registration procedures without the decisions of the landowners. Cadastral directorates are authorized to technical control of these plans only.

Expropriation (kamulaştırma) maps: Expropriation is the transferring of a private immovable property to the state as a legal entity for the purpose of public interest only. In expropriation the cost is paid in advance, then State owns the real estate or establishes the right of easement on it. Expropriation maps made or commissioned by the relevant body is controlled by the cadastral directorate.

7.2 Graphical-cadastral and renewing

The first cadastral studies in Turkey were carried out by graphic method. In this method, the measurement of parcel corner points was made with chained measurements based on polygons marked on the ground but without coordinate values. Therefore, the parcel measuring values produced by this method are usually produced independently of the control steps. In most of these maps, there are significant differences between the ground and the sheets. Cadastral maps produced by this method cover 42% of the country.

Graphic maps are maps produced without any coordinate system. They are usually drawn on paper and cardboard sheets of different sizes. The measurements were made by polar method depending on the closed polygon networks created by measuring angle and distance.

Map drawings are also made by graphic method with the help of miter and rulers. Polygons established during cadastral are very unlikely to be located on the ground. Coordinate information and a network of frames are not available.



Fig x. An example of graphical-cadastre map sheets

RENEWING REQUIREMENTS

REQUIREMENTS for 22 / a

(22 / a), in accordance with the procedures for the transfer, cadastre or modification; to eliminate errors caused by limitation, measurement, drawing and calculation;

A - insufficient technical reasons; The fact that the construction techniques do not provide the technical sensitivity that is foreseen in BÖHHBÜY,

B - losing application ability; The fact that the map or the information and documents that have a basis are not capable of being applied to the field,

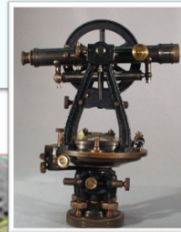
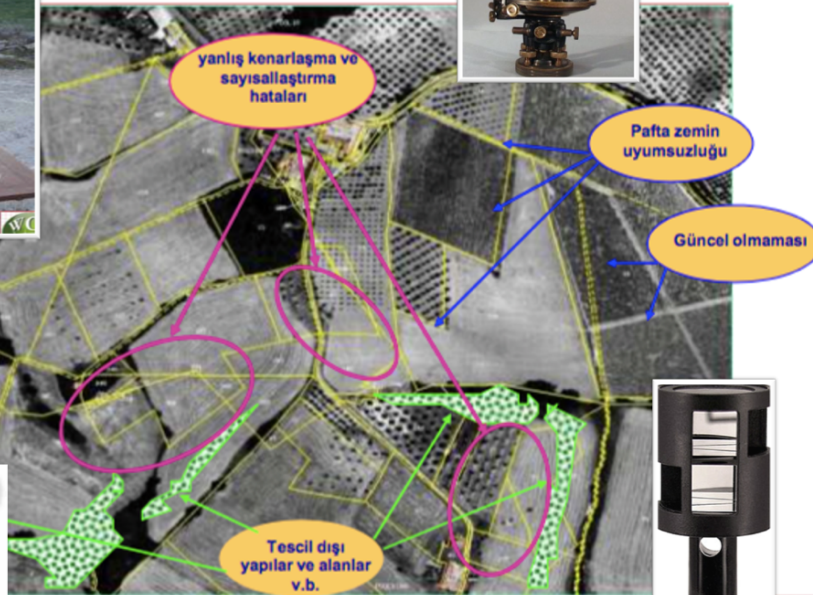
C - Deficiency seen; The lack of some of the information needed on the map and the fact that this information cannot be obtained from the original documents,

D - It is determined that the boundaries on the field do not show the truth; If there are differences between the boundaries in the layouts and the boundaries in the field,

Cadastral maps may be subjected to renovation works in accordance with 22 / a and the necessary corrections can be made in land registers.



RENEWING REQUIREMENTS



YENİLEME GEREKLİLİĞİ...

Ölçü Yöntemi	Pafta Adedi	Yüzdesi
Prizmatik yöntem	49955	7.85
Grafik yöntem	106371	16.72
Sayısal yöntem	258802	40.69
Klasik yöntem	32713	5.14
Fotogrametrik yöntem	79344	12.47
Kutupsal yöntem	99905	15.70
Fotoplan yöntem	627	0.10
Takeometrik yöntem	8463	1.33
Toplam	636180	100

Koordinat Sistemi	Pafta Adedi	Yüzdesi
ITRF	113607	17.86
Fransız	20	0.00
Mevzii	93910	14.76
Ülke	319312	50.19
Koordinatsız	109331	17.19
Toplam	636180	100

Ölçek	Pafta Adedi	Yüzdesi
100	47	0.01
200	212	0.03
250	10	0.00
400	4	0.00
500	26694	4.20
1000	275885	43.36
1200	2	0.00
1500	5	0.00
2000	162322	25.51
2500	20052	3.15
3000	47	0.01
4000	288	0.05
5000	149797	23.55
6000	2	0.00
8000	5	0.00
10000	808	0.13
Toplam	636180	100

Althk Türü	Pafta Adedi	Yüzdesi
Astrolon	278499	43.78
Alüminyum	32578	5.12
Karton	100112	15.74
Diazo	64159	10.09
Polyester	135907	21.35
Kağıt	18350	2.88
Aydınger	198	0.03
Asetat	185	0.03
Film	678	0.11
Fotograf	676	0.11
Muşamba	47	0.01
Ozalit	845	0.13
Plastik	1829	0.29
Şeffaf	2089	0.33
Selülon	28	0.00
Toplam	636180	100



Prof. Dr. Tahsin YOMRALIOĞLU | www.tahsinhoca.net | tahsin@itu.edu.tr | @tyomralioglu



RENEWING REQUIREMENTS

REQUIREMENTS for 22/a applications

For reasons of technical reasons such as being insufficient, losing the application feature, lacking in the ground and not showing the boundaries in the ground correctly, each of the reasons that require renewal of the map sheets is not independent of the other, but intertwined with each other and directly affect each other. Namely;

- ✓ If a map sheet is inadequate for technical reasons, the sheet also loses its application feature.
- ✓ The fact that a piece of material loses its application is due to its inadequate technical reasons.
- ✓ If a map sheet is missing, application with this sheet is not possible.
- ✓ If a map sheet does not show the boundaries on the ground correctly, this is due to the technical failure of the sheet. Accordingly, the application is an indication that it has lost its property.

Transactions in Renewing Works:

- The application team is created.
- Application (renewal) is announced.
- Indication is made in the land registry records.
- Legal and technical documents are provided.
- Demarcation works are started.
- Technical studies are carried out.
- Boundary sketch is arranged.
- Measurement sketch is arranged.
- Transparent map sheet drawing is done and the parcels are finalized.
- Application to the field.
- Block sketch is arranged with relay acquisition.
- "Block report" is issued.
- "Implementation report" is issued.
- Drawing of new map layouts.
- The area is calculated.
- Control work is carried out.
- The application is finalized with the announcement.
- The old sheets are cancelled.
- New sheets are validated.
- Technical document files are arranged.
- New land titles are arranged.
- The central office is notified.



7.3 Renewing applications by the 3402/Art.22-a

In paragraphs (a and b) of Article 22 of the Law No. 3402.

—Regarding deeds, cadastral or modifications; deeds and cadastral places to reorganize cadastral maps that have lost their application quality, are inadequate for technical reasons, are lacking or found not to show the boundaries on the ground as factual, and to provide the necessary corrections to the land registry,

—In places that were previously only deed distortion or to be renewed according to the Law no. 2859 on the Renewal of Land Registry and Cadastral Maps, and in places subject to the provisions of the Law on The Amendment of a Clause of the Zoning Law No. 6785 and some transactions to be applied to structures contrary to the Zoning and Slum Legislation No. 2981,

The provision of paragraph 1 shall not apply. By bringing the verdict, the studies to be carried out according to these paragraphs were not accepted as duplication cadastral.

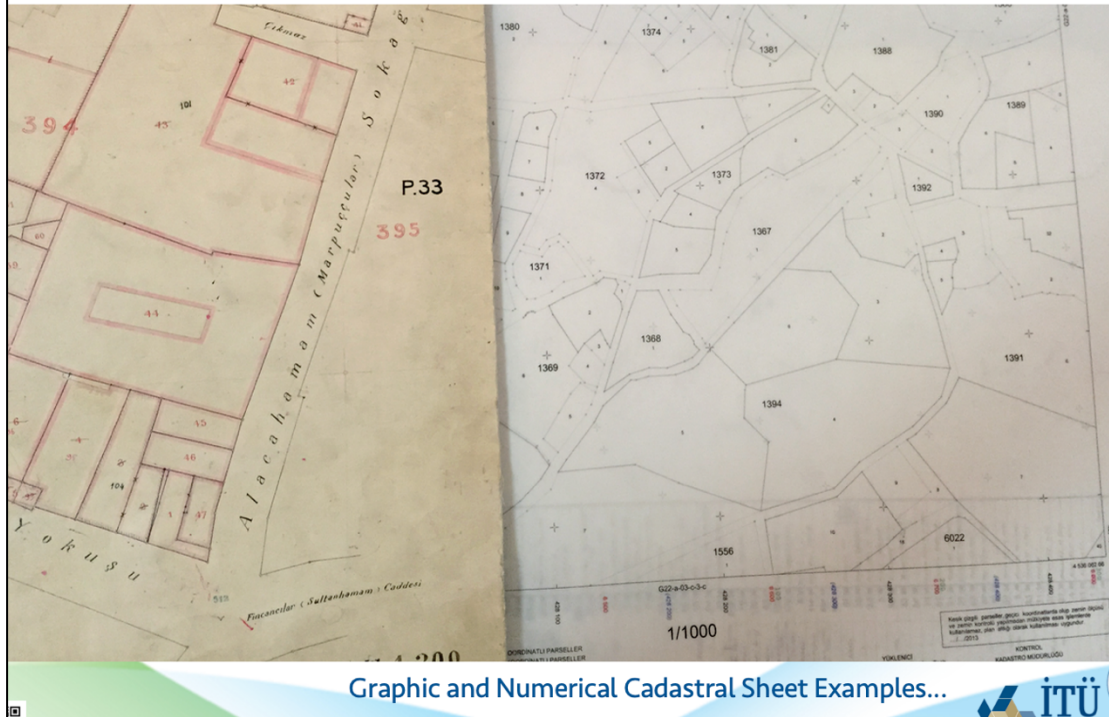
Section 22 of the Cadastral Law No. 3402. Article 2. paragraph (a)

—The Regulation on The Procedures and Principles to Be Observed in the Reorganization of Cadastral Maps and The Necessary Corrections in the Land Registry has been published and clarified the issues to be observed in the studies.

To tie the construction and controls of the implementation works to be carried out in line with the principles of the Regulation to a standard and to ensure unity in the implementation, circular dated 22.10.2010 and numbered 2010/19 was issued for the places to be implemented within the scope of the 2010/18 circular and the tender.

7.4 Digital cadastre

RENEWING REQUIREMENTS



Graphic and Numerical Cadastral Sheet Examples...



CORRECTION AND RENEWING IN CADASTRE

DIGITIZATION (Annex Article 1)

With the article 11 of Law No. 5304 of Cadastre Law No. 3402, Cadastre maps are digitized by field survey control. The results of the studies are announced according to Article 11 and the necessary corrections are made in the records of the immovables that are not subject to any court case during the announcement period.

Cadastre studies have been carried out since 1912 in our country. As a result of the studies carried out since this date, map layouts were created with various systems. These maps should be re-evaluated in order to be used in geographic information systems and country services.

For this reason, cadastral maps are digitized by making field control and parcel corner points according to new map techniques. These transactions are announced by the cadastral directorates in accordance with Article 11 of the Law no. The provision of this article is made since these works are aimed to be provided with legal status and to make necessary corrections in their records.

*The procedures and principles in the application of this article were published in the Official Gazette No. 26356 dated November 24, 2006. According to this; **The Regulation on Digitization of Cadastral Maps** is published. Then, the Amendment Regulation was published in the Official Gazette dated 28 September 2012 and numbered 28425. Accordingly, it was announced in the circular of TKGM 2012/15.*



7.5 Digitization of cadastral plans

According to Article 11 of the Law No. 5304.

—Cadastral or Deed maps are digitized by ground control. As a result of the studies carried out, it is announced according to article 11 and the necessary correction is made in the records of the real estates that are not prosecuted during the announcement period.

Cadastral/deed works have been carried out in our country since 1912. As a result of the studies carried out since then, map sheets have been created with different systems. These sheets must be reassessed to be used for land information systems and country investments.

Therefore, this article provision has been introduced because it is aimed to coordinate and digitize the cadastral or deed maps, the corner points required by today's map technique by conducting land control, and to allow the necessary corrections to be made in the records by the cadastral directorates in accordance with Article 11 of the Law No. 3402.

The procedures and principles in the implementation of this article are explained in the "*Regulation on the Digitization of Cadastral Maps*" published in the Official Gazette dated November 24 2006, and numbered 26356, and the Regulation on *The Digitization of Cadastral Maps* published in the Official Gazette dated September 28, 2012 and numbered 28425, and the regulation on the amendment of the Regulation on the Digitization of Cadastral Maps" and TKGM's *circular no. 2012/15*.

7.6 Correcting technical errors with 3402/Md.41

Article 41 of the Law No. 3402 (amended with Article 9 of the Law No. 5304), "*Errors arising from measurement, demarcation, reversal and calculations in real estate whose geometric status is finalized by the procedures carried out during or after the cadastre are corrected by the cadastral directorate. The correction shall be communicated to the immovable owners and other beneficiaries. If no lawsuit is filed in the magistrates' court to remove the correction within thirty days starting from the date of notification, the correction will be finalized.*

In real estates finalized by the procedures carried out during or after the cadastral, cadastral directorates are authorized to correct the differences in the area arising during the change procedures and those that remain within the error limits specified in the technical rules on which the cadastral is based.

In the application of this article, the critical period specified in Article 12 is not requested.

The procedures and principles of the application of the article in question are clarified by the *"Regulation on The Correction of Errors arising from Measurement, Limitation, Reversal and Calculations in Real Estates Whose Geometric Conditions Have Been Finalized by The Procedures Carried Out During or After Cadastral"*.

therefore

In accordance with Article 41 of the Law No. 3402 and the provision of the regulation in question, errors arising from measurement, limitation, reversal and calculations in real estate whose geometric status is finalized by the procedures carried out during or after cadastral; it is possible to correct the application of the person concerned or by the cadastral directorates.

By the Cadastral Directorate, whether there is an error that needs to be corrected within the scope of this article and the cause of the error, if any, is determined by a team of at least three people who will be formed by the cadastral directorate as a control engineer, control officer or cadastral member and cadastral technician as a result of the examination of the office and the land. The team created is signed by editing a report detailing the results of the review and a sketch showing the status and correction status.

Since the corrections to be made within the scope of Article 41 of the Cadastral Law No. 3402 are not subject to the 10-year entitlement reduction specified in Article 12 of the same Law, there is no need to conduct any further research on this issue by the Land Registry Directorates.

In case of litigation, the file number of the case and the name of the court in which the case was filed are written in the declarations house of the title registry page of the relevant parcels and a certified sample of the documents related to the subject is sent to the court where the case is being held. In this case, the correction process is held until the case is concluded.

7.7 Correcting errors in the land registry

Article 74 of the Land Registry Regulation dated 17.08.2013 and published in the Official Gazette no. 28738 states how to make *"corrections on the main and auxiliary registers"*. In paragraph 1 of Article 75 of the Land Registry Regulation, *"methods for correcting errors in the title registry concerning the name, surname and father name of the owner or beneficiary arising from cadastral studies, 2. in the paragraph, it is indicated how the examination process will be carried out on*

the ground. In paragraph 3 of the same article, these methods can be used to update the information in the land registry and to eliminate deficiencies, 4. in the paragraph, it is stated that it is mandatory to apply to the directorates for registration corrections.

While the procedures are being taken in accordance with circular 1495 regarding the correction of errors made on the land registry, the circular dated 20.05.2014 and numbered 2014/3 has been issued by TKGM due to the new practices introduced by the Land Registry Regulation.

Methods for eliminating errors and deficiencies arising from cadastral studies related to the credentials specified in the circular have the possibility of being applied comparatively in accordance with paragraph 3 of Article 74 of the Land Registry Regulation, if there is not enough data based on identification in the documents submitted by the relevant persons or issued by other administrations and the deficiency cannot be addressed within the scope of the relevant article.

7.8 Correcting the area calculation and typing errors

Upon the application of the relevant person that the property has been registered incorrectly in violation of the document and map of the area or nature of the property, or if it is detected by the cadastral directorate during the process, the correction is sent to the land registry directorate by showing three copies in the registration notice to be issued. In this context, in correcting errors related to the field account, the field of the parcel and the map-ground suitability are examined by the technical staff of the cadastral unit. If it is determined that the field error detected as a result of this review is an error caused by a typo contrary to the document and map, action will be taken within the scope of circular 2014/3. If the error is detected during the process by the digitization legislation, the digitization legislation acts.

The Approved Report to be issued within the scope of circular 2014/3 must be included in the registration notice as a result of the examination of the incorrectly registered surfaces due to typo in violation of the document and map by the cadastral directorate/unit, as well as as the examination of the nature of the incorrectly registered property due to the typo in violation of the document and map.

In relation to these errors, the necessary stating is made in the registration of the property upon notification of the cadastral directorate, and if the consent of the relevant subject cannot be achieved, action is taken in accordance with paragraph 4 of article 74 of the Land Registry Regulation.

The land registry manager makes the correction by taking a wage after the signature of the request document issued in accordance with the registration notice by the beneficiaries. The statement regarding the correction is also duly abandoned. After the correction, two copies of the registration notice are sent to the cadastral directorate. The cadastral directorate/unit takes the necessary action on these registration notices and, if necessary, on the folders.

7.9 Correcting of TAKBİS Data

Data correction: It is the process of making the records on TAKBİS in accordance with the registration and the underlying document in the title deed log, condominium log, impeachment register and general journal.

According to Article 12 of the Land Registry Regulation; After the date of electronic retention of the title deed records, the main and auxiliary records are stored and managed within TAKBİS and these records are based on the registry. Therefore, corrections to records that are kept electronically alone cannot be made in the form of data corrections. Corrections within this scope are made in accordance with Article 74 of the Land Registry Regulation.

Preparation and Control of the Process

If the registration in the land registry, condominium, impeachment register or general journal is found to be incorrect, or if the information contained in the underlying documents and TAKBİS records do not overlap, personnel authorized to take action to correct the TAKBİS data is assigned by the land registry manager or the deputy authorized manager to correct the TAKBİS data.

The reasons for the difference between the registration and the TAKBİS records and whether the registration reflects the actual situation are investigated by the personnel on duty using the underlying documents. If it is understood that the registration in the land registry is in accordance with the underlying document, the data correction process is prepared through TAKBİS. After being checked by the land registry manager or the authorized assistant manager together with the registration and fulcrum documents, the transaction is finalized on TAKBİS.

8 MODERNIZATION WORKS IN CADASTRE

8.1 TAKBİS (Cadastral Information System)

Land Registry and Cadastre Information System (LRIS, TAKBİS in Turkish) is one of the basic e-State projects aiming at uploading all ownership information within the country and allow people to search all kinds of answers in the electronic environment. The purpose is to allow carry out all kinds of transactions online; this would allow effective follow and control of both private and state immoveable properties by computers. TAKBİS is modelled as a three-phase project.

I. Phase: The existing mechanism was analysed and system was designed in this direction Software was encoded according to the designs and application trials were conducted on a system model.

II. Phase: After the success and experience of the pilot project, data entry process started. After 3 years, 25% of entire data integrated to the system.

III. Phase: All data integrated to the system in line with Country Action Plans.

4 main software has been developed under the project. These are.

- *Land Registry Application Software*
- *Cadastral Application Software*
- *Project Tracking Software*
- *Resource Management (Office Automation) Software*

TAKBİS is an integrated information system that provides:

- *Implementation of all transactions carried out by the GDLRC according to the regulations in the electronic environment by the standardization of transactions related to the land registry and cadastral technique,*
- *Minimization or elimination of risks in relation with transactions carried out by using control and warning mechanisms included to the developed software,*
- *Computer supported training on its own screen by providing information on the most regulation regarding the transaction to the staff and explanations about transactions,*
- *Carry out transactions like property sale from any place of Turkey by forming an integrated structure,*
- *Opportunity to monitor the performance of directorates and staff,*
- *Production of decision support functions and reports*
- *Accurate and updated data base for many institutions and all these transactions carried out with geographical information system/land information system logic.*

History of TAKBİS

Firstly, with the contract signed on December 26, 2000 with HAVELSAN A.Ş., the foundation of TKGM's Turkish Armed Forces Empowerment Foundation, actual work began in early 2001. Within the scope of the first project process completed in 2004, the following work items were included:

- Development of necessary application software (Land Registry Application Software (TSUY), Cadastral Application Software (KUY), Office Automation Software,
- Creation of geographical information system infrastructure,
- To determine their suitability by testing them,
- Equipment procurement for pilot project (pilot system center and pilot directorates (6 Land Registry Directorate, 1 Cadastral Directorate, 1 Cadastral Directorate),
- System Center and the establishment of provincial local area and wide area networks integrated into this center,
- Development of data transfer and completion processes and integration methodologies for land registry and cadastral units, implementation in pilot units,
- Determination and implementation of the principles of training, operating support and technical support services based on the dissemination process,
- Implementation of the system in pilot application units as a whole,

TAKBİS; It included the analysis of the activities carried out in the General Directorate of Land Registry and Cadastral, the Ankara I. Regional Directorate, the Land Registry Directorates and cadastral directorates, its connection with other related institutions, the design of the TAKBİS Model to be developed, the development of application software within the GIS/LIS concept, the testing of the developed application software, the preparation of the data dictionary, other relevant technical and training documents and usage manuals, personnel training. In the project application, it is aimed to transfer approximately 943,000 owners and 288,000 main real estate information belonging to The Cankaya and Gölbaşı Land Registry Directorate with 2068 pafta belonging to Ankara Çankaya Cadastral Directorate and Gölbaşı Cadastral Directorate to the system.

Due to the fact that TAKBİS is a data-dependent project, 154 cadastral map sheets consisting of 8500 parcels, which are mainly covered by the Cankaya I. Land Registry Directorate, and 52,000 immovable and 132,000 owner information related to them have been digitized, checked, verified and integrated into the system in accordance with the TAKBİS data model.

With the completion of the software development works, as of 16.12.2002, it was implemented in Çankaya First Regional Land Registry Directorate and Çankaya Cadastral Directorate, and as of 06.01.2003 at The Lakeside Land Registry Directorate. Applications were carried out in the pilot areas selected with TAKBİS-I, land registry cadastral application software was developed, and **final acceptance was made by** the administration, deed and cadastral data were transferred to the system in the pilot region, problems in data infrastructure were detected and automation of Land Registry and Cadastral transactions was provided.

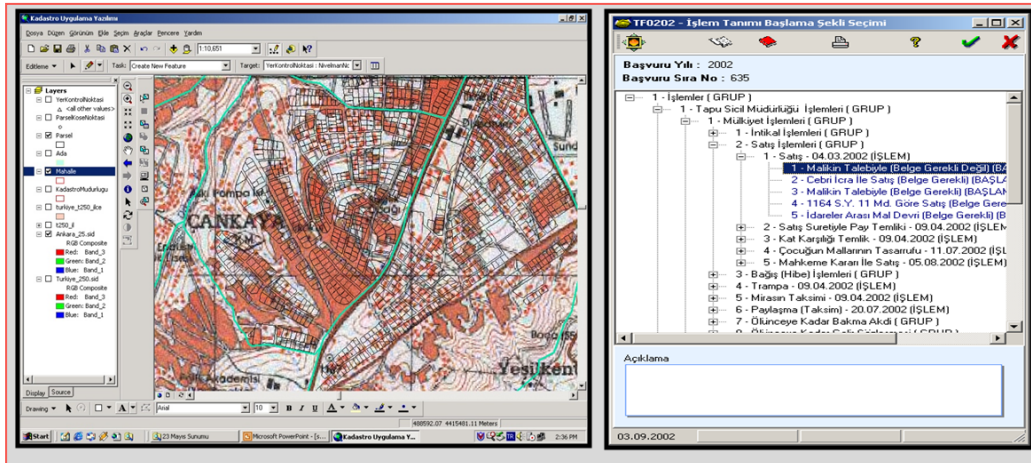


Figure x. TAKBİS software interface

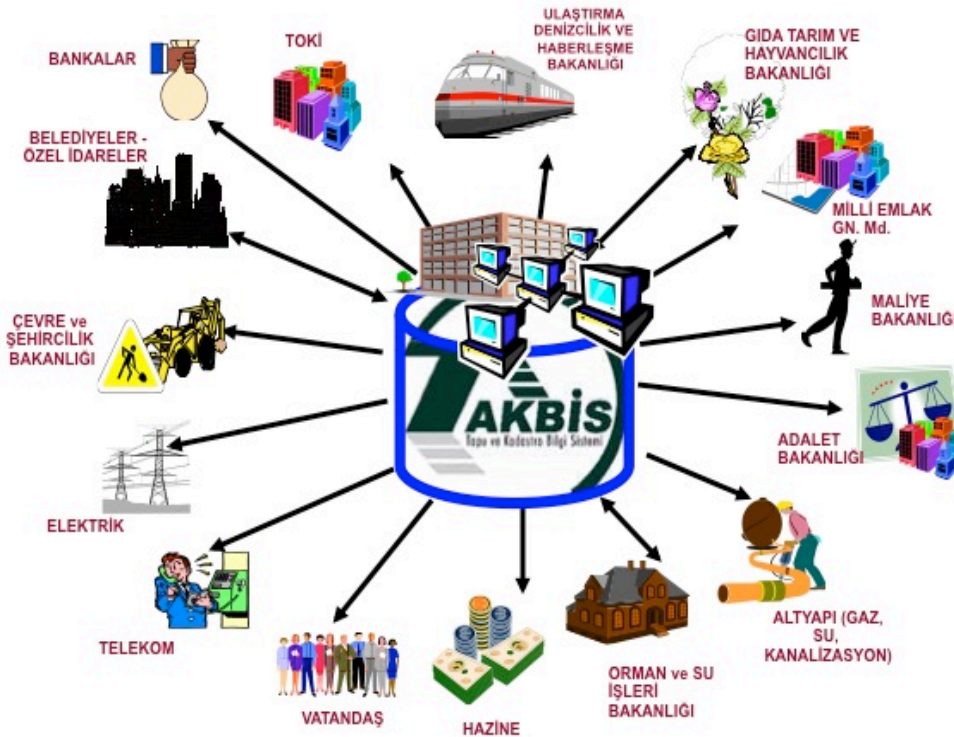


Figure x. General Structure and External Users of TAKBİS

8.2 MEGSIS (Spatial Property System)

Spatial Property System (*MEGSIS- Mekansal Gayrimenkul Sistemi*); is an open-source application developed by GDLRC, where cadastral data are collected by the central system from the local users in the cadastral offices in digital (.cad) format and are harmonized with land registry data to be submitted to stakeholder institution, organization, municipalities, and citizens by e-government link. Studies held under MEGSIS are collected under four main topics.

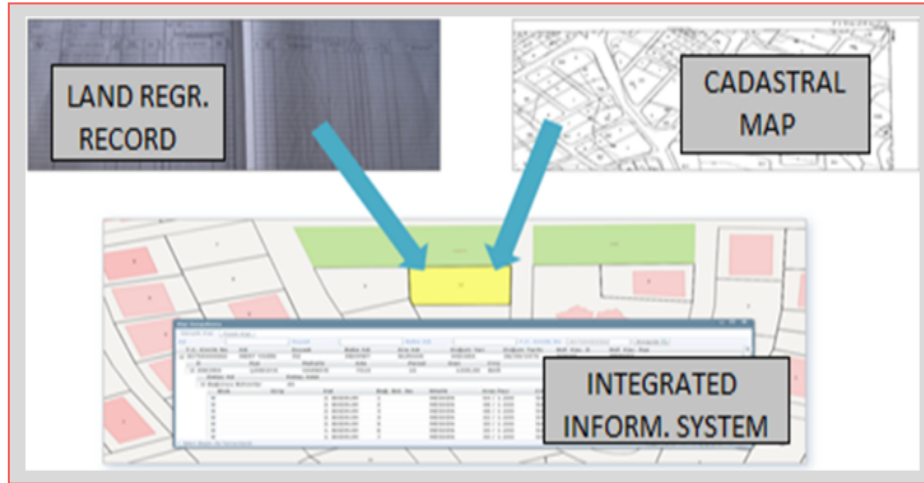


Figure x. MEGSIS working system

Web-based application software, it can be used for different levels and requirements and by the administrative frame of identification/authorization, internal and external users can input data, collect data, integrate land registry data and make queries using this software. It includes also modules for following-up and controlling a process.

International standard map services, collected cadastral data within MEGSIS requested by institutions, organizations, municipalities within protocol is shared in standard format, which is open source and tested by commercial products.

E-Government Services, collected cadastral data combined with land registry data as a map service is offered to the citizens for information purposes. These services offered by the www.turkiye.gov.tr internet address have the characteristic to be the one and only geographical service.

Orthophoto Services, orthophoto maps produced in 1/5000 scale are offered via prepared services by the open source GDAL Library in TileMapService (TMS) standards.

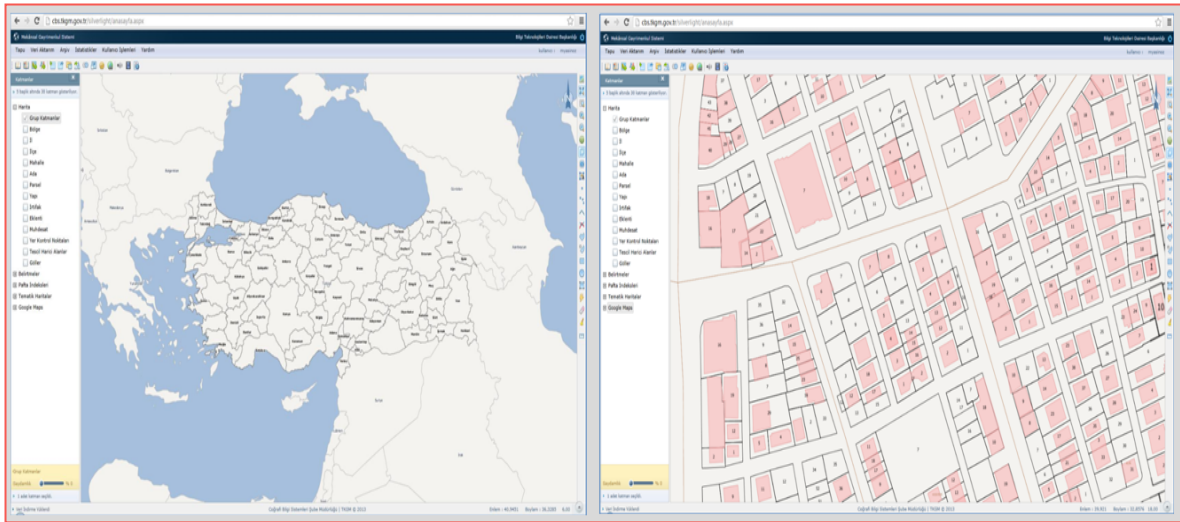


Figure x. MEGSIS software interface

8.3 TUSAGA – ACTIVE Project

TUSAGA- Active System (Turkish National Permanent G.N.S.S. Network – Active) provides map and location information about any place and any time in a project area within a few seconds with the centimeter accuracy. The TUSAGA Active System is made up of 146 permanent GNSS stations in Turkey and in the Turkish Republic of North Cyprus. All stations are transmitting 24 hours long data to main control system at the GDLRC via internet.

TUSAGA – Active System especially focus on two survey techniques. These are;

Real Time Kinematic (RTK) Application: All kinds of dual frequency GNSS receivers and all brands of GNSS receivers with RTCM correction are capable of using TUSAGA-Active network RTK correction data in order to access to real time precise location information.

Static GNSS Application: RINEX data from the TUSAGA-Active permanent station can be demanded from GDLRC in an effort to identify precise location with static GNSS measurement method by post-processing in the position of control point production with static measurement method and under circumstances obliging the establishment of location control point in the lack of adequate communication facilities. 4,201 users from 34 different universities, 235 different state offices and institutions, 264 different municipalities and 2234 different public sector companies are benefiting from TUSAGA-Active System.

TUSAGA-Active System is used in earthquake studies, improvement of weather forecast, military activities, mapping, navigation, construction, logistics and similar fields.

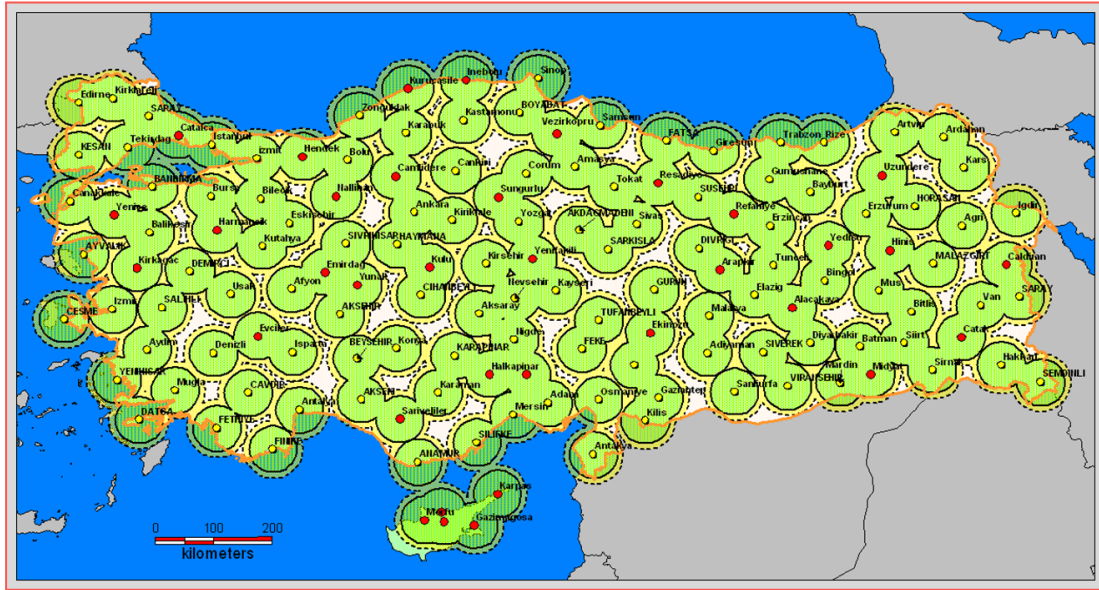


Figure x. TUSAGA-Active GNSS Stations

8.4 TARBIS (Land Registry Archive Information System)

The Ottoman Empire which ruled a large geography from the Middle East to Balkans, from North Africa to Europe for more than 600 years, collected a rich archive that embraces all the culture under its domination on this large geography. This archive legacy is uploaded to the electronic environment as a part of Land Registry Archive Information System (TARBIS- Tapu Arşiv Bilgi Sistemi). Archive Documents subject to Deed Archive Automation Project includes are;

- Foreign “Zabıt” Records Books
- “Temessük” notebooks in Istanbul TKBM Archive
- Village and Highland Border Records and “Mera” Allocation Decisions
- Revenue Records
- Deed Tahrir Books
- Deed Tahrir Books have been transferred to the digital environment. Information in these notebooks is also provided quickly.
- These documents, which are the primary source of reference of other independent countries established after the fall of the Ottoman Empire, can be kept alive for centuries more since microfilms and digital copies were obtained.
- According to the existing Index system, access to information has become easier with the new documentation system, which is formed as a result of transferring the index information about the immovable and owned land registry abroad to the digital environment.
- Statistical information on various subjects is more easily accessed.

8.5 FIG-2014 Cadastral Vision

At the XX. FIG Congress in Melbourne, Australia in 1994, the 7th edition of FIG was held. The Commission (Cadastral and Land Management Commission) has established three Working Groups to operate for four years. One of them, "Working Group 7.1", was tasked with carrying out work on cadastral reform projects in developed countries. As a result of the trend analysis carried out by the Group; it has developed a vision in the context of where cadastral systems will be in the next 20 years, the changes that may occur in this process, how changes can be implemented and used during their implementation. This vision was published in 1998 in the report "Cadastre 2014" (Kaufmann and Steudler, 1998). This report, which has gained great international attention for its long-term expressions and easy-to-understand structure, is one of the most effective studies in the field of cadastral (Williamson et al., 2003). In 2014, cadastral; In addition to the cadastral vision of the future, recommendations are also offered about the current state of cadastral systems in the world, current reform projects and trends related to cadastral, the role of mappers in Cadastre 2014 and what needs to be done to increase the importance of this role.

The report states that the most powerful aspects of existing cadastral systems are that the systems have legal *guarantees*, the state guarantees the deed, the rapid service to the user and the cadastral covers the entire surface of the countries. *The weakest aspects* are the limited level of automation, the weakness of relations between land registration and cadastral, and problems in financial, administrative, and organizational matters.

In Cadastre 2014, the *basic trends* of existing cadastral systems were evaluated in three sub-headings: technical, legal and organizational. Accordingly, technical *trends* are automation of systems, transition from promissory note registration system to deed registration system, making cadastral one of the components of LIS by associating it with different databases, network structure and creation of databases. *Legal trends*: It is the work carried out in the field of new legislation and financial models during the transition to LIS. The *organizational* trends of cadastral systems are the combination of different administrations dealing with land or land data, the linking of cadastral systems with monitoring environmental data and resources, the removal of ossified public structures within the framework of the new public administration approach, the emphasis on the private sector, reducing public personnel and making cost recovery more effective.

The most important reason why the Cadastre 2014 report received great international attention is the *6 statements* that determine the cadastral vision of the future. Accordingly, in Cadastre 2014; (1) the entire legal status of the land, including public rights and restrictions, will be shown, (2) the distinction between maps and

records will be eliminated, (3) cadastral mapping will be replaced by cadastral modeling, (4) paper and pen cadaster will be replaced by basic data model, (5) cadastral will be significantly privatized, the public sector and the private sector will work closely together, and (6) cadastral will be cost recovery.

In addition to the 6 phrases featured in Cadastre 2014, another notable approach is "*Land Object*" (LO). In the report, LO; It is defined as "a piece of land with homogeneous conditions within its borders". A legal LO specifies where a right or restriction begins and ends, and its contents. For example, if you want to use privately owned parcels, areas where traditional rights exist, administrative boundaries, water, nature, noise and pollution protection zones, land use zones, areas where natural resources are allowed to be used represent a legal LO. An LO that does not have legal identification is called a physical land *object*. The report states that the 2014 cadastral will include official records of rights to legal land objects.

The basic principles of Cadastre 2014 are defined in 7 headings in the report. Accordingly, in Cadastre 2014; (1) the way private and public land objects are identified is similar and every designated right to a legal land object is officially recorded, (2) land ownership maintains its current structure, (3) since the legal land object is fundamental, only the land registration system is valid, the promissory note registration system is not an alternative, (4) the existing principles of land registration are maintained, (5) legal land objects are represented in different layers and cadastre is key to the implementation Cadastre 2014, (6) the fixed boundary system is valid, that is, the boundaries are defined by coordinates, not ground markings, (7) land objects have a common reference system.

8.6 Land information systems (LIS)

Land Information Systems (LIS) is one of the most intensive areas of geographical information systems. The main purpose of LIS is to collect, produce and manage property information for real estate. Although the basic concepts and functions in cadastral knowledge are influenced by information technology over time, the concept of multipurpose cadastral has developed, but with geographical information systems, it has been replaced by the land information system.

Land Information System: "a combination of human and technical resources in terms of management, the science and art of decision-making in the support of precisely perceived objects, within the integrity of procedures designed to produce information for certain administrative requests".

Land information systems help establish the necessary system for the management of land information, helping to develop land policies on a country and region basis much faster and healthier. In general, LIS contributes to planned development,

makes the existing property structure much more efficient and improved by providing land information to potential users with technology support during the decision-making phase for all kinds of investments in the land.

Dimensions of LIS

The potential capacities offered by existing technology have been a focal point for the restructuring of the traditional LIS and the development of new ones. However, an LIS should not imply the necessity of automation or computer activities should not be considered an LIS alone. Many traditional LIS, technical resources, a phone, typewriter may be limited to a copier. In more advanced information systems, there can be many technological components for data processing and data communication. But *technology* is only one dimension of abs.

A second dimension; they are *organizing* procedures that structure relations between human and information sources. From administrative arrangements to data structure, it is the systematic organization of resources that distinguishes a terrain information system from a collection of components. Organizational procedures include standards for content, reference and image of information products and specific data elements. These also include the collection, storage, processing, and presentation of information in the system, as well as the business steps required for data exchange standards with other systems.

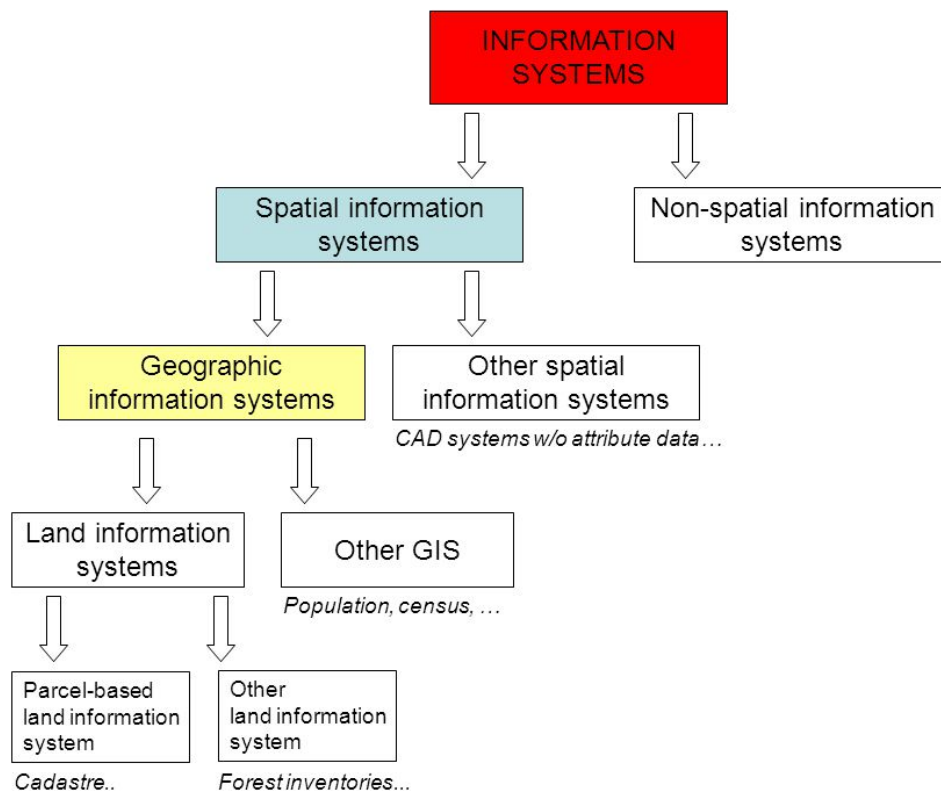
Institutionalization is a third dimension that provides the necessary support mechanism for the creation, development and functioning of an LIS. In the land information system, the needs are met by providing services to the environment with institutional regulations. In addition to regulations on environmental, land use and resource management, this includes administrative, legal, political, and economic relations within a given authority.

The fourth dimension of the LIS is the basis of *information*. Knowledge is a source that is processed and has meaning and importance in the private activities of users. In this sense, one user's data can be information to another. For example, in a flood zone, length measurements made to determine property boundaries can be considered data for someone making administrative decisions about the terrain. However, from a mapper's point of view, these measures are the information that the boundaries need to be re-appliance to the land.

Parcel-Based Information: CADASTRE

In the classification of Land Information Systems, parcel-based Land Information System, or Modern Cadastral in other words, can be distinguished by at least two features within location-based information systems.

The first is that the cadastral deals directly with the information containing property, and another is that the associations are handled on a parcel basis. Cadastral can enclose all or part of the information stored within any geographic information system. However, the main object of the system is immovable and helps to provide corporate data on immovable ownership, immovable value, and use. Therefore, the main tool in the organization of LIS is the immovable unit, which in a sense refers to the cadastral parcel or property. In other positional information systems, coordinate values are referenced for data processing, while in abs, information is collected, stored, processed, and presented at the parcel level. Obtaining the necessary information at this level is the main task of the cadastral.



9 OTHER CADASTRAL ACTIVITIES

9.1 Forest Cadastre

What is forest?

"Naturally, the trees and tree communities that are grown and grown with labour are considered forests with their places." The authority to carry out forest cadastral in accordance with the Forest Law No. 6831 belongs **to the forest cadastral commissions** (6831/7). The technical aspect of forest cadastral is undertaken by the surveying engineer (6831/10).

According to the article 4 of Law No. 3402, cadastral teams are authorized to perform forest cadastral in places where cadaster are performed. During the work to be carried out by cadastral teams, one forest engineer from forest administration and one agricultural engineer from the Agricultural Provincial Directorate participate in the cadastral team.

Legal Legislation

- Forest Law No. 6831
- Cadastral Law No. 3402
- Law no. 5831 on the Amendment of Certain Laws
- Law no. 6292 on supporting the development of forest villagers and evaluating the places taken out of forest boundaries on behalf of the Treasury and the sale of agricultural land belonging to the treasury

In order for a place to be registered as a Forest; According to the Forest Law No. 6831, it has been finalized by working by forest cadastral commission and taking a 6-month advertisement or;

According to the Cadastral Law No. 3402, work must be carried out by the CADASTRO TEAM created with the participation of forest engineer (with master's degree) and agricultural engineer (with master's degree) and finalized by taking a 30-day advertisement.

Places to Take Out of the Forest

The places to be taken out of the forest are regulated by Article 2 of the Forest Code. Article 2 (A) is based on Article 170 of the Constitution, and article (B) is the basis of Article 169 of the Constitution.

6831/2A. First, for the purpose of partially or completely resettling the villagers in the forest, the places that have been found to be useful in converting them into agricultural areas, as opposed to those where there is no science and science benefit

9.2 Disaster Cadastre

Article 18 of the Law No. 7269, which has been amended with the Law No. 1051, states, *"According to this Law, two experts are given to cadastral correspondence by the municipality and the village elderly delegation without the need to establish cadastral commissions for cadastral announcements of places to be needed by the Ministry of Zoning and Housing due to disaster and savings audits, According to the Cadastral and Land Registry Law No. 2613, it is firstly carried out by the General Directorate of Land Registry and Cadastral by performing by the local cadastral manager and the land registry officer. Disputes are settled by local courts."*

However, the Law No. 2613 was repealed by the Cadastral Law No. 3402 and with paragraph 2 of Article 48 of this law, *"References made by other laws to the laws no. 2613 and 766 shall be deemed to have been made to the relevant provisions of this Law."* provision has been imposed.

Accordingly, in the places exposed to disaster, cadastral studies are started by taking the positive opinion of TKGM. During cadastral studies, the advertisements stipulated in the Law No. 3402 are not made. However, an announcement should be made through the headman 2-3 days before the start of the work to inform the citizens and present their documents, if any.

Disaster cadastral studies are carried out within the limits determined by the Governorships and shown on the ground, and it is not possible to cadastral subject the immovable assets outside the borders under the Law No. 7269. If the site designated as a residential area due to the disaster remains within the boundaries of more than one working area, it first determines the working area according to the administrative limits. The selected piece is subjected to cadastral to which ever administrative boundaries it falls within. Otherwise, there is no need to set the workspace limit.

The studies are carried out by the cadastral team in accordance with the provisions of the Law No. 3402. However, since the cadastral commission will not be established and no suspension announcements will be made, it should be explained in the reason column of the cadastral report that the studies were carried out in accordance with article 18 of the Law No. 7269 and the law no. 1051.

Since the cadastral commission is not established in the studies carried out in accordance with the Law No. 7269, the objections are not referred to the commission. In addition, since no suspension announcements will be made, minutes and documents are delivered to the cadastral manager when the work is concluded. By the cadastral director; after the necessary checks are made and the deficiencies, if any, are completed by the cadastral team, the minutes are finalized by writing in an

9.4 Marine Cadastre

Throughout history, mankind has used the sea to feed, extract its raw material, develop its technology, and provide transportation. Societies within a particular ecosystem destroy the eco-balance as a result of the production technologies they use, and in the long term they destroy many opportunities of the future in the worry of making a living in the short term. The marine environment, where pollution is most suitable, is rapidly losing its status as a future food store for humanity. The pollution of the seas is as dangerous today as it is biologically for the future. Pollution runs along the food chain and harms all living things, including humans. In Turkey, the average population growth, pollution and annual precipitation is lower than the world average; it requires more careful use of existing resources and necessary measures against pollution as soon as possible. The diversity of the activities contained in these areas has revealed the need to control these areas, which are constantly changing because they are non-renewable and non-reproducible areas. The limitation and supervision of these wide range of activities and requests reveals a registration requirement.

All these reasons described above have brought up the concept of Marine Cadaster in many developed countries, especially the United States, Canada and Australia. In Turkey, When the legislation on coastal areas and seas is examined, it is stated that the seas and coasts are in the provisions and savings of the state and private property cannot be involved in these areas.

According to the current legislation in Turkey, cadastral studies also include some findings regarding the areas covered by general waters. Places suitable for aquaculture rationing in the sea, lake, dam lake, river and river mouths under the provisions and savings of the state can be left to the benefit of private and legal persons through allocation or leasing. In accordance with the relevant legislation, they are measured; After the name, island and parcel number are determined, registration is made to the "Dalyan and Voli Log". Cadastral measurements and altitude holders of these areas should be determined in order to develop and support cultural fisheries in the seas and inland waters. Although the boundaries of such places are not determined very precisely, they still need to be reflected in the cadastral. It is estimated that the cultural fisheries activities initiated today will become more widespread in the future. Therefore, the coasts surrounding the general waters will also need to be covered by cadastral in places.

In general, in the seas in Turkey; transportation, trade, industry, agriculture, waste material discharge, raw material supply, defense, recreation and tourism, health, aquaculture, submarine cables, oil and pipelines, ports, shipping, water sports, marinas, etc. activities have been occurred.

When the legislation regarding coastal areas and seas is examined in Turkey, it is stated that there are many legal regulations such as Constitution, Civil Code, Coastal Law, Cadastral Law, etc., that seas and coasts are in the provisions and savings of the state and that private property cannot be used in these areas, in other words, these areas cannot be registered. However, due to the variety of activities in which these areas are contained, the increasing importance of these areas, and the fact that they are no generable and non-reproducible areas, it is foreseen that the transition to cadastral processes in these areas will be inevitable in the near future, if not today. In this context, the following is general information about this topic.

It defines the concept of **marine cadastre** as "a system that allows the recording, positional management and physical identification of rights and interests related to the use of marine areas in relation to other neighbouring or fundamental rights and interests' boundaries". Marine cadastre is considered one of the basic layers of positional data infrastructures related to marine areas. Accordingly, Marine Cadastre Objectives.

- *To provide a natural resource management perspective,*
- *To provide a comprehensive positional data infrastructure that covers rights, boundaries and responsibilities assessed and managed around the sea.*
- *In this way, managers; to ensure that they have access to the best information available for management, implementation, and research purposes.*

In 1958, the United Nations held its first conference on maritime law (United Nations Convention on the Law of the Sea=UNCLOS I) in Geneva, and the 86 countries participating in the conference reached an agreement. Accordingly, it is not the case. In the Territorial Waters and Adjacent Territorial Convention, no limit is imposed on its territorial waters; by establishing the basic principles, it was stated that coastal countries could apply certain rules on customs, health, and financial issues in a 12-mile section of the regions adjacent to their territorial waters. In modern times, the management and management of the ocean became increasingly important. The problem with ocean management is that the idea of marine cadastre to support ocean ownership, borders and ocean management has begun to develop in Australia, New Zealand, the US, Canada, the Netherlands, and Japan.

Turkey is in an important position with its effective maritime geographical location on international relations, where maritime activities are very intense. The presence of important gas and oil deposits in the sea areas, the Bosphorus and ports, fishing facilities, shipyards, the majority of the settlement on the shores and the discharge of household waste directly into the sea, having many streams discharged into the sea, etc. characteristics, the intensity and diversity of activities in coastal and sea areas in Turkey can be clearly seen.

“Dalyans” are hunting grounds in the vicinity of the coast, where shoals of fish come together, with nets on three sides and open on one side and closed when the fish enter. “Voli” is the name given to nets that spread to the waters and then washed up in a distance detected from the beaches. The Voli have contact with the beach, and they have to use a certain coastal area because their nets are drawn to the beach.

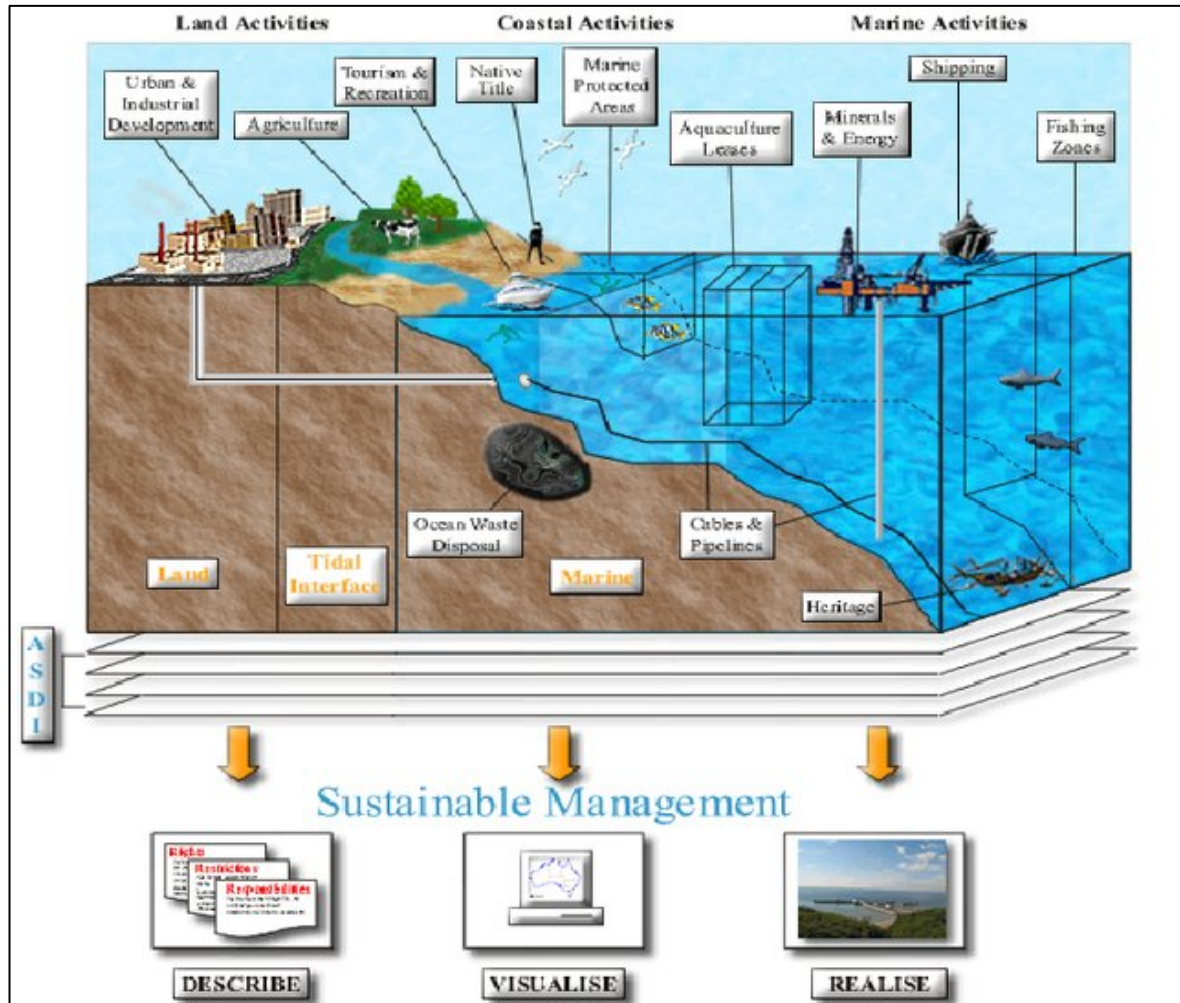


Figure x. Marine cadastre concept

10 REFERENCES

<be added & updated...>

Surveyors at work - 3000 BC

Surveyors in action - 2014 AD

Thank you for your listening ...

Prof. Dr. Tahsin Yomralioğlu

Prof. Dr. Tahsin YOMRALIOĞLU | www.tahsinhoca.net | tahsin@itu.edu.tr | @tyomralioglu

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Attention to reader: The lecture notes presented here are updated from time to time. For this reason, it is necessary to follow the “version” information on the lecture cover over the web in order to access the updated notes.

<https://web.itu.edu.tr/tahsin/PAPERBOX/GEO303-CADASTRE.pdf>

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