

New Vision towards a Multipurpose Cadastral System to Support Land Management in Morocco

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Key words: land, titling, registry, cadastre, urban, planning, management, multipurpose.

SUMMARY

In Morocco, the land constitutes a basic and important resource at the economical, social and affective levels. Investors consider that among economic speculations, the land is seen as the most profitable and secured investment. The study of Moroccan cadastre enables us to discuss major beneficial aspects of this system to support land management matters. In Morocco, the establishment of a cadastral system is widely linked to the progress of the activities of three fundamental components: juridical cadastre, national cadastre, and national land agency.

Both the Land Registry Service and the Service of Cadastre accomplish the mission of a juridical cadastre as a Register Facility. They deal with all processes of land titling and cadastre. The Land Registry Service deals with legal aspects of land titling and constitutes the first office receiving requisitions for titling. It was instituted by the dahir n° 1-73-163 of May 31, 1973 and the decree n°2-73-055 of 4 June 1973, a national cadastre to enhance the global inventory of land. This new system provides information on land structures needed in farming, urban planning, demarcation of communes, design of roads and bridges, and establishment of various networks. It also consists of a good reference for taxation purposes based on accurate determination of land plates. The national cadastre includes all data regarding economical, social, and topographical aspects.

In December 1979, a agency was created to make inventory of public lands for a better usage. Since this time, an inter-departmental work group undertook a review that resulted in the creation of a National Land Agency within the Direction of Land Registry and Topographic Works. The Agency became the unique center of information about lands in urban and suburban areas. It is responsible for collecting, archiving, and diffusing land data and legal information relating to lands. It deals with urban planning and management and collaborates with various administrations to meet the government requirements in land management.

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1. INTRODUCTION

Vital components for human life are land, access to land, and managing the land. The land is fundamental for humankind because it includes all things upon it such as roads, buildings, animals, the air above, the water and the minerals within its surface. The land means to many people the space for their activities and the different forms of holding and managing its resources. In Morocco, it constitutes a basic and critical resource at the economical, social and affective levels. Investors consider that among economic speculations the land is seen as the most profitable and secured investment.

The relationship between Moroccan owners and lands is the ownership, which is dominated by two forms of regulation. Firstly, we find the Islamic law using abstract deeds called Aduler Acts to garrantiy the ownership. Secondly, we find the titling regime, based on cadastral principles, formalized by the colonial authorities. The study of Moroccan cadastre enables a discussion of beneficial aspects of this system to support land management matters. The establishment of a cadastral system, in Morocco, is widely linked to the progress of the activities of three fundamental components: juridical cadastre, national cadastre, and national land agency.

The objectives of this paper are to discuss the role of the three components to establish the Moroccan cadastre and present new orientations of the National Agency of Land Registry, cadastre, and Cartography. A new vision is proposed, in accordance with the new requirements, to establish a multipurpose cadastre supporting land management.

2. THE ESTABLISHMENT OF MOROCCAN CADASTRE

2.1 The Meaning of Cadastre

The origin of the term cadastre is not clear. Authors seem to have many different opinions. For some, this origin belonged to the Rome, in antiquity, and constituted the contraction of the Latin words *capi-dastra*, which means the establishment of registers indicating the list of the owners and their landed properties. While others, assume that it could come from the Greek term *Katastikhon* that means list (Merriam Webster, 1998). Indeed, the concept of cadastre has existed in relationship to human beings. The earliest signs of the cadastre were found in sheets of schist in Syria and Arabian Peninsula. Other traces were found in Egypt and China (Cichocinski, 1999). The oldest systems of cadastre were elaborated for taxation purposes. They were based on the principle that everyone who cultivated any land had to pay taxes as a form of rent. The earliest forms of cadastre in Islamic society were instituted in the 7th century by the Prophet Mohamed (God's peace and blessing be on him and on all

prophets). Interested in best managing of lands he stated the following uses (Almawardi, 1960):

- Delimiting by stones the “khayber” area (collective lands around the city of Mecca in Saudi Arabia): this was the first form of demarcation in Islam,
- Encouraging the agriculture activity by adopting the reviving dead lands (*mawat*), which refer to unutilized lands and to which there are no identifiable claims of use.

Generally, the cadastre or the cadastral system is the basis used for the protection of the property by means of registration procedures and cadastral plans made from geodetic operations and surveying. Each parcel or property and its owners are registered. All spatial structures consisting of locations, boundaries and contents are graphically described in a cadastral map or digitally stored in a database. It may be a systematic or a sporadic official description of properties. It is seen as land information system affording information on real estate of a property (El Ayachi and Semlali, 2001).

2.2 The Evolution of the Cadastral Institution in Morocco

Since 1913, the characteristics of juridical cadastre were established progressively as soon as the operations of land titling were undertaken. The objective is to create a register book regime contributing to the appropriation of land and whereby the legal and physical aspects of properties will be defined. The first Service of Land Registry was created in 1915 as an administrative structure to establish the regime of land titling described by the dahir of August 12, 1913. In 1924, the Cherifian Service of Topography was created and linked to Land and Domain Recording Service in the Direction of Finance (Decroux, 1977). In 1948, the Ministry of Agriculture and Forest created a Division of Land Registry, which grouped both the Service of Land Registry and the Cherifian Service of Topography. In 1963, this Division undertook activities of geodesy and cartography.

The Division of Land Registry was transformed in 1972 to a Direction of Land Registry and Topographic Works (DCFTT) depending on the Ministry of Agriculture and Agrarian Reform. In 1973, the Dahir n°1-73-163 concerned the establishment and maintenance of the national cadastre. Since this time, the DCFTT conducted new tasks regarding the establishment of an exhaustive inventory of all lands. This new vision was reinforced in 1982 by the creation within the DCFTT of a National Land Agency. However, the activities of national cadastre were suspended from 1983 to 1993 because of a lack financial support. In 1994, the DCFTT was transformed into the Administration of Land Registry, Cadastre, and Cartography (ACFCC) within the same Ministry. Since 1995, the ACFCC is responsible for a global survey in fast developing cities. In January 2003, the ACFCC was transformed to the National Agency of Land Registry, Cadastre, and Cartography (ANCFCC) with the statute of a private agency. This new institution works from the former structure, but added new activities defined by the law 58.00 (BO5036, 2002).

The analysis of the evolution of the Moroccan cadastre enables us to conclude that the current cadastral institution encompasses all aspects of a cadastre: juridical cadastre, national cadastre, and national land agency.

2.3 The Components of the Moroccan Cadastre

At the national level, the Division of Cadastre, within the ANCFCC, is responsible for conducting juridical and national cadastre. Its mission is to establish, maintain juridical and national cadastre, and conduct studies relating to land structure and farming. All the produced data must be reliable and accurate in paper or digital forms. The Division is structured in 5 central services and 43 exterior services. They are directly responsible for establishing and executing cadastral tasks at the local level. As technical services, they largely contribute to carry out the attribution of the Division of Cadastre relating to titling matters. They collaborate with the Services of Land Registry to establish titles by demarcation and direct surveying. The Services of Cadastre contribute progressively to establish juridical cadastre at the provincial level.

2.3.1 The Juridical Cadastre

Both the Land Registry Service and the Service of Cadastre accomplish mutually the mission of a juridical cadastre under a Register Facility and deal with all processes of land titling and surveying. The Land Registry Service deals with legal aspects of land titling and constitutes the first office receiving requisitions for titling. The Service of Cadastre has to deal with demarcation by establishing boundaries and land plan for every title regarding requirements fixed by legislation. It takes care of making cadastral maps to represent graphically registered properties and requested properties for titling. The Register Facility establishes plans and registers for each property and respective owners. The registers identify properties and owners. The plans indicate delineation of each property, its boundaries, and its uses in accordance with standards. All these data are maintained and updated to meet requirements of increase needs of titling.

2.3.2 The National Cadastre

The dahir n° 1-73-163 of May 31, 1973 and the decree n°2-73-055 of 4 June 1973 created a national cadastre to enhance the global inventory of land. This new system provides information on land structures needed for farming, urban planning, demarcation of communes, design of roads and bridges, establishment of various networks. It also consists of a good reference for taxation purposes based on accurate determination of land plates. The national cadastre includes all data regarding economical, social, and topographical aspects. For every parcel, it determines land statute, location, area, soil characteristics, value, and the civil state of apparent owners. The national cadastre is known as a graphic system that defines limits of lands using orthophotos. It updates systematically land information to maintain daily changes that affect delineated parcels.

2.3.3 The National Land Agency

During the last decade, Morocco has seen a continually growing demography and an accelerated migration from rural to urban areas. The harmful consequences are a dramatic urban growth and lack of food resources. The land heritage, because of a historic evolution of real estate, cannot meet the needs of the modern society. The impact of failing to master lands implies a degradation of urban space and depopulation of rural areas. Regarding this

situation, Morocco must raise challenges and provide a convenient policy of managing land heritage to ensure social stability. The state remains the biggest owner of lands, which are probably a useful reserve to satisfy needs of settlement, industry, tourism, infrastructure equipments and farming. In this context, the king Hassan II proposed, in December 1979, to create a agency that will inventory public lands for a better usage. An inter-departmental work group study resulted in the recommendation for a National Land Agency. In 26th of August 1982, the circular n°338/C of the Prime Minister created this agency as a Division within the Direction of Land Registry and Topographic Works (ANF, 1990). The Agency is the unique center of information about lands in urban and sub urban areas. It is responsible for collecting, archiving, and diffusing land data and legal information relating to lands. This inventory only includes lands belonging to private and public domain of state, local and ethnic groups, Habous, Guich, and forests domain inside urban and suburban perimeters. The information includes land geographic positions, categories of owners, land statutes, area, consistency, current usage, eventual destination, and land values per square meter. It provides to municipalities, autonomous and delimited cities, and their peripheral zones various land information and documents. It collaborates with different administrations to meet the government requirements in urban management.

3. THE ON-GOING STRATEGIES TO MODERNIZE THE CADASTRE

3.1 The new Mission of the ANCFCC

The mission of the National Agency of Land Registry, Cadastre, and Cartography was clearly defined by the law n° 58-00 of the dahir n°1-02-125 of June 13, 2002. According to the item 2, there are four principle objectives for this Agency. Firstly, it must maintain land titling process, public access to information on land ownerships, archive properties and ownerships, and establish land plans to serve land titling. Secondly, it is responsible for maintaining the national cadastre. Thirdly, the agency must conduct studies and establishes basic works concerning geodetic infrastructure, leveling, coordination, and maintenance of national photographs and maps. It must update basic maps of the country. Fourthly, it must establish exhaustive inventory of lands. Thus, the fundamental components of the ANCFCC mission concern institutional, organizational, and technical aspects.

3.1.1 Institutional Reform

The ANCFCC strategy focuses on a new legislative and administrative framework to regulate the previous rudimentary structure. The fundamental elements of this strategy are decentralization of the management process, legislation of transfer modality and protection of digital data relating to cadastre and cartography, update and standardization of procedures and techniques, and extension of the disposals of the dahir 11th of November 1972. In January 2003, the dahir n°1-02-125 promulgated the law 58-00 to transform previous administration into a National Agency. This agency, in accordance with disposals of the law 58-00, has the ability to conceptualize convenient policy to meet government needs in land management. Therefore, the ANCFCC aims to overcome difficulties and specific gaps in administrating lands in the former structure by developing new and modern regulation.

3.1.2 Organizational Reform

Since the creation of the first Land Registry Service in 1915, the ANCFCC knew an important organizational and administrative evolution, which can be explained by the strong increase of titling requests and subsequent operations to titling. The organizational structure is characterized by the reorganization of its central, provincial, and regional offices to improve management procedures and meet customer needs. At the administrative level, the agency started a policy of developing management skills of its employees. This strategy will improve the services and products quality. It will enable private companies to take advantage of adequate institution and support the agency to reduce its growing instances. All these organizational and administrative strategies will serve to generalize land titling and national cadastral system. The essential objective is to establish a global cadastre serving as a basis for titling, economical, and development projects. In 2003, the institution was transformed in a national agency, which will have an independent status and financial autonomy, to improve administrative tasks and budget procedures. It will be able to innovate mechanisms to overcome imposed constraints regarding recruitment and incentive tools to enhance skills of its employees.

3.1.3 Technical and Procedural Reforms

The ANCFCC has to accomplish all technical and procedural tasks as defined by the law 58.00. It must deal in real time with all user needs in the following domain: land titling, land inventory, cadastre, and mapping. The agency initiated the conception and development of geographical information systems concerning legal aspects, land, cartography, and cadastre. The objective was to furnish digital data facilitating retrieval, processing, updating, and storage operations. Several template projects are conducted at national and local levels to digitize the existing documents such as cadastral maps, archived dossiers, and land data. New techniques are introduced such as digital instruments, GPS, and electronic archiving documents. Regarding the data processing, the ANCFCC aims to simplify procedures, modernize methods and integrate progressively private companies in cadastral projects. Simultaneously, it introduces new techniques to generalize the aspects of the national cadastre and to enhance the quality of services and documents.

3.2 Benefits of the new Law 58.00

The former structure named ACFCC was transformed, in January 2003, to the ANCFCC for National Agency of Land Registry, Cadastre, and Cartography. The law 58.00 promulgated by the dahir no. 1-02-125 of June 13, 2002 regulates a new statute to define its new mission across the articles premier, two, and three. The articles 5 through 10 determine the managerial and administrative concerns. The articles 11 through 16 define the financial resources in terms of the benefit-cost recovery. The fundamental domains belonging to the ANCFCC are the land registration, the cadastre and the cartography. The new law requires that these activities must be reinforced as its principal axes. In the domain of land registration, the law determines the principal activities as below:

- Titling land properties,
- Maintenance of land ownerships and all interests affecting whether the titled or non titled property,
- Maintenance of cadastral documents and archives,
- Establishment of cadastral plans to serve land titling.

In the domain of cadastre, the ANCFCC establishes cadastral documents such as surveying plans, cadastral maps, and cadastral plans to meet the requirements of land titling and registration. It has the responsibility to establish and maintain the national cadastre and to coordinate its activities with different institutions dealing with public land inventory, to centralize and maintain topographic and cadastral documents in urban and rural areas.

The ANCFCC assumes the responsibility of cartography across the country. It must establish and update the geodetic infrastructure such as geodetic network and national precise leveling, compile and maintain the base map, realize and centralize all the photogrammetric documents. New functions are thematic mapping, research and development projects, technical and judicial investigations, land and agricultural studies for best practices, and land management for urban purposes. The ANCFCC needs to collaborate with all public institutions, professional organizations, and private companies to standardize and improve technical procedures.

Regarding the law 58.00, the ANCFCC will be the only institution capable of improving the status of cadastre in Morocco. It fortunately encompasses both the responsibilities of cadastre and cartography as in a unique institution. These two tasks constitute the basis of a multipurpose cadastre. They facilitate the establishment of a basic infrastructure enabling to set up a land information system. The article 4 of the law 58.00 defines clearly the role and the responsibility of the General Registrar in managing and maintaining the land titling dossiers and the Surveying Engineers in dealing with legal and technical requirements according to the law 30.93, which specifies the attributions of surveyors. This allows dealing with cadastral and cartographic works in a unique framework taking in account the public and governmental requirements and private companies' needs.

The ANCFCC according to the law 58.00 has the ability to define its policy in terms of managerial, administrative, and financial tasks. The articles 5 through 10 statute that the agency is administered by a Council of Administration and a General Director (BO5036, 2002). The council of administration includes all the departments concerned by lands and land information. This board will determine efficiently the strategy of ANCFCC and the political feasibility of the multipurpose cadastral information system. Certainly, the board will focus on the evaluation of the existing arrangement, on the requirements of the communities, and on the potential sources of funding such project. Regarding the law, a spectrum of interests will be defined and all operations will be integrated to establish an adequate system.

All these regulation disposals permit to the agency to conduct studies in terms of financial analysis to increase its incomes. It should reach in accordance with the law 58.00 a self-sustaining state allowing revenues from registration fees and maps to be greater than overhead and operating costs. The major advantage of this law is that it will enable the

agency to carry out directly a periodic system review of the success of its strategy and of the impact of any proposals for changes. The possibility of integrating funding agencies is effectively allowed to enlarge the ANCFCC field of cooperation.

3.3 The former Visions

During the last five years, two important visions were proposed to modernize the cadastral system in Morocco. The first study was conducted by the Surveying Engineer Ahmed Chakir in 2001. The second study resulted from a meeting held in Mai 2002, which was aimed to establish a new strategy called vision 2006 to modernize the cadastre in regard to the law 58.00 (Chakir, 2001).

The former study had recommended three principal elements. Firstly, the development of a general cadastre to meet land titling purposes by extending the functions of the national cadastre to the areas with major economic activities. Secondly, the involvement of the private sector to deal with computer actions, cadastre, and cartographic works. Thirdly, the establishment of an appropriate outreach program enabling the implementation of the general cadastre. However, the vision should present in practice the real steps to achieve the recommendations.

The first study (Chakir, 2001) proposed new requirements to modernize the cadastre in Morocco. The Author adapted the structure of the Swiss cadastre to reorganize the existing system in Morocco. He proposed three cadastral levels: national, regional, and local. The national level is concerned by questions related to regulation, coordination, supervision, and technology. The regional level supervises and coordinates the regional activities. The local level produces cadastral data and maps. The new study proposes the creation of Regional Direction and Local Delegation as. At the local level, the former structure will be transformed radically in four units (Figure 1).

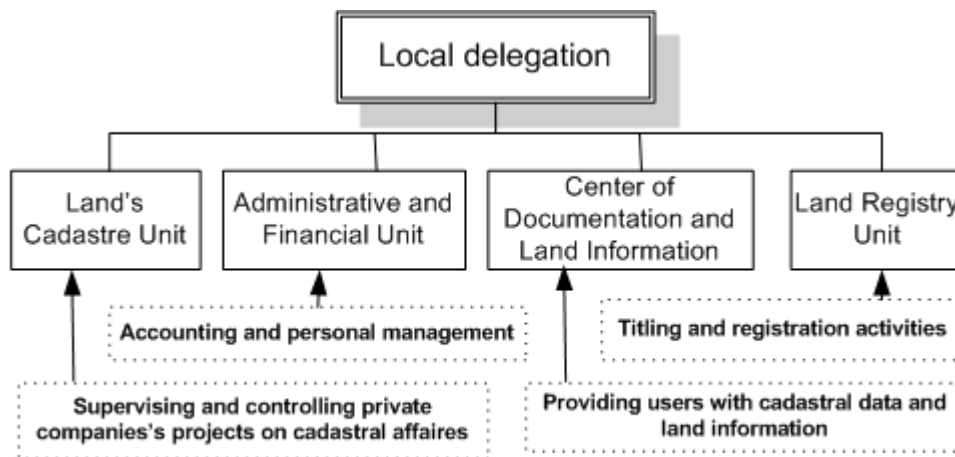


Figure 1: Local delegation in a proposed organizational Structure Chakir (2001)

This study needs further. The existing structure at the local level as recommended by Chakir (2001) did not foresee multipurpose aspects of cadastre. On the other hand, the author proposed the creation of a regional direction to coordinate regional tasks and supervise the

local activities. This could be time consuming especially if the cadastre still deals only with titling and registration matters. The development of a new vision is required to implement a multipurpose cadastre in order to meet the user's needs in several domains.

4. TOWARDS A MULTIPURPOSE CADASTRE IN MOROCCO

4.1 Principles of a Multipurpose Cadastre

Over the last hundred years, cadastral systems have been increasingly developed. The evolution of modern systems began in Europe in the 19th century to serve taxation and fiscal purposes. The Napoleonic cadastre in France is a prime example. Since then, other countries, particularly in the English-speaking world, such as Canada, USA, and Australia, started to establish their specific systems (Williamson, 2001). In the mid-1970, cadastral systems began to assume a more diverse role (McLaughlin, 1975). In 1998, the working group attached to the commission 7 of the International Federation of Surveyors (FIG) elaborated a vision for a future cadastral system, called cadastre 2014, for the next 20 years. This project emphasizes the role of cadastral systems being multipurpose and responding all public and private interests. The author J.Douglas McLaughlin (1975) defined the multipurpose cadastre as a system implemented by the following steps:

- Establishment of a cadastral survey base consisting of two interrelated elements, which are a spatial control framework and a graphical base,
- Establishment of a cadastral survey system that permits to create and maintain a series of cadastral maps showing the size, shape, and location of parcels,
- Establishment of a cadastral records system that contains two kinds of information, which are information concerning public and private ownerships legally recognized in lands and information concerning the historical development of these rights.

In 1980, the US Committee on Geodesy, in the National Research Council (Committee on Geodesy, 1980), established a new project concerning the urgent need of implementing a multipurpose cadastre for the USA. The study asserted that the multipurpose cadastre is a framework supporting continuous, readily and comprehensive land information at the parcel level by implementing the followings components:

- A reference framework consisting of a geodetic network,
- A series of current, accurate large-scale maps,
- A cadastral overlay delineating all cadastral parcels,
- A unique identifying number assigned to each parcel that is used as a common index of all land records in information systems,
- A series of land data files, each including a parcel identifier for information retrieval and links to other data files.

The multipurpose cadastre provides comprehensive information on land and presents all information at the parcel level. It is built around a reliable and accurate spatial framework: base maps, a cadastral overlay linked to juridical information of properties, and a linkage to land information generated by many offices and users. It supports both the legal and fiscal

purposes. Data are used for facilities management, base mapping, value assessment, land use planning and environmental impact assessment.

4.2 Driving Forces to modernizing the Moroccan Cadastre

The significant advantage of the existing cadastral system in Morocco is the nature of its registration and titling regime and administrative structure. The registration and titling process and the surveying activities are performed actually at the local level by a unique agency called the Land Registry Facility. This structure guarantees the best co-ordination between the Service of Cadastre and the Service of Land Registry responsible for all cadastral functions. The basis of all surveying operations is a unique reference geodetic network in spite of its several difficulties regarding its update and maintenance. The new law 58.00 opens a wide perspective for the agency to be the core of various utilities such as land use, planning, and administration either in urban or rural areas.

The driving forces behind re-engineering the cadastral systems are new customer needs, new global changes around the world, technological evolution, and government administration requirements. The cadastral system customers are of two kinds: individuals and group of individuals. Their needs are significant and should be dealt with great and specific attention.

The major customer demand is an efficient system. This means the ability to determine exactly their properties in a short time. Fortunately, the accuracy of defining parcels and properties in the current system is adequate. Once a property is demarcated and delineated, the holders of ownerships and rights on land are exactly defined. The produced title is guaranteed through the adjudication process. World global changes influence the nature of the cadastral system to develop. Efforts must be conducted to improve the certainty of land rights and the security of tenure. Under the globalization, the cadastral system should serve requirements of land and territory planning to support international companies that will use land inside Morocco. A new system must be developed to increase security on land and to allow its use with respect to local land regulations regarding obligations and restrictions. Through the development of a multipurpose cadastre, various benefits will arise and will have direct impacts on economic and social life. Technology has made significant progress in different domains. These new technological improvements concern the cadastral system. Varieties of instruments recently introduced will accelerate the processes of surveying, land titling, registration, and mapping. Geographical information systems enable to modernize all operational and functional processes of the cadastre. New approaches and methodologies are conceived to modernize the existing systems. The government administration, as a landowner, needs to establish an efficient system of cadastre to increase the security on landownership and facilitate land administration. This will permit the monitoring of land market, the improvement of planning in urban and rural areas, the regulation of legal framework and statutes of land, and the introduction of new technology to maintain land reform such as redistribution, consolidation, valuation, and assessment. In addition, the multipurpose cadastre will ensure within the society a minimum level of quality and establish a uniform land information system based on properties and parcels.

5. A NEW VISION FOR A MULTIPURPOSE CADASTRE OF MOROCCO

The first model presented by McLaughlin (1975) was essentially basic. Its purpose was to launch the development of a multipurpose cadastre for North America. The second model, developed by the committee on Geodesy, was adapted to the new conditions of the USA cadastral system. This project determined the responsibilities of each organization concerned by land data and defined the role of the federal government in establishing this system. The committee established guidance in terms of cooperation, organization, and standards at federal, state, and local levels.

The first configuration seems not adequate to Moroccan conditions for the two following reasons. Firstly, the Moroccan cadastral system has its national geodetic network as a cadastral survey base. Secondly, the land titling system is the unique reference enabling the registration of land ownerships and the historical development of these rights. The cadastral system and land titling system deal together with cadastral records and cadastral operations such as delineation and demarcation of properties and parcels. Many cadastral maps are created and maintained in each cadastre to report titled properties. In the second model, we retain the second and third components add two new characteristics. The first one is the production of a series of current, accurate large-scale maps keeping the new cadastre continuously updated. The second characteristic is a generalized cadastre across the USA to serve as a land information system.

From the analysis of the two visions developed in Morocco, the two approaches in North America, the statements of the new visions cadastre 2014, and the current, nature, and needs of the Moroccan cadastre, the following components are proposed to serve as the basis of a new vision to develop and implement a multipurpose cadastre:

- A global geodetic network as a reference framework,
- A series of regular cadastral sections located and monumented as a basic cadastral grid for cadastral overlays,
- A series of large-scale maps of natural and physical features,
- A unique judicial cadastre dealing both with titling, registration, and surveying tasks,
- A computerized cadastral information system.

The development of a multipurpose cadastral information system requires the contribution of many different departments to execute the fundamental components of the system. Both the governmental and private institutions are involved concurrently to integrate all items of the new system. The implementation of each component belongs to a specific institution at national, regional, and local level. The multipurpose cadastre provides not only land ownerships and property information but also a large variety of land information such as land use, land zoning, infrastructure information, building, property, and address. The new multipurpose cadastre enables progressively a systematic registration and overcome difficulties of the ancient system such as long time to update registers, high registration costs per property, and absence of an exhaustive overview of existing parcels and properties within an area.

The new system aims to support land planning, land administration, land taxation, and agricultural development projects. The Moroccan government as well as the private sector has an important role in the implementation of a multipurpose cadastre. The existing system is improved rather than altered or re-established because its current and previous arrangements are largely linked to historical and political reasons. A multi-institutional committee proposes gradual, phased, and cumulative efforts to implement the system.

The new vision implies a reorganization of the ANCFCC. This constitutes an essential component of modernizing the cadastral system. According to the five components of the multipurpose cadastre and to the five requirements discussed above, the future organization of the ANCFCC focuses on a hierarchical structure including three fundamental levels: national, regional, and local.

At the national level, all different departments, offices, and agencies contribute to develop a wide multipurpose cadastre. The first basic component, the global geodetic network, is a national activity. The responsibility of a series of regular cadastral sections located and monumented as a basic cadastral grid for cadastral overlays and a series of large-scale maps of natural features is assigned to the regional level. At the local level, a unique judicial cadastre deals with titling, registration, and surveying tasks and the development of a computerized cadastral information system (Figure 2). This system requires important efforts and commitments from the government.

5.1 At the National Level

The national level is a driving leader of regional and local activities relating to cadastral multi-purposes. Its mission must be redefined to meet the requirements of best managing and monitoring. It is a key tool for enhancing regional and local administration of lands. The new structure includes the transformation of the Direction of Cadastre and Cartography into two major directions, the Direction of Cartography and the Direction of Cadastre. The responsibilities of the former Divisions of Cartography and Cadastre are assigned respectively to the Direction of Cartography and Direction of Cadastre.

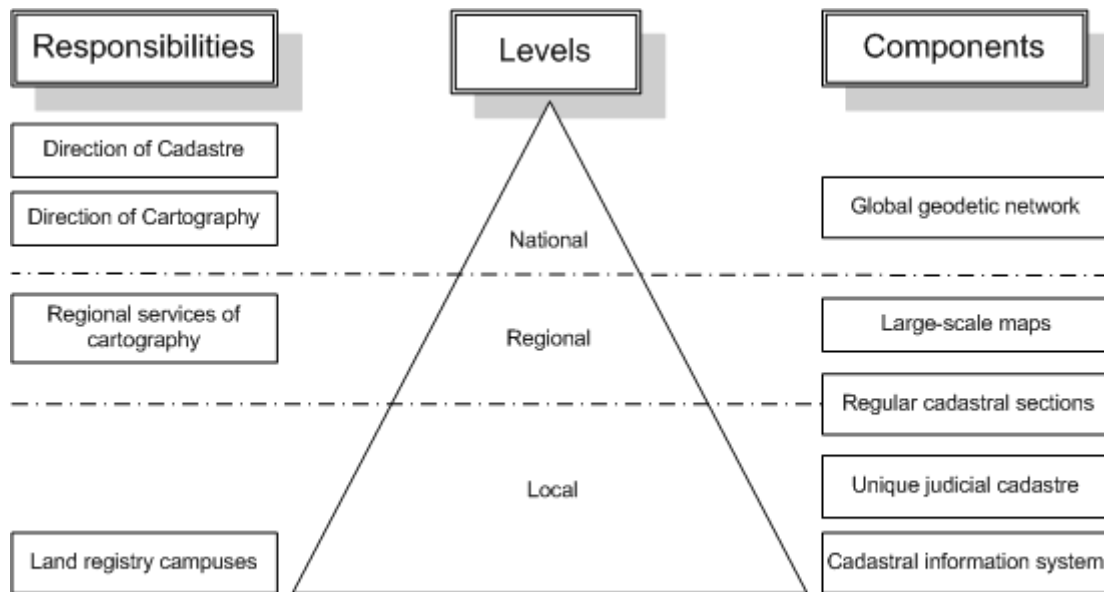


Figure 2: New organization of the multipurpose cadastre

The Direction of Cartography is responsible for establishing and maintaining the global geodetic network. The Direction of Cadastre includes three essential Divisions, a Division of National Land Agency, a Division of Cadastre, and a Division of National Cadastre. The function of the Division of National Land Agency is extended to encompass the general inventory of lands in urban and suburban areas rather than public lands. The Division of National Cadastre deals with the inventory of lands in rural areas. The three divisions are establishing procedures and standards to create and maintain the multipurpose cadastre at national and regional levels.

5.2 At the Regional Level

The regional level is a fundamental stage linking the national level to the local level. It serves, in addition, as a leadership in establishing partnerships between different departments at the regional or national level. The Regional Services of Cartography are assigned the responsibility of creating and maintaining the multipurpose cadastre at this level. The major functions of these services include the maintenance of the vertical and horizontal geodetic network, the maintenance of precise leveling, the creation and maintenance of national cadastre, and the maintenance of land inventory in urban and suburban zones. They provide users with large-scale maps of natural features concurrently with the Urban Agency, the Municipalities, the Communes, and the Regional Centers of Investments. Further, the Service develops standards for creating cadastral sections. A large cooperation, at the regional level, is required to enhance the management of the new system. All land data are shared at the regional level between all agencies needing land information. Within the region, the Regional Service of Cartography centralizes the efforts of implementing and maintaining the multipurpose cadastre.

5.3 At the Local Level

The success of this new strategy depends strongly on the effective contribution of cadastral services at the local level to produce and update all land data and ownerships. The local level is a basic tool of assembling community, local administration, private companies, and investors around lands and land rights. This enables local government to best decision on land management and administration. The responsibility of maintaining the multipurpose cadastre, at the local level, is assigned to each Service of Cadastre implemented in a province. Every service still deals with its former functions related to titling and surveying works. It creates and maintains the cadastral sections according to the regional guidelines to facilitate the collection and update of data by public and private agencies. It makes efforts to develop a cadastral information system as a basis for implementing a multipurpose cadastral information system in respect to regional and national guidelines.

The fundamental components of such system are cadastral sections, property boundaries, parcels within each property, land tenure, and administrative boundaries concerning cities, circles, and districts. The local services must cooperate with the provincial boards, city and commune councils, and local representatives of various departments such as housing, equipments, education, and agriculture. The advantage of the Moroccan cadastral system is that, in each province, a unique cadastral service is created and linked to at least one land registry service to perform and maintain together registration, titling, and cadastral tasks.

6. CONCLUSION

The cadastre is an inventory of land object. It provides a wide inventory of local, regional, state, and national land objects such as parcels, properties, natural resources, environmental and legal aspects. The cadastre is normally up-to-date in which land information is systematically identified. The cadastre shows present conditions of lands.

A new perspective is presented for implementing a multipurpose cadastre. The driving forces for modernizing the former structure of cadastre in Morocco include new customer needs, new global changes, technological evolution, and country requirements. Various approaches are discussed for modernizing cadastral systems. The establishment of a new perspective takes in account two proposed visions in Morocco, two experiences in North America, and cadastre 2014. The main objective of implementing a multipurpose cadastre for Morocco is to stretch the functionalities of the former structure to support new responsibilities concerning land information, land planning and zoning, and land administration.

The components of the new system include a global geodetic network, a series of monumented cadastral sections, a series of large-scale maps, a unique judicial cadastre, and a computerized cadastral information system. The organizational requirements to succeed in implementing the system are the reorganization of the ANCFCC, the institution of a multi-institutional committee, and the establishment of a large cooperation between different public and private agencies.

A strategy to create such system is based on progressive and systematic efforts at different levels. Firstly, the national administration establishes guidelines and standards to facilitate the

performance of cadastral projects. Secondly, regional and local efforts establishes standards to implement the components of the multipurpose cadastre. Finally, the regional services of cartography and the local services of cadastre playes a major role in promoting the system at the executive levels.

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