

MULTIPURPOSE LAND INFORMATION SYSTEMS - AN ALBANIAN PERSPECTIVE

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ABSTRACT

The need for more, better, and integrated land information and the availability of technology to meet this need, have set the stage for the development of Multipurpose Land Information Systems (MPLIS). In the paper we note that the cadastral maps being produced in Albania would be part of the graphic material of an MPLIS and the property register information (such as registry books, tapi, etc) would be included as part of the attribute record in text form. The MPLIS is a relatively complex system, but it covers many needs of both government and the private sector. We recognize the current need to focus on cadastre as part of Land Market Action Plan. The Government of Albania has begun planning for the future as the needs for an MPLIS are increasing and the free trade economy is making such a system economically feasible. Therefore, we suggest the development of an MPLIS for Albania.

Key word: Albania, Land Information Systems, Multipurpose Land Information Systems, cadastre, cadastre maps, reference frameworks.

1. INTRODUCTION

Vital components for human life are land, access to land and managing the land. The land is fundamental for humankind because it carries all things on 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.

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Conventionally cadastral systems have supplied spatial information for land administration, spatial planning, billing for cost recovery from services etc. New approaches to spatial information and land information management are required to upgrade and manage cadastral parcels. Automated land information systems are being proposed and developed throughout world. Because many, if not most, of these systems are being developed with public funds, it is essential that methodologies be developed that can be used to evaluate the effectiveness of these expenditures.

We use the term Multipurpose Land Information Systems to refer to a system in which “the fundamental means of organizing data is the cadastral parcel or proprietary land unit”, which main objective is “the provision of institutional data concerning land ownership, value and use”. It is built to support a wide variety of applications. The underlying data should be accurate enough to support the envisioned applications, compatible so that data sets can be used in combination with each other and comprehensive so that current and appropriate data are available when they are needed.

A fully implemented Multipurpose Land Information System should be incorporated into an environment that provides:

1. The fundamental land base;
2. Data features on or near the Earth’s surface;
3. The means to interpret and manage these data – increasingly computer software;
4. The media upon which data and management techniques reside, increasingly computer hardware;
5. The means to represent and disseminate data and information;
6. People organized to oversee the system operations;
7. Procedures for using and maintaining the system.

Such a system would permit data to be used conveniently and accurately through spatial analyses, such as polygon overlay, area and distance calculations. It would also use interrelationships among data sets for tying maps to a common spatial reference system and for linking records through common identifiers.

The variety of land necessitates a system capable of integrating different information and improving the flow of information between different organizations. This different information can be classified into four major categories:

- environmental or natural information,
- infrastructure/utility information,
- legal/fiscal, “cadastral” information; concerned with land tenure and land use,
- socio-economic information.

A Multipurpose Land Information System is capable of integration these different kinds of information and serves different purposes. This different information can be viewed as different layers within an MPLIS.

The types of information mentioned above, have been created and developed also in Albania, but only in some particular institutions and departments, working apart from each other and for their own purposes. In the absence of a consolidated Spatial Data Infrastructure (SDI) and when the standardized geographic information does not exist, it emerges the obligation to improve and stabilize the use of SIG in the institutions and departments that do manage this information, on purpose to build and develop MPLIS also in Albania.

In Albania, 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 Albanian owners and lands is the ownership. The study of Albanian cadastre enables a discussion of beneficial aspects of this system to support land management matters. The establishment of a cadastral system, in Albania, is widely linked to the progress of the activities of three fundamental components: juridical cadastre, national cadastre, and national land agency. The objective of this paper is to note the role of the components to establish the Albanian Multipurpose Land Information System.

2. IMMOVABLE PROPERTY REGISTRATION IN ALBANIA

The need for a registration and cadastral information system has a long history. Since the Assyrian – Babylonian and ancient Egyptians eras, the concept of “publicity” of a transaction was important. The Roman emperor, Diocletianus, mandated an imperial cadastre for fiscal purposes. Similar projects took place in China (circa 700 AD) and in southern India, under Raja the Great in 1000 AD. In England, William the Conqueror created a written national inventory in 1085 which resulted in the creation of the “Doomsday Book”, which is considered the origin of the concept of the “cadastre”. Incredibly, that work was completed in only one year. It was not until the end of the 16-th century, however, that technologies for land surveying and mapping were developed.

In Western Europe, all the cadastres are based, on the French system (l’ancient cadastre), defined by Napoleon at the beginning of the 19-th century. The cadastres contain two principal elements. One is the written description. The other is a map which shows the location and the boundaries of all units of land. Each unit has an individual cadastral number in order to join the two sources of information. Originally, the cadastres were used for tax collection

The historic evolution of the land structures in Albania has passed through the Turk land organization (timar and çiftlik). After the independence proclamation, the land structures has not changed very much in spite the several efforts done by the governments in charge during the period 1912 -1945. Before and during the Second World War 27% (or 106300 ha) of the arable land was latifundial property, and the main land owners were the farmers. We should underline that in this big group, we can find many cases and sub groups, the forest and pasture land were generally property of the community. The main turnover in the land structures of the country has happened after the second war with the power of the Communist Party. The agrarian reform has been begun on 1945 with the approbation of the law “About the agrarian reform”. During the application of the reform was distributed a surface of 147.340 ha, to the poor families and beneficent 145.000 families. The main arable land was organized in little farms with a surface in average of 2.2 ha. The land surface of the ex owners in the first version of the law were limited on 40 ha and in the second version in 5 ha. The impact of the reform were not very long lasting because in 1946 the communist Party, begun the socialization of the agriculture that meant also the forced socialization of the land.

After an intensive and very hard policy of collectivization, the private land was reduced only in house yards, in 1967. The main land organizations during the period 1970-1990 were the state farmers and the socialist cooperatives. These organizations presented respectively 24.1% and 71.6% of the arable land. It is important to underline the role and the organization of the socialist cooperatives. Legally these organizations were group property but in their activity the group didn’t had the possibility to decide

the economic policy and to establish the agricultural plants and the market where to place the production.

Since the late 1980's, a massive transformation of land management is occurring in Eastern Europe including Albania, and Eurasia. Prior to 1989, State institutions were responsible for the management of land, that is, State agencies made the decisions about how to use the land and about who would profit from that use.

In Western market economies, special institutions to deal with the identification of "true owners" have existed for hundreds of years, but in the completely "socialized" countries as was nearly the case in Albania after 1975, there was no use of such entities, since land and buildings were not privately owned. Land administration agencies registered the use of properties such as land and buildings for the state users (different ministries and institutions), or private occupiers, such as apartments and houses.

But even during the "socializing" period of property ownership following World War II, land administration institutions from the previous political economic model continued to operate, such as the "Hipoteka" offices in most cities which recorded deeds of sale when sales were allowed, as well as deeds of mortgage and inheritance arrangements when these transactions occurred. In the 1920's, Albanians had adopted the French institution of "Hipoteka" offices, which recorded deeds of mortgage and sale and inheritance documents pertaining to land, houses, and businesses, but only for the main urban areas of the country. Similarly, the Cadastral Offices recorded the results of the 1948 land reforms which distributed much of the agricultural lands previously held by the large landowners to the peasantry. Following the adoption of the 1975 Constitution in Albania, which recognized only State and collective ownership of land and buildings, the Hipoteka offices gradually closed. The cadastral offices had already shifted from the recording of rights to land, to recording of the uses of agricultural land in support of the collective agricultural enterprises established after 1950.

With the end of private property in 1975, there was no reason to keep the Hipoteka offices open, and the last one, in Tirana, was closed in 1980.

Land distribution done during 1991, faced the Albanian agriculture with different problems of farm organization as well as land structures. The main problems of land structures can be summarized on these points:

- The extreme land fragmentation
- The security, "insecurity about the property"
- The land policies and the confrontation of the agriculture versus the other economic activities (tourism and urbanization)

Originally the Eastern Europe countries had traditional cadastres, but these have been used recently for environmental purposes or for agricultural land management. Currently there is a movement to "re-invent" the cadastres, with projects such as the one in Albania. Albanians decided to make the transition to a market oriented political economy, based on the private ownership of land and buildings. Private ownership rights include the right of the owners to sell their properties to other private persons through contractual agreements between buyers and sellers. Markets in land linked to markets in capital and labor are central to market economies. Land markets in the market oriented economies are important mechanisms for deciding who has access to land and how the land is used, instead of the planned political economy's State institutions which has exercised these functions for previous decades.

As the management of land becomes privatized, the institutions of land administration (understood as the processes of recording and disseminating information about the ownership, use and value of land) must also change from serving the needs of State agencies, to serving the needs of private managers of land.

Privatization of land and buildings does not happen overnight. Land of different types have different requirements for shifting into private ownership, according to the policies of the transition. In Albania, the privatization of immovable property was carried out through a variety of programs, including: (1) the distribution of the ex-cooperative agricultural land to rural households, mostly in 1991 and 1992; (2) the distribution of ex-state farm land also to households, approved in November, 1992; (3) the sale of business sites mostly in 1991-92 to individual owners; (4) the sale of housing units in state constructed apartment buildings to adult residents begun in 1993; (5) the restitution of mostly urban properties to their owners prior to state acquisition, or to their heirs, also begun in 1993; (6) the privatization of enterprises; (7) transfer of artist studios to their artist occupants in ownership. De facto privatization of agricultural land began in 1990, as rural people began taking land previously managed by cooperatives.

The Immovable Property Registration (IPRO) in Albania was designed as a unified, comprehensive and parcel based title registration system because of its applicability to a defined parcel of immovable property and the flexibility it has in being able to be utilized for a multitude of immovable property and mapping related purposes. The procedures for immovable property registration attempted to establish the technical and organizational basis for the future development of computer based information systems which unify geographic (map) and attribute (kartela) information, and linking these components of a registration information system which opens the door for the creation of a Geographical Information System that could be of significance for the future development of Albania.

Central concepts used in the construction of the IPRO in Albania are the following:

Kartela: A page of information prepared for each immovable property, including information about its: a) geographical location; b) general description, such as area, type of property, whether within urban boundaries or not, and whether a part of a building; c) who holds different ownership rights over the property; d) who rents, leases, uses, has a servitude, or holds a restrictive agreement over the property; and e) what mortgages, court decisions, or other restrictions on changing ownership exist. A paper kartela is filled out for each property, and a digital copy made of the information recorded on the paper kartela.

Registry Index Map: A comprehensive map of all parcels of land with kartelas. Scales of maps include 1:2500 for most agricultural parcels and 1:1000 for most urban parcels. A digital copy of the Index Map is produced, following the completion of the field surveys.

Registration Zone: A geographically defined area, usually a District, which is the administrative responsibility of an Immovable Property Registration Local Office (also known as a local Registry). A zone may be smaller than a District such as in the case of a large city (originally Tirana had two local Registration Local Offices), or may include two or more Districts if the Chief Registrar determines that there are not enough properties or transactions in a District to justify a Registration Local Office in each District.

Cadastral Zone: A geographically defined area, usually a village in rural areas, or a neighborhood in cities, which is small enough to be able to locate parcels relatively

easily, usually containing no more than 1500 immovable properties. There are no more than 200 Cadastral Zones in any Registration Zone, and usually fewer.

Immovable Property Number: Each immovable property in Albania has a unique number, composed of the Cadastral Zone number and within that zone, a unique number. For agricultural parcels this unique number within a zone is usually composed of the old field number followed by a “slash” and a subdivision number. For example, the number 1289 11/32 refers to subdivision 32 of old field 11 in Cadastral Zone 1289. For apartments, the number is composed of the Cadastral Zone number and within that zone a unique number, which is usually the old building number, stairway number and apartment number.

The Albanian IPRO manages a combination of paper based information and digital information. The IPRO in Albania is composed of Registration Local Offices in each District which record and display information about the rights that people and/or agencies hold in immovable properties. The IPRO (and the laws that protect such rights) should provide significant psychological security to the holders of property rights, and is, thereby, a central institution for assuring societal stability.

The IPRO also enables people and agencies to engage in transactions involving such properties without physically exchanging them (a necessity for “immovable” properties!). That characteristic of the IPRO distinguishes it from market institutions which structure transactions in reference to commodities and to labor, and even fundamentally the institutions, which structure the market transactions involving capital (money).

Digital copies of the Kartelas and Index Maps are supposed to be produced for archival purposes and for supporting the operations of the Registration Local Offices (for example, owner name indices, the production of updated Index Maps). In those Registration Zones with proper conditions, more of the registration operations can be gradually computerized.

Any action which changes the information contained on a kartela or on the index map by law must be registered, that is, the parties responsible for the change must apply to have the change introduced into the kartelas and/or index maps which comprise two of the most important elements of the IPRO information system. This means that if the change has to do with information on the Kartela, the change must be made in the physical kartela and should also be made in the digital database copy of that Kartela. If a change involves a boundary change (subdivision of an existing parcel or merging of two existing parcels, or correction of an error on the index map), it must be recorded on the physical index map and should also be incorporated into the digital copy of that index map.

3. CADASTRAL SURVEYING AND CADASTRAL MAPS IN ALBANIA

The production of cadastral maps was done for about 40 years by using the classical methods (tachymetry) at a scale of 1:2500 and 1:5000. About 1,070,000 hectares, or about one-third of the entire area of the country, were surveyed with this method, including 629,000 hectares of cultivated agricultural land, or 90 percent of all agricultural land. These surveys were mainly in the lowland areas of the country. The maps were used not only for cadastral purposes but also for different considerations such as land irrigation systems, land management, and so forth. Two co-ordinate systems for cadastral maps production are applied:

- one system based on the Bessel ellipsoid is used to produce maps at a scale of 1:2500;

- and the other system based on the Krasowski ellipsoid is used to generate maps at a scale of 1:5000. The Gauss-Kruger projection is used for both systems; for the first system the central meridian is 20°, and for the second it is 21°.

The maps at the scale of 1:2500 in the Bessel co-ordinate system are based on a map sheet layout system unique to Albania. All the Albanian territory is covered with map sheets starting from each side of the 20° central meridian and all the sheets are referenced by their orthogonal grid values. Map sheets produced in the Krasowski system are referenced by geographic coordinates. All surveying at the scale of 1:2500 and 1:5000, which is used for producing cadastre maps, is done using the tachymetry method with different kinds of instruments.

Most of the maps for urban areas were done using the Krasowski system. These maps cover 42 cities surveyed at a scale of 1:500 with a total area of about 14,400 hectares.

Maps produced at Military Topographic Institute (today-Military Geographic Institute) are, in general, at a small scale and are not suitable for the production of cadastre base maps. However, some of these maps, at a scale of 1:10,000 and 1:25,000, will serve for the registration of forests, pastures, and other large parcels of land.

In Albania there are considerable and useful mapping data which vary in quality and availability. This information is used to speed up the map-producing process in places where project work is under way. The data come from three main resources:

- cadastre maps of agricultural land produced by the Land Research Institute at a scale of 1:5000;
- maps of urban areas produced by the Geology and Geodetic Enterprise, Ministry of Construction, at the scale of 1:500 or 1:1000; and
- small-scale maps produced by the Military Topographic Institute.

Unlike many other less developed countries, Albania has a dense network of geodetic control points (approximately 4 Km density) which in many instances are clearly demarcated by means of tall tripod signals. Provisional tests using GPS (MSI 1992) confirm that this network has been surveyed to a high degree of accuracy.

In previous years all surveying work was done through the government and there is no private sector surveying industry. The substantial set of maps that currently exist in Albania, especially at larger scales (1:500 - 1:10,000), provides a valuable base of land information on which to build an effective cadastre. The cadastral surveying approach that is currently being followed is to enlarge the 1:5,000 base maps to a scale of 1:2,500. The individual land parcels are then mapped relative to topographic map features with the aid of taped field distances. Very few monuments are used to define parcel boundaries and for the most part small water furrows or crop lines are used to differentiate adjacent parcels.

Most of cadastre maps that are currently used in Albania are based on the Krasowski ellipsoid and Gauss-Kruger projection. The UN Ad Hoc Group of Experts on Cadastral Surveying and Land Information Systems reached the following conclusion: Cadastral maps and other land information systems should always be based on a network of homogeneous control points, preferably connected to the national geodetic control. Although the primary concern is that the position of each parcel must be correct relative to its immediate surroundings, longer-term considerations indicate that it also should be correct in its absolute position in space in respect of the national co-ordinate system.

The national triangulation network covers the entire nation's territory and is composed of three orders. The standard error between the positions of the two closest points is less than 0.125 meter, which satisfies normal accuracy specifications for maps at a scale of 1:2000.

The national triangulation network is densified in order to provide the survey control for maps at a scale of 1:2500 and 1:5000. The frequency of point densification corresponds with mapping scale; the distance between points varies from 0.7 kilometer to 1.7 kilometers. The proportional accuracy of fixation of adjacent control points is better than one part in 700, which means they provide adequate control for vertical-staff tachymetry.

The privatization process has resulted in extensive land fragmentation that is difficult to depict on the existing 1:5000 scale cadastral maps. Therefore, it was decided that all the cadastre maps for intensive agriculture areas, which will be managed by the registration offices, will be at a scale of 1:2500. Cadastral maps for both city-urban and village-urban areas will be at a scale of 1:500 and 1:1000. The transformation of cadastral maps at a scale of 1:5000 to 1:2500 will be done by photographic enlargement of 1:5000 sheets dividing them into four parts. The new cadastral maps consist of a combination of the original topographic maps and the updated, traced copies prepared by the district cadastre offices.

The maps for urban areas of villages are integrated with the base index maps of properties depending on the density of buildings and other features. Maps with a scale larger than 1:2500 are used in those cases where greater clarity is needed to show the boundaries and positions of parcels.

In urban areas, index maps are at a scale of 1:500 using existing maps. These maps have not been up-dated so they often do not show the current situation. Since they were produced 20–25 years ago, field up-dating together with identification of owners is required.

Most of the western lowlands, about 4000 kilometers² are photographed using aerial photography at a scale of 1:10,000. Aerial photography are used for the production of new photo maps at a scale of 1:2500 for rural areas. Urban areas included in the area are photographed at a scale of 1:2500 so that 1:1000 maps can be prepared.

Aerial photography is also taken in those areas where maps are very old and were done under the Bessel system. This includes one of the most intensively cultivated agricultural areas and one of the main areas for tourism and infrastructure development. Since new technology permits the production of photo maps at a scale of 1:2500 from photographs taken at a scale of 1:20,000, photographs that were produced by the Military Topographic Institute during 1980–1990 is used for map production in those mountain areas where changes have been minimal and where little fieldwork is needed. A combination of photogrammetric surveying and field surveying is used

Aerial photography does not show all property elements, only those that are visible from the air on the photograph; this does depend on the scale of the photography. In those cases where physical boundaries are not visible and where the land is all cultivated with the same crops, fieldwork will be needed in order to complete the survey.

4. MULTIPURPOSE LAND INFORMATION SYSTEM - THE ADEQUATE TOOL TO SUPPORT REFORM PROCESS IN ALBANIA.

4.1. The 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. In the mid-1970, cadastral systems began to assume a more diverse role. 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 multipurpose cadastre is defined 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, 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. The significant advantage of the existing cadastral system in Albania 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 Immovable Property Registration (IPRO). 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.

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.

4.2. Multipurpose Land Information System

The goal of the Land Market Action Plan is to create dynamic land markets that are socially and environmentally sustainable. Land markets based on the private ownership of tradable rights to land and buildings function more fluidly within an Immovable Property Registration System (IPRS). The IPRS provides security to potential buyers that the sellers are indeed the true owners with rights to sell the immovable property. The IPRS also enables the linkage of capital and immovable property markets by providing opportunities and guarantees for the mortgaging of immovable property, thereby facilitating property owners' access to long-term investment capital.

The first model of Multipurpose Land Information System 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 Albanian conditions for the two following reasons. Firstly, the Albanian 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 Albania, the two approaches in North America, the statements of the new visions cadastre 2014, and the current, nature, and needs of the Albanian cadastre, the following components are proposed to serve as the basis of a new vision to develop and implement a multipurpose cadastre and Multipurpose Land Information System:

- 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 land 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 land information system 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 land information system 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 Albanian government as well as the private sector has an important role in the implementation of a multipurpose land information system. According to the five components of the multipurpose land information system and to the five requirements discussed above, the future organization of the Immovable Property Registration (IPRO) 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. This system requires important efforts and commitments from the government.

Moreover, the IPRS provides security to owners of immovable property that they or their heirs will benefit tomorrow from investments made today, thereby providing those people with entrepreneurial motivation and incentive to acquire properties or to use more intensively those they already possess. This security in a psychological sense will emerge only after people acquire confidence in the new institutions and learn what the practical limits of their new rights to land are. However, the very act of creating the IPRS in the ways devised in Albania is a stabilizing influence, as will be shown below.

Land markets built on a solid base of accurate and legally protected registration of rights to properties should function efficiently to encourage market dynamism as well as productive investments. Yet, in reality, other phenomena can condition and re-direct the expected effects, giving rise to problems:

- under conditions of unequal accessibility of capital, those with such access will be able to acquire properties while the disadvantaged sectors of the population will be excluded from access through the markets, leading to wider gaps between the rich and the poor;

- under conditions of cultural and political inequalities of access to immovable property, discriminated groups (ethnic groups as well as women in some countries) will not be able to experience the benefits of immovable property markets;
- under conditions of economic or political risk, when formal security may be inadequate to produce subjective feelings of confidence, even formally secure owners may decide to extract the maximum economic benefits in the shortest amount of time, leading to environmental degradation and loss of a sustainable economic base; and
- with political or historical factors that eliminate valuable and valued immovable properties from the market (such as restrictions on the buying and selling of certain types of property, declarations of protected areas for parks or environmental preserves, or pending but unresolved claims of ex-owners to urban land), people who strongly desire land for housing or business may be driven to illegally acquire land outside of areas designated for these purposes, thus leading to the loss of productive agricultural land and increased costs of infrastructural services as well as environmental and public health degradation.

Multipurpose Land Information Systems (MLIS), including the cadastral component, are intended to coordinate and integrate all routinely maintained records concerning the land such that they can be identified and accessed with respect to the unique portion of the earth to which they refer. Such systems are beginning to appear in Albania and indications are that the rate of their adoption is increasing. This is a function of (1) the increasing responsibilities placed upon local government for land management, and (2) the application of new technologies to meet these responsibilities. The creation of a functional MLIS, although promising effective benefit/cost ratios in the long term, represents a potentially significant investment. Because these systems are often public, methods of evaluation need to be developed.

A land cadastre of Multipurpose Land Information System/Geographic Information System (MPLIS/GIS) is the adequate tool to support reform process of property registry system in Albania.

For a variety of purposes, policy makers need to have reliable data such as:

1. Topography,
2. Land tenure,
3. Location of boundaries,
4. Location of roads,
5. Right to public access and public roads,
6. Availability and location of electric cables,
7. Availability and location of telephone wires,
8. Water, gas and sewage pipes,
9. Size of lots,
10. Zoning,
11. Address information,
12. Location of police services,
13. Access to educational and health services,
14. Location of natural water and rivers,
15. Soil quality,
16. Current lot owner.

Unfortunately, a central source of information related to all of the above mentioned data generally does not exist. Managers require time to collect all necessary data, for

example, to create a strategy for a new (urban) housing development or to renovate a pre-existing one. Policy makers need the basic information to:

1. Identify limitations and opportunities,
2. Monitor a project's progress,
3. Evaluate progress and failure,
4. Correct problems as soon as possible,
5. Provide transparency of transactions,
6. Increase level of public participation in the community and the private sector,
7. Create public – private associations (network, guilds) to stimulate access to land,
8. Prevent public and private land invasions.

In Albania there are some GIS data, especially about Country Border, Communes, Castles, Churches, Mosques, Temples, Rivers, Roads, Sites, Villages, Water-major, etc., but is need to integrate this data to create the Multipurpose Land Information System.

5. CONCLUSIONS

The need for more, better, and integrated land information and the availability of technology to meet this need, have set the stage for the development of Multipurpose Land Information Systems (MPLIS). The cadastral maps that are produced in Albania would be part of the graphic material of an MPLIS and the property register information (such as registry books, tapi, etc) would be included as part of the attribute record in text form. The production of cadastral maps was done for about 40 years by using the classical methods (tachymetry) at a scale of 1:2500 and 1:5000. The maps were used not only for cadastral purposes but also for different considerations such as land irrigation systems, land management, and so forth.

In Albania there are considerable and useful mapping data which vary in quality and availability. In other hand, most of the western lowlands, about 4000 kilometers² are photographed using aerial photography at a scale of 1:10,000. Aerial photography are used for the production of new photo maps at a scale of 1:2500 for rural areas. Urban areas included in the area are photographed at a scale of 1:2500 so that 1:1000 maps can be prepared. In Albania there are GIS data about Country Border, Communes, Castles, Churches, Mosques, Temples, Rivers, Roads, Sites, Villages, Water-major, etc.

Multipurpose Land Information Systems (MLIS), including the cadastral component, are intended to coordinate and integrate all routinely maintained records concerning the land such that they can be identified and accessed with respect to the unique portion of the earth to which they refer. Such systems are beginning to appear in Albania and indications are that the rate of their adoption is increasing. A land cadastre of Multipurpose Land Information System/Geographic Information System (MPLIS/GIS) is the adequate tool to support reform process of property registry system in Albania.

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7. BIOGRAPHICAL NOTES OF THE AUTHORS



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