



# The development of the North Macedonian cadastral system: An overview of the cadastral system

## Kuzey Makedonya kadastro sisteminin gelişimi: Kadastro sistemine genel bakış

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### Abstract

This article is mainly concerned to present an overview situation of the cadastral system, passing through a historical outline to the present day. This study provides a brief overview of the cadastral system, including the early period and the first steps such as the creation and consolidation and subsequent development of the same. A review of the North Macedonian Cadastral System, especially the establishment of the Agency for Real Estate Cadastre (AREC), principles of the cadastral system, a historical outline, and the laws on establishing the cadastral system, notably the Law on Real Estate Cadastre are the basic material of this article. This, together with the structure and organization, responsibilities, works, tasks, obligations, financing, and priorities of the AREC in the future are the main purpose and the focus of this paper. Analyzing the current situation of the AREC and identifying the actual problems which the AREC faces, helps us to ensure a safer approach to the problems and challenges of the future. Furthermore, this review has represented the involvement of the private sector and the importance of its involvement. Although, the concept of Cadastre is unique – it is a public register for real estate registration and includes some basic elements such as immovable ownership information, areas, values of the land, and boundaries. As a final summary, we can freely conclude that the focus, priorities, and goals of the AREC are strengthening, cooperating with international institutions, being more efficient and effective, and being closer to the citizens.

**Keywords:** Cadastre, Real Estate, AREC, Private sector involvement, North Macedonia

### A country report – North Macedonia

**North Macedonia**, is a landlocked country, located in the middle of the Balkan, in Southeast Europe. Covering an area of 25,713 km<sup>2</sup> (25,433 km<sup>2</sup> land area and 280 km<sup>2</sup> water area) and has 766 km of boundaries; gives the opportunity to share them with Kosovo and Albania (to the northwest and to the west), with Serbia (to the north), with Greece (to the south) and Bulgaria (to the east). North Macedonia has approximately 1.9 million inhabitants (due to 2021 Census). The capital city is Skopje, located in the north part of the country, with more than 800.000 inhabitants (see [Table 1](#)).

### Öz

Bu makale, esas olarak, kadastro sisteminin günümüze tarihsel bir çerçeveden geçerek genel bir durumunu sunmakla ilgilidir. Bu çalışma, kadastro sistemine, erken dönem ve oluşturulması, konsolidasyonu ve daha sonraki gelişimi gibi ilk adımlar dahil olmak üzere kısa bir genel bakış sunmaktadır. Kuzey Makedonya Kadastro Sisteminin bir incelemesi, özellikle Emlak Kadastro Ajansı'nın (AREC) kurulması, kadastro sisteminin ilkeleri, tarihi bir çerçeve ve kadastro sisteminin kurulmasına ilişkin kanunlar, özellikle Emlak Kadastro Kanunu, bu makalenin temel malzemesidir. Bu, yapısı ve organizasyonu, sorumlulukları, çalışmaları, görevleri, yükümlülükleri, finansmanı ve gelecekteki AREC'in öncelikleri ile birlikte bu belgenin ana amacı ve odak noktasıdır. AREC'in mevcut durumunu analiz etmek ve AREC'in karşılaştığı gerçek sorunları belirlemek, geleceğin sorunlarına ve zorluklarına daha güvenli bir yaklaşım sağlamamıza yardımcı olur. Ayrıca, bu inceleme özel sektörün katılımını ve katılımının önemini temsil etmiştir. Her ne kadar kadastro kavramı benzersiz olsa da - gayrimenkul tescili için halka açık bir sicildir ve taşınmaz mülkiyet bilgileri, alanlar, arazi değerleri ve sınırlar gibi bazı temel unsurları içerir. Son olarak, AREC'in odak noktası, öncelikleri ve hedeflerinin güçlenmek, uluslararası kuruluşlarla işbirliği yapmak, daha verimli ve etkili olmak ve vatandaşlara daha yakın olmak olduğunu rahatlıkla söyleyebiliriz.

**Anahtar kelimeler:** Kadastro, Emlak, AREC, Özel sektör katılımı, Kuzey Makedonya

**Table 1.** General statistics about North Macedonia

Statistical facts	
Population	~ 1.9 million
Total area	25,713 km <sup>2</sup>
Land area	25,433 km <sup>2</sup>
Water area	280 km <sup>2</sup>
Capital city	Skopje
Largest city	Skopje (~800.000 inhabitants)
Largest river	Vardar
Biggest lake	Lake Ohrid
Tallest mountain	Korab Mountain (2,764 m)
GDP / per capital	12,69 Billion\$ / 6,093.15\$
Currency	Macedonian Denar-MKD

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## 1 Introduction

In the Republic of North Macedonia, cadastral works have been started 1928-1945. As a result of developing technologies, cadastral works have been facing numerous variations as in the regulations, same also in technological tools and working methods.

In different countries, usually cadastral systems have different purposes. Even though there are different approaches, generally, all of these systems are based on the same logical basis [1]. Either, we are witnesses that different definitions about cadastre and cadastral systems already exist based on different factors such as the scope or content, or even administrative structure.

The establishment of the Cadastre is extremely important, same as developed countries as well as the developing ones. Establishing the Cadastre, need a huge investment and it is crucial to have a detailed budget, and secure the necessary financial resources before starting the project [2].

FIG [3], stated cadastre as a normally parcel-based, and up-to-date land information system containing a record of interests inland. Cadastre can be defined also as a recording of surveyed boundaries that right concerns. The boundaries of the land (also other real estates such as buildings), location, and unique identifier are shown in a cadastral map. The cadastral map may include also buildings and other features [4,5]. Zevenbergen [6], defines cadastre as: “public inventory of spatial data concerning properties within certain country or district, based on a survey of their boundaries”. The concept of cadastre, according to Enemark [7], is difficult to identify. Thus, different countries, depending on their own development, affected by various causes, have created or designed cadastre in many different ways.

For creating a strong institutional structure, qualified, experienced, and professional project management is required [2]. Furthermore, involvement of the private sector seems to be very flexible and cooperation between private and public sectors shows the quality in doing business.

Some countries have merged land registration and cadastre into one organization (e.g. certain European countries as the Netherlands, Sweden, Norway, Finland, Turkey, Hungary, Romania etc.) while in some other countries merging the land registration and cadastre did not take place yet (e.g. certain European countries as Spain, Croatia, Austria, Bulgaria, Poland, Bosnia and Herzegovina etc.) [8]. By merging land registration and cadastre, and creating one organization, many countries in Europe, intended to improve the functioning of those two components reflected the changes [9]. Cadastre can be defined also as a recording of surveyed boundaries that right concerns. The boundaries of the land (also other real estates such as buildings), location, and unique identifier are shown in a cadastral map.

In this paper, we are going to present the structure of cadastral system of North Macedonia, the establishment of the same, an overview situation as a historical part, current situation of the cadastral system and the cadastral works, about the Agency for Real Estate Cadastre (AREC), and its problems, challenges, priorities, and goals. Knowing and

facing problems and taking a step forward in the tendency to solve them makes the process even easier.

## 2 North Macedonian cadastral system

The two main components of a cadastral system are Land registration and Cadastre. In general they are performed in different ways in different regions or countries. After defining the concepts of land registration and cadastre, the most important thing which follows after it, is to derive how the data/information from both components of the cadastral system is maintained and stored nowadays [10].

In most European countries, the creation of the Cadastre and the Cadastral System dates back to the early 19th century while in the Republic of North Macedonia this process started back to the 20th century.

The establishment of the cadastral system in North Macedonia dates back to the first cadastral measurements, in 1928, which is also known as the period of land cadastre. Later then dates the creation of the descriptive cadastre, known more like a fiscal and does not represent graphical part, and in the present days, we have the Real Estate Cadastre. In North Macedonia, the only cadastral system is the Comprehensive cadastral system. By definition, it is a parcel-based cadastral system and covers the entire territory of the state. The cadastral parcel is represented as at least 1m<sup>2</sup> land. Every cadastral parcel has its own unique parcel identifier number, the boundary of the parcel is represented with coordinates and the parcel has its own surface.

The basic principles of the cadastral system, according to the Law on Real Estate Cadastre, are as follows:

- **The principle of compulsory registration**  
Every citizen is obliged to register the right to real estate.
- **The constitutional principle of registration**  
The right of ownership is achieved only by registration in the Real Estate Cadastre and the same prohibits its deletion by the same.
- **The principle of publicity - All data/recordings are public**  
Every registration in the real estate cadastre is open to all citizens – 24/7 online information system.
- **The principle of accuracy and reliability**  
Cadastral data are considered accurate and reliable. There are procedures for correcting the error if it is found.
- **The principle of legality during registration**  
The civil servant is obliged to make registration based on the final legal acts.
- **The principle of priority**  
Registration is based on the time of receipt of the application for registration.
- **The principle of determination**  
Registration must be done based on the determination of real estate, the right holder, as well as the type of right.
- **The principle of independence**  
The civil servant independently notifies the party of the registration/change in the Real Estate Cadastre.

### 2.1 The historical outline of the cadastral system

Initial cadastral surveying in North Macedonia was done in the period of 1928-1945. It covered some towns and their surroundings (Figure 1). The cadastral surveying was done using ground-surveying technologies of time such as theodolites, using the orthogonal and polar method [11].

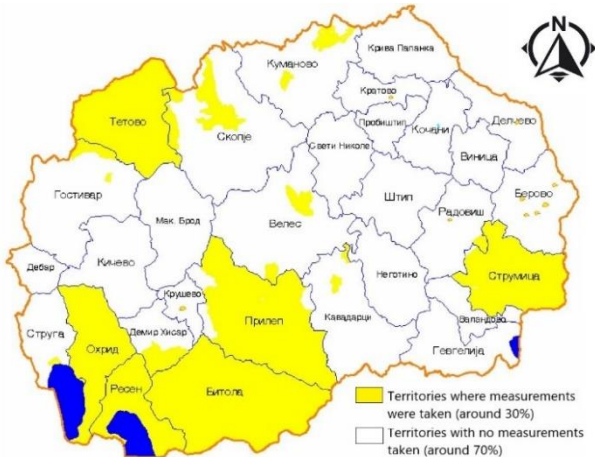


Figure 1. Cadastral surveying (ground based) in the Republic of North Macedonia, 1928-1945 [11]

During that period of time were surveyed 549 cadastral municipalities. The total surveyed area was around 7000 km<sup>2</sup>, which is almost 30% of the whole territory of the state. The cadastral boundaries were mapped in different scales. 1:500 and 1:1000 – in urban areas, 1:2500 – in suburban areas and surroundings (Figure 2), whereas in mountain areas the boundaries were mapped in scale 1:5000 [11].

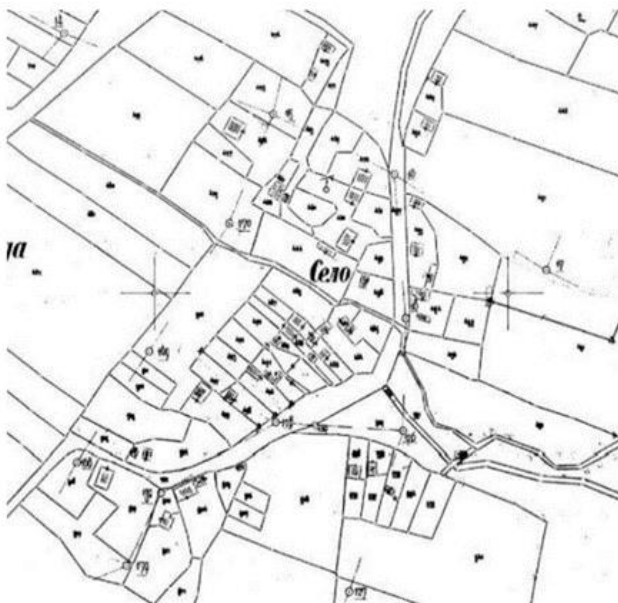


Figure 2. Cadastral map in scale 1:2500 (archive original)

An overview of all the laws, their amendments and legal changes that have been made in certain periods, and that regulate the competence of this institution (with its sub-

regional units) in the previous period in relation to the cadastre represented as follows:

- Law on Land Cadastre - **1928**
- Law on Public Revenues and Taxation (initiates the implementation of the descriptive cadastre - **1952**
- The Decision on the maintenance of data from the land cadastre - **1953**
- Law on Land Surveying and Cadastre - **1965**
- Law on Land Surveying and Cadastre - **1972**
- Amending and Supplementing the 1972 Law - **1978**
- Law on Survey, Cadastre and Real Estate Rights Registration - **1986**
- Amending and supplementing the 1986 Law - **1991**
- Amending and supplementing the 1991 Law - **2005**
- Law on Real Estate Cadastre - **2008** [11]

### 2.2 Establishment of AREC and the present day cadastral system

According to the AREC, on 14 July 1947 was established the Geodetic Authority of the People's Republic of Macedonia. In 1986, with the Law on Survey, Cadastre and Real Estate Rights Registration, the Agency for Immovable Cadastre, in addition to geodetic-cadastral works, was added another function known as the registration of immovable property rights [10].

Three types of registrations; systematic, sporadic, and conversion were initial for doing mainly done the establishment of the cadastral system. The last one converted already registered land data, cadastral boundaries, and legal data, from Land Cadastre into Real Estate Cadastre. The registered land rights are shown in a legal document named as Land Title Certificate [12].

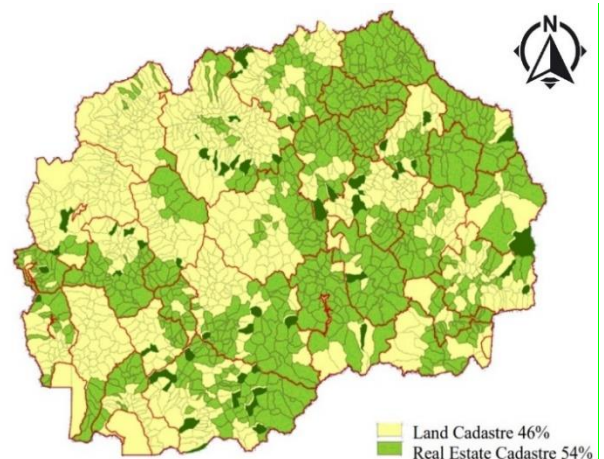


Figure 3. A graphic overview of the established Real Estate Cadastre in 2005, in the Republic of North Macedonia [13]

Land Title Certificate shows the information on the right holder, parcel data (id, area, cadastral culture, class), buildings, as well as other rights, restrictions, and responsibilities. The main functions of the land administration system are performed by the AREC [12].

Some maintenances of the cadastral system are handled by private surveying companies due to the involvement of the private sector in North Macedonia, in 2005. Furthermore, North Macedonia has a complete land administration and it has a fixed boundary approach [12].

2.3 Structure and organization

The AREC is managed by a Steering Board (see Figure 4), comprised of five members. The Government of the

Republic of North Macedonia has the right to appoint and dismiss members of the board of directors, who have a 5-year term, and at the end of the term, re-election is not allowed. The director is the leader appointed to lead the AREC, and he has his deputy. The division of tasks, duties, and obligations which also have subdivisions according to type, scope, complexity, and interconnection, is an integral part of the institutional organization of the AREC, whose authorizations are defined by law.

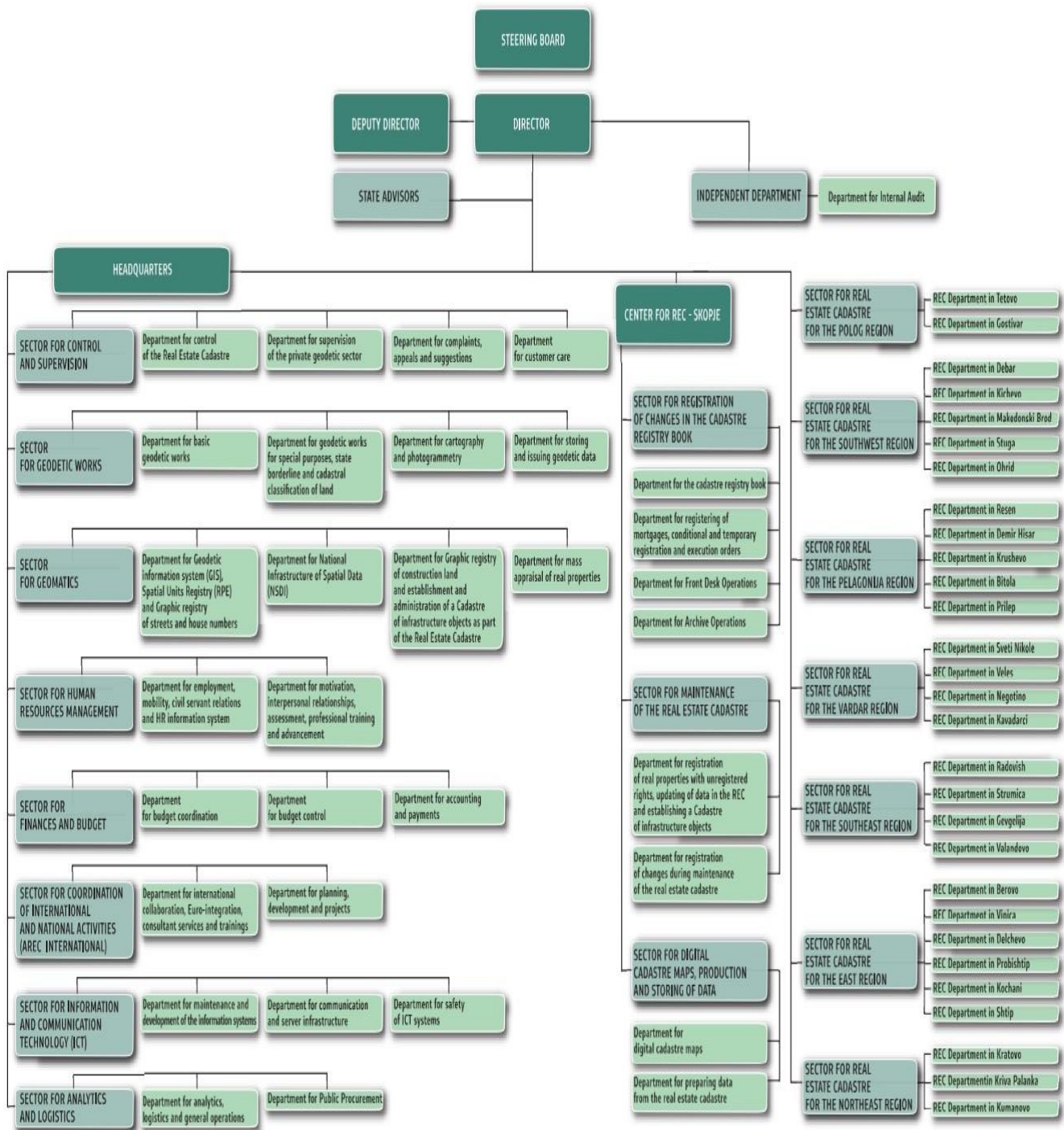


Figure 4. AREC Organizational chart [14]

#### 2.4 AREC responsibilities, works, tasks and obligations

Acting, functioning, and operating on the basic principles; as the principle of legitimacy, the principle of expertise, the principle of efficiency, the principle of transparency, the principle of professionalism and liability, and the principle of service orientation makes the AREC act in the capacity of a legal person. Acting in the capacity of a legal person with its rights, liabilities, and responsibilities, as stipulated by the Law, enables the AREC to report only to the Government of the Republic of North Macedonia.

The cadastral establishment works in North Macedonia, are considered as a “public service”. As a public sector, it has its own competencies (carried by regional and local offices and employees; also see Table 2), it provides public infrastructure projects that should be prepared and implemented by public institutions. However, AREC in North Macedonia provides deep cooperation with the private sector. Thus, in addition to cooperation, it is also a controller, supervisor and plays a special role in the development of private-sector affairs.

**Table 2.** General statistics about public sector competences of AREC [15]

Public Sector Competence – AREC	
Regional/Local offices	29
Number of employees	878
Employed surveyors	220
Employed lawyers	180

The amendments made in 2005 were aimed at enabling the establishment of the real estate cadastre throughout the territory of the country within a short time frame, by:

- simplifying the real estate survey and allowing the collection of data relevant to the real estate rights registration only (thus refraining from the collection of data for vertical land layout, as well as of data on land classes);
- shortening the procedure for establishing the real estate cadastre;
- determining new procedures for real estate rights registration; as well as engaging the private sector in the performance of the geodetic practice [13].

#### 2.5 AREC financing

AREC is the only legal body that performs the functions of land registration and cadastre. Therefore, AREC works and activities are financed by the government of the state. AREC has two budgets (see Table 3); the State budget (which is approximately ~30%), and the Cost recovery budget (which is approximately ~70%).

**Table 3.** The budget for financing the AREC [15]

Public Sector Competence – AREC	
COMPETENCE	AREC
BUDGET	~70% cost recovery ~30% state budget

According to the sixth principle of the Cadastre 2014 or also well known as the Statement 6 on Cadastre 2014, “Cadastre 2014 will be cost-recovering!” [16], and observing Table 3 (also see Figure 5), today, we can ascertain and conclude that, “Statement 6 on Cadastre 2014” seems to be vital and real for the Republic of North Macedonia. It shows us that 70% of the budget of the AREC is cost recovery and only 30% of the budget seems to be the state budget.

#### 2.6 Private sector involvement

According to Dimova [13], one of the most fundamental and vital changes in the law on Real Estate Cadastre is the changes that enabled the inclusion of the private sector and the development of private surveying companies to perform engineering and geodetic services.

Private sector involvement, in geodetic activities, has provided great advantages and seems to be very effective and efficient in North Macedonia. Also, this is seen as inevitable. For the period of this, the number of staff who used to work in the Public Sector has reduced. Even though North Macedonia is a small country with 25,713 square kilometers of area, besides this, inside this small country there are about 4,082,407 parcels registered. Represented in the table below (see Table 4), are the private surveying offices active nowadays in North Macedonia and also the licensed surveyors which operate in the business.

**Table 4.** Involvement of the private sector in North Macedonia [15]

Private sector involvement	
PRIVATE SURVEYING OFFICES	272
LICENCED SURVEYORS	411

Today, we can ascertain with more conviction that, “Statement 5 on Cadastre 2014” seems to be vital for the Republic of North Macedonia. According to Statement 5 on Cadastre 2014, “Cadastre 2014 will be highly privatized! Public and private sector are working closely together!” [16], and we can truly say that today this seems to be vivid for a cadastral system and irreplaceable (see Figure 5).

Looking back at the time stages that North Macedonia has gone through, and according to the Cadastre 2014 and its Statements, today we can notice that a lot of work has been done successfully. There is certainly yet more to constantly solve, create, produce, develop, and shortly yet more to do and a lot of work to be done.

According to the fourth principle of the Cadastre 2014, which says “Paper and pencil – cadastre, will have gone!” [16] (see Figure 5), we can truly confirm that since the 2D cadastre hasn’t been completed yet, this Statement of the Cadastre 2014 it’s not fully completed, and ‘Paper and pencil – cadastre’ has continued its own path. However, technological development and the digitalization process have managed to have their effects and the impact of technology and transition to the digital cadastre based on technology is very successful and very important.

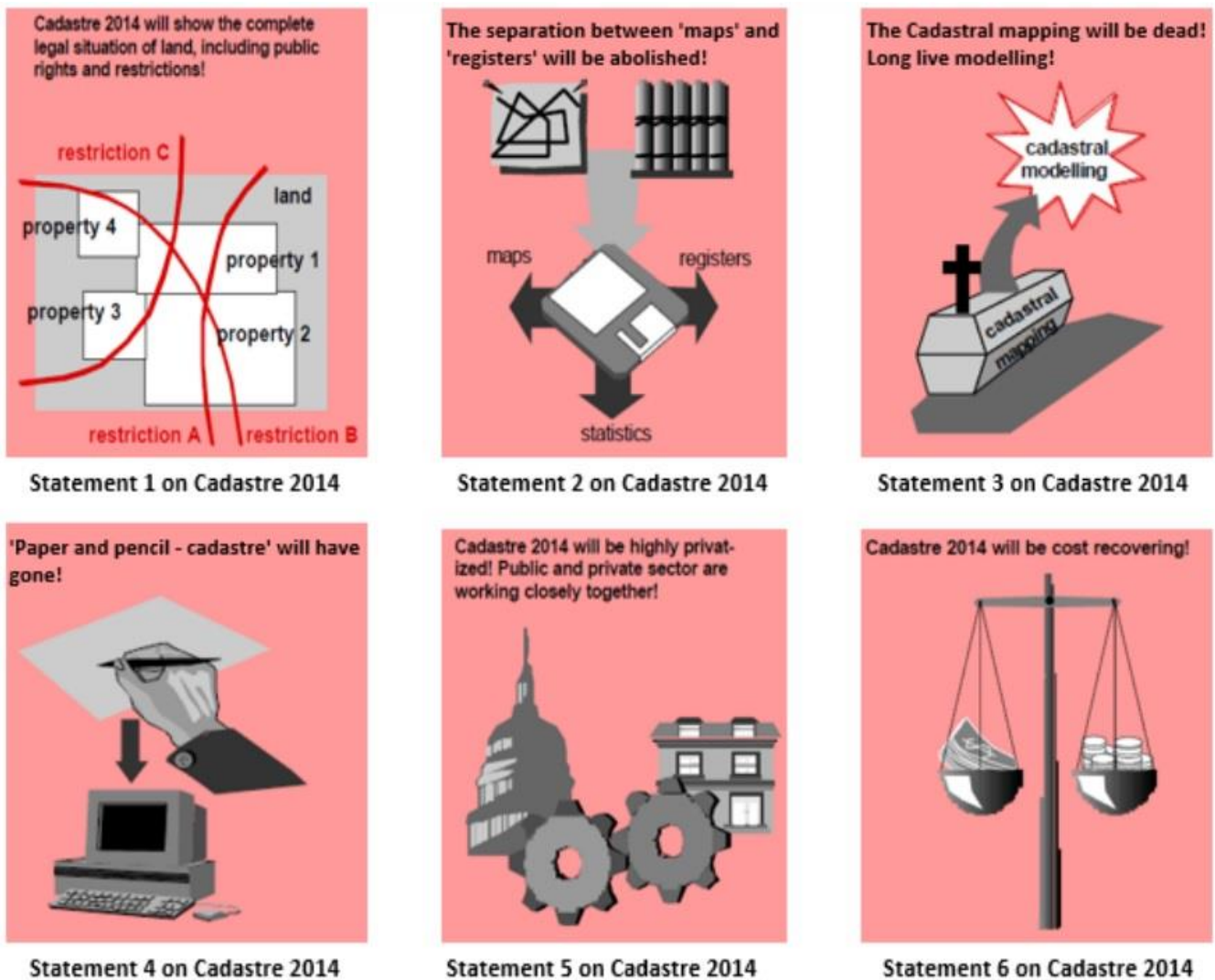


Figure 5. The six statements on Cadastre 2014 [16]

Cadastre 2014, or more precisely its principles, also known as the Statements (*Statement 1, Statement 2, Statement 3, Statement 4, Statement 5, and Statement 6*) of the Cadastre 2014, have been a guide for the development of a cadastral system like the cadastral system of North Macedonia and the cadastre itself. Although some of them are not fully realized and are not completed based on the foreseen frameworks of Cadastre 2014, some of which continue to be in the process of development and work; however, without a doubt it can be said that a basic and very important work has been done and it's very fruitful.

### 3 Priorities of AREC

According to the *STRATEGIC WORK PLAN* [14], AREC, there are three main priorities as a strategy for the realization of goals that AREC puts to itself:

- **Priority No. 1:** AREC is a service-oriented institution.
- **Priority No. 2:** Efficient, Secure, and Safe digital GCIS.

- **Priority No. 3:** Strengthening AREC in institutional capacities and cooperation on the national and international level.

AREC is a service-oriented institution that provides secure and efficient access to GCIS digital data through e-services, manages Graphical Registry of construction land, enters data on streets and house numbers in the database of Graphical Registry, and maintains the Graphical Registry. AREC is a contemporary institution with fully established primary and secondary business processes which ensure the exchange of top quality and updated digital data and services on national and regional levels and contribute to the economic growth and development of the society.

### 4 Conclusions

This paper shows the cadastral system of North Macedonia, and how one has gone through different time stages. It also shows the dealing of the study of historical development and advancement of the cadastral system of North Macedonia. The North Macedonian Cadastre has gone through different periods of time, from the foundation of its

own institution until the present time – nowadays. These are respectively land cadastre, descriptive cadastre, and real estate cadastre, in another way, through graphical, textual, and digital cadastres. It shows the development of the cadastral system on its own and the help and the importance of this development as a factor for the rapid development of the state.

The Law on Real Estate Cadastre and later following amendments of the Law also shows its importance on firstly establishing the Real Estate Cadastre, then structure and its organizational part, AREC responsibilities, tasks and works, and AREC financing.

The involvement of the private sector in cadastral works is also a part of this work. It is a very important matter, which plays a unique role, especially for the road of the “Cadastre 2014”. Furthermore, the involvement of the private sector in North Macedonia seems to be very fruitful due to the flexibility of this sector. Cooperation, the method of doing business, and complicity between the private and public sectors lead us to the quality of the work. With private sector involvement in cadastral works, business seems to be explicit and evident.

Priorities and goals of the AREC, also shows that the AREC is concerned and dedicated to being more transparent to users and to the citizens, to get to be more productive in informing and keeping up-to-date users and citizens, also in terms of professional representation of affairs and the responsibilities of the AREC to get to be more efficient, well-organized, more secured and safer, and strengthening the capacities and cooperation of AREC as an institution on the national and international level.

Finally, in this paper, the cadastral system of North Macedonia was discussed with a focus on its administration, technical, and functioning. As a result, we can freely say that the seriousness of improving and developing, has created an effective and efficient cadastral system in North Macedonia in terms of a legal, economic, social, historical, political, and professional context.

#### Conflicts of interest

The authors declare that there is no conflict of interest.

**Similarity rate (iThenticate):** 16%

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