



## The Cadastre in Spain

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The Cadastre, or to put it more correctly, the cadastral model that each country adopts, is no more than the result of having chosen a specific option from amongst various possibilities. It is evident, especially if we are in a democratic state, that choosing one cadastral model over another means coming to a policy decision, which must suit the circumstances and the objectives in that society. During this presentation, we will provide a comprehensive summary of what the Cadastre is like in Spain today. But first of all, allow me to refer briefly to the history behind the institution here, which will help us to understand more clearly why we are where we are.

In Spain, as elsewhere in Europe, the Cadastre has predecessors that date back to the Roman Empire or even earlier. But it was not until the 18th century when the absolute monarchs were recognized to have, amongst their many other powers, that of investigating the properties of their subjects and levying taxes on them to sustain the crown's expenses.

It was in such a context that the *Catastros de Patiño* were carried out in Catalonia in 1715, and the *Catastro de Ensenada* in the rest of the country from 1749 on. Experts have defined the work inspired by the Marquis of Ensenada as «a colossal enterprise». It was the first serious attempt to establish a system to fairly distribute the tax burden according to people's real wealth.

During the 19th century, the Cadastre became the key to fiscal equality. A long fight was initiated to create it. It was an important element on the liberal and democratic agendas and formed part of all general projects to modernize the country. However, the more conservative forces, linked to the particular interests of the land-owning elite, always resisted such plans.

If the government wanted to have a cadastre to share out taxes equitably and put a stop to the fiscal fraud of landlords whilst freeing the peasantry from excessive taxation, they had make a substantial invest-

ment into the operation. They needed a network of Administration agents to reach the furthest corners of the territory to measure parcels, inspect title deeds, establish quality, prices, etc.

In 1845, the minister Alejandro Mon brought in a tax reform, importing the French taxation model to Spain. This led in 1846 to the design of the *Estadística de la Riqueza*, the wealth statistics, a first step towards a full-blown cadastre. However, the more conservative groups in the Moderate Party took it upon themselves to stop things going any further. Instead, they came up with the idea of the *Amillaramientos*, a system used to distribute tax quotas until well into the 20th century. The *amillaramiento* (literally «into thousands-ing») consisted of a declaration made by the owners of any estate, in which they gave not only its surface area, but also its value and a description of its use. The high incidence of fraudulent declarations led to a somewhat unjust situation and massive loss of cadastral information.

The system of sharing out the tax burden by quotas was unfair and unequal and fiscal fraud was systematic. Its permanent introduction to Spain generated an attitude of 'turning a blind eye' to fraud, which consisted purely and simply in hiding properties from the treasury. As better maps were drawn up of the land, this became increasingly difficult. But the landlords were powerful enough to continue defrauding the tax collectors regarding the value of their lands and the sharing out of the quotas.

The «*Catastro Parcelario de España*» (Parcel Cadastre of Spain) was the outcome of consensus between the conservatives and liberals. Finally, in 1906, a new Cadastre Law was passed, which was the immediate predecessor of the current legislation. It stipulated that the cadastre should be drawn up in two stages. The first was the «*Avance Catastral*» (Cadastral Advance), which included topographical measurement of uniform farmed areas and settlements, with rough sketches of the parcels. The second was the complete topographic cadastre of the parcels, «el *Catastro Topográfico Parcelario*».

With the invention of aerial photography, the «*Avance Catastral*» was finished at the end of the Fifties. Since the aerial photographs provided objective mapping which would brook no argument, fraud shifted to deceit in the classification and quality of the land. The realization that fraud continued to flourish led to further reforms which still failed to overcome the low quality of the Spanish Cadastre.

A final attempt to create a reliable data base took place over the period from 1965 to 1974. It was called the «*Implantación del Régimen Catastral*» (implantation of the Cadastral Regime) and its main defect was that it lacked any computerization potential. Very limited mechanization was introduced into the process of issuing documents for collecting taxes related to the Cadastre. Consequently, in a few years, the information deteriorated and it became necessary to draw up a new Cadastre. This was the situation facing the Government in 1982.

As you can see from what I have explained so far, when the current Cadastre came to be designed in

1982, one objective stood out over all the others: that this should be the last time that the State would have to make such a hefty investment in creating a cadastre. From then on, all efforts would be devoted simply to its maintenance and conservation. This meant that sufficient computerized instruments would be needed and access would have to be guaranteed for all information into the cadastral data base.

With this philosophy, the work done from 1982 to date can be divided into two clearly differentiated periods. The first was a time of creation, the second of consolidation:

The data base was created between 1982 and 1990, with mass input of new information and the establishment of a cadastral information system. To give you an idea of the size of the job: six million new real estate assets were incorporated and the updating of cadastral values brought the average value up from 1.4 to 2.7 million pesetas.

The period of consolidation began in 1990 and we are still in it. The cadastral base having been created, it is now a matter of constantly updating it. Thus, our activity is aimed at two objectives: to capture data to keep the information up-to-date, and to update cadastral values to keep them in line with market values. The national average cadastral values are currently at approximately 25% of urban property values, whilst rural property values are at about 20%.

During this stage, roughly ten million properties have had their values updated, so that they are at 50% of their real saleable value. This estimate is obtained by first carrying out market studies and then coordinating all the values at local, regional and national level. Each real estate asset in our country has its own, specific, individualized value, determined according to appraisal parameters that are uniform throughout all the different areas nationwide.

Following the analysis of historical developments and the current situation, we can now give a definition of the Cadastre, using the terms that appear in the Law regulating it:

«The Rustic and Urban Real Estate Cadastres are made up of a set of data and descriptions of rustic and urban real estate, expressing their surface areas, location, boundaries, crops and usage, qualities, values and other physical, economic and legal circumstances that give knowledge of land ownership and define its different aspects and applications.» This definition is completed in this same Law, after stipulating that the State is responsible for exercising these powers with the cooperation of the other administrations, when it states that these cadastres must be configured as a data base that can be used by the State, Regional and Local Administrations.»

From this legal definition, we can now start to analyze the main characteristics in the configuration of the Spanish Cadastre, paying special attention to the means, objectives and results that we are getting from it.

### The National Government holds the power

The first characteristic of the Spanish cadastral model is that it has been set up as a power and activity directly in the hands of the Government of the Nation. Obviously, there are other possibilities. Indeed, in this



room are representatives of countries where the cadastres are managed at regional or local level, with different results.

In Spain, the prevailing Constitution guarantees the regions' and the municipalities' rights to autonomy, although the municipalities' rights are somewhat more limited. There are, therefore, three clearly differentiated levels of administration: State, regional and local, each with its own organs of government and its own powers or competencies, many of which directly affect the land.

Defending the argument that cadastral management should be one of the State powers does not require any logical acrobats. It seems natural that drawing up and maintaining a cadastre, which is the basis of the information at the source of various fiscal, economic and legal actions, involving the interests of many different public administration organs, should be a nationwide State-run scheme.

Some kind of higher or supraterritorial interest should prevail. Its consolidation as a State function is not only justified by the State powers in the area of economy and finance in general, but also by the need to guarantee the equality of impact on all citizens throughout national territory and on a wide range of sectors, which requires a high level of uniformity. We believe that there are also obviously reasons of economy and efficiency which scarcely need to be mentioned.

This was the reasoning behind the design of the cadastral model, which was to cover 7,572 municipalities, in which there were 22 million urban real estate assets and 43 rustic real estate assets within an area of 50 million hectares.

It was decided that the design and monitoring of the process should be highly centralized, whilst the management and maintenance of the cadastral data base should be strongly decentralized. The Ministry of Economy and Finance, working through the Directorate General of the Cadastral Management and Tax Cooperation Center (Centro de Gestión Catastral y Cooperación Tributaria) set up a network of 16 regional offices, which in turn coordinate the work of 65 Territorial Administrations with a provincial and/or local scope. All these Administrations were structured and fitted out as centers for producing and conserving the cadastre of their own territory. They were to work according to identical parameters, using the same tools and being obliged to obtain the same quality levels. This is the way to guarantee the equality and standardization that we referred to above.

This organization is made up of people, who are really its main asset. At present, the Cadastre has a staff of 3,200 employees, of whom 200 are working in the central office in Madrid, on management and control, whilst the rest are in the provincial or local offices, working on production. This means that only 6.2% of the total staff are involved in administrative management.

The professional qualifications of the staff is another outstanding characteristic within the model. 1,500 employees (47%) come from a technical background. These include 351 architects, 294 agricultural engineers, 156 computer experts, 236 cartographers and 498 specialists from other fields. The rest of the personnel

(53%) are trained as ancillary and backup staff. These data show the multidisciplinary nature of any cadastre, going far beyond the old concepts that considered it work for topographers and geographers.

All the personnel receives intensive training at their different levels, according to their job profile. Ongoing learning and permanent training is not only a way of enhancing their technical know-how but also to stimulate people to do their best with a view to promotion within the organisation.

#### Taxation

Spain, as a Mediterranean country, has a Cadastre based on the Napoleonic or Roman legal concepts that see it as a basis for tax activities. It was the need to have an instrument to guarantee the principles of justice and equality in sharing out the tax burden that first led to first a mere list of landowners and later a detailed description of the properties owned. It is this background that means that the Cadastre does not even attempt to substitute the Land Registry, but rather acts in a complementary role to it, mutually exchanging help and information.

The way that the Cadastre fits into the taxation scheme in a country is valuable in one aspect in particular: since it serves to fix economic obligations that fall upon citizens, the citizens have the right to demand from it a high degree of quality and veracity, so that no erroneous or incomplete data should force them to take on greater obligations than they legally are due for. At the end of the day, the citizens' demand leads to greater quality in the cadastral data base.

Moreover, within the territorial model just described, the three different levels of administration (state, regional and local) each manage and collect their own taxes. The Spanish Cadastre has direct and indirect links to six taxes. At local government level, it is linked directly to the «Impuesto sobre Bienes Inmuebles» (property tax) and the «Impuesto sobre el Incremento del Valor de los Terrenos de Naturaleza Urbana» (urban property capital gains tax). At regional level, the «Impuesto sobre Transmisiones Patrimoniales» (capital transfer tax) and «Impuesto sobre Sucesiones y Donaciones» (inheritance and gift tax) use the cadastral value to establish the tax base. And finally, at state-wide level, the cadastral value serves to fix certain obligations on citizens under their «Impuesto sobre la Renta de Personas Físicas» (income tax) and the «Impuesto sobre el Patrimonio» (wealth tax).

#### Working with other Public Administrations. Notaries and land Registrars

The third main characteristic defining our model is that it is not exclusive, but includes different levels of participation for each of the Public Administrations and other agents involved in land ownership information.

The Public Administrations work in the Cadastre management in a different way, with local administrations participating more actively than the regional ones. Basically, it is a voluntary model under which special outsourcing contracts are signed with the local councils and the provincial government bodies, so that they take on functions ranging from simply suppl-

ying information to delegated full exercise of certain competences of the cadastral activity.

There are already 1,145 municipalities working within this model of layered activity, covering seven million urban units, i.e. 30% of the total nationwide.

Following a similar line of cooperation, there are also outsourcing agreements with the regional Notaries professional associations. Under these agreements, the Cadastre is directly informed of all transfers of real estate made before Notary. This serves two purposes: firstly, it relieves the owner of the obligation to declare any change in ownership and secondly, the Cadastre is permanently updated with the new information on property ownership.

This integral design has meant a set of technical, legal and computer tools have had to be set up to give the Public Administrations and other social agents access to the Cadastre and to facilitate their part in running it, providing them with suitable information channels. This means that information is sent immediately in real time and that management is more efficient, since with the cooperation of different administrations and social agents the cadastral data base can be updated as quickly and as exactly as possible.

#### The Cadastre is Computerized and Multifunctional

The fourth characteristic of the Spanish cadastral model is the key role played by information technology in it.

It seems obvious that in the era in which we live, the state of the art in computer hardware and software will condition the way we do things, at work, at home and at leisure. The cadastre could not stand outside this historical context, as it had done until 1982, when we began to develop the model we are describing here. After all, the Cadastre was basically a straightforward data base, and it would be inconceivable for a modern cadastre not to be computerized, somehow or other.

Given this situation, when we speak of the high degree of computerization in the Spanish Cadastre, we are not simply referring to the fact that it is stored on a digital support medium within a computer. We are referring to something much more specific: that all the activities revolving around the Cadastre as a whole, with all their different variables and changes, are impregnated with the working methods and criteria that derive from what we can call «information technology culture».

This is clear in various different aspects:

Firstly, creating and maintaining the Cadastre as a computerized «data base», as we saw above.

Secondly, information technology in our organisation is articulated through two basic tools for managing data:

- A geographical information system, especially designed by our developers to meet the management needs of the Cadastre. This is known as the «Sistema de Información Geográfico Catastral (SIGCA)».

- A system specifically for managing information, which captures, maintains and exploits data. This information manager is known as the «Sistema de Información de Gestión Catastral».

The information management is characterized by linking up different kinds of information. A range of



formats have been established and are fully operational, for exchanging data between Public Administrations, Notaries and Land Registrars. These serve as a vehicle for downloading and uploading enormous volumes of information. However, for the moment we have not yet reached the stage of instant information transmission.

To such end, each of the existing Territorial Administrations is configured as a data processing centre, and has all the necessary hardware and software to handle all the information in its field of action, whether alphanumeric or graphic.

To conclude the analysis of this key characteristic, I would just like to give you one statistic, which I think amply demonstrates the importance of information technology in our organisation. At the moment, we have 2,300 terminals for a total staff of 3,200 employees. This is a ratio of 1.4 people per terminal.

#### Maintaining the Cadastre

As I said above, all the organisation's current efforts are invested in keeping the cadastral data base alive and updated, in order never to have to create it again from scratch.

Along this line of work, all the media and resources to which I have referred are directed towards handling information which is continuously being changed.

The different changes that real estate undergoes are of both a physical and a legal nature, due to change of ownership, surface area or crop use, or perhaps because new constructions have been built or old ones knocked down. All these generate a constant flow of activity for the Cadastre Administration workers. We can get a clear idea of their work loads by analyzing the figures in the chart, showing how many dossiers were handled in 1995 (see chart on pag. 13).

There are 3,000 persons working in the Territorial Administrations, so the number of dossiers handled per employee is 1.350. Apart from these data, during 1995, over 2.355.000 verbal and written queries were presented by citizens requesting information or asking for clarification.

#### Conclusion

To conclude, I would like to give you summarized ideas that show the kind of investment the government has had to make to get the results I have described.

The Cadastre in Spain has been drawn up by services companies, under the overall management of the Ministry of Economy and Finance. The Directorate General established the technical conditions for tender, defining the deadlines for development, establishing the technical specifications, and the criteria for monitoring the work and controlling the final quality of the product.

The services companies, both publicly and privately owned, actually carried out much of the work needed to create and update the Cadastre. They did the aerial photography, restitution, orthophotography, digitalizing the cartography, collecting field data, etc. All in all, the ancillary work of collecting, preparing and screening the information prior to its delivery, when it is subjected to due processes of quality control and validation before it is put into the actual data base. The

Directorate General, actually, has made all the work that entailed altering the cadastral data base, including (and very significantly) the allocation of a value to each of the existing real estate assets.

The needed investment to elaborate the cadastre may seem very high, especially for some of the nations represented here who are designing models to develop their own cadastres. However, the investment needed will depend on other factors that each country will have to consider when defining its own model, such as how long they have to make it and the scope of needs to be covered. Costs will vary accordingly.

There are many arguments that can help to justify this kind of investment. If one links the Cadastre to the establishment of real estate taxes, the yield on investment is not only immediate but also quite outstanding. As an example last year in Spain, 493.831 million pesetas were collected for the «Impuesto sobre Bienes Inmuebles» (property tax). Moreover, the efforts put in to creating the cadastral data base have made it possible to boost the amounts collected from 146.799 million pesetas (1.203 dollars) at the beginning of the process to 493.831 million pesetas (4.048 million dollars) in 1995, i.e. bringing about an increase of 336%.

It is, therefore, evident that investment in the Cadastre immediately generates economic resources for the Public Administrations, which is an objective that should never be forgotten when designing a model. It should also be remembered that, since it is related to taxes imposed on real estate, the level of fraud is very low, since it is materially impossible to hide such assets, especially now aerial photography is so ubiquitous.

I should not fail to point out the social profitability deriving from such operations. An up-to-date Cadastre, accessible to all the Public Administrations and citizens, is the ultimate support to greater legal certainty in real estate transactions. It is a key instrument in facilitating policies for planning and developing infrastructures and diagnosing basic citizens' needs. It is also a decisive tool for urban and territorial planning, whilst it makes it possible to obtain all kinds of by products from the information, such as a census of publicly owned real estate, of certain kinds of crops, etc., instead of having to go for them on a piecemeal basis, as happens in many countries.

To conclude, I would like to make a final comment about what I have been telling you. Evidently, economic profitability is one of the main constraints when adopting any policy decision, and therefore, any projects that want to be put into operation should take such profitability into account. However, economic reasoning, as I see it, should not be the make-or-break factor in the decision. A Cadastre that is an efficient base of land information, whatever model is chosen for its configuration, is one of the characteristics defining a modern State. Its positive effects go beyond the purely economic realm and are manifested in many aspects where they can be seen to be necessary. I would therefore encourage anyone thinking of drawing up or developing the technical specs for cadastral data to take on the project with maximum enthusiasm, since they are without a doubt thereby making an efficient contribution to the development of their country. ■



## Coincidences and differences of Cadastral systems in countries in transition and in Latin America: Running projects

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#### Latin American countries

All Latin American countries have some type of cadastre and a goodly number have cadastral organizations that date back many years, in some cases back to the last century. This does not mean, however, that the cadastral systems have been thoroughly implemented. The great majority of the countries still lack a proper cadastre with national coverage.

The most common situation is that of a rustic or rural cadastre, created primarily for basic knowledge and planning of natural resources. It is usually run directly by the Central Administration. Along with this "national" cadastre, there are also a multitude of municipal cadastres, created by the town councils for fiscal reasons. On numerous occasions, one can find other "cadastres" also belonging to the Central government, dedicated to specific subjects such as mining or forest activities.

There some countries with a significant technical tradition (part of Argentina, Chile) where in the past quality partial cadastres or general inventories have been done, or where a significant effort has been made recently with positive results (Mexico). But the majority have only made one-off efforts or have never given much priority to the subject.

#### Eastern and Central European countries

These countries can be divided into two major groups, according to the land information held at the start of their transition to a market economy regime:

The first group consists of Russia, the Ukraine and Belarus, i.e. those countries more tightly incorporated into the Socialist Soviet regime. The second group consists of the rest of the Central and Eastern European



countries which the regime incorporated after the end of the Second World War (Czech Republic, Hungary, Poland, Croatia, Slovenia, Bulgaria, etc.).

At the start of their changeover to new economic regimes, the first group had full and complete cadastral maps. These were land inventories mainly oriented toward the planning and control of agriculture production. Cartography and information detailing agricultural characteristics of the land (surface as well as sub soil) demonstrate a detailed and exhaustive analysis of the uses and conditions of the land. However, in the last few years the cartographic documentation has become outdated. Generally, various organisations are involved in the production, maintenance and analysis of the cadastral documentation at local, regional, and central levels, with a clear division of responsibilities in everything relating to land and urban areas.

The second group also have cartographic and document information with characteristics similar to the first group. However, over the last few years they have involved a cadastral organisation and land registry that, although incomplete and lacking legal recognition, tend to keep the cadastre up to date. There are several political, cultural, and historical reasons for this. This group initially began with a better level of information to generate a cadastre, as well as a more clearly defined model of the project to implement.

## Objectives

### *Latin American countries*

The existence of a plurality of cadastral systems generates a plurality of objectives, to which are added the differences resulting from the various technical, legal, etc. trajectories of each country. In the case of urban cadastral systems it is clear that the main short-term objective is fiscal. The desire for improved real estate tax management seems to be the reason shared by the great majority of these countries, although not the only one.

In the case of rustic cadastral systems the objective also seems to be fiscal, but it coexists with the necessity for counting on an information base reliable enough for planning and managing natural resources.

In some cases the necessity for the cadastre has become obvious because of large reform projects aimed at agricultural structures (Costa Rica, Honduras, Venezuela) or processes of occupation and privatization of public lands (Mexico). The need for a reliable information base contained in the Land Registries seems obvious not only in those countries already cited, but also in others such as Chile, El Salvador, The Dominican Republic, some Argentine provinces, etc.

The majority of countries are planning cadastral reform. All are embarked, to a greater or lesser extent, on broadening the scope of their present cadastral systems, and all aspire to a multi purpose cadastre.

### *Eastern and Central European countries*

Mirroring the two types of situations described above, which are at the root of the different objectives, here too, there are also two main sets of macro-objectives, arising from the transition to private property systems and market economies.

The first group of countries (Russia, The Ukraine, and to a lesser degree Belarus) are clearly oriented to-

ward privatisation and distribution of the land, while the second group give priority to the restitution of property (along with the alternative, compensation), along with the privatisation of collective farms and distribution of the land. In both cases the creation of a modern cadastre is tied to the legal system of land registry, and which should be high priority in all cases given the need to register privatisation, distribution, and restitution operations.

In general terms, a multi-purpose cadastre is seen as a good idea, supported by new information technologies (computerisation, digital cartography). It requires strong investment, a long time for its execution, and to train specialists in the various disciplines related to cadastral systems and land registries.

As for the fiscal aspect, while not relegating its importance, few steps have been taken to date.

## Legislation

### *Latin American countries*

The majority of countries have specific cadastral legislation, some dating back to as early as 1817 or the beginning of the century. In certain cases there are no major guidelines other than the generic provision for the existence of a cadastre under local regime regulations.

Some countries have recently introduced modifications, and many are revisiting their cadastral legislation in order to shape it to the new requirements for implementing a multi-purpose cadastre.

Experience seems to indicate that existing regulations in many cases have been inadequate and are poorly applied, judging from results obtained to date. It can generally be said that those countries which lack cadastral legislation find themselves lagging behind in implementing their cadastral systems.

### *Eastern and Central European countries*

It seems self-evident that the initial formulation of political changes should be the promulgation of laws that boost market development by establishing rules and conditions. The Administration will be reorganized in order to favor such objectives.

Also, with few exceptions, the creation of a legal framework has been and continues to be a complex process, confusing, and in many cases more arbitrary than positive, given the difficulties of all types that surface during a period of transition.

## Administrative organisation

### *Latin American Countries*

Generally speaking the state holds legislative responsibility, although in the case of a federal system such as in Mexico, the legislation is in the hands of the federal entities. Except for federal states the central government normally assumes some functions of creating cadastral systems, with the clear exception of countries like Peru where it is almost exclusively in municipal hands.

The distinction between rustic and urban cadastral systems usually carries a parallel split in responsibilities. Generally, the rustic cadastre is central government's responsibility and the urban the municipal administration's. Municipal competence does not entirely preclude central administration involvement, as there are many occasions when the national government esta-

blishes common regulations, or technical and economic co-operation programs for implementation in municipal cadastral systems.

In a goodly number of cases the cadastre falls under the Ministry or Department charged with public finances, although if a rural cadastre exists it is assigned to the Ministry of Agriculture. In some cases the cadastre is integrated into the Ministry of Public Works, Urban Development or its equivalent (Bolivia, Mexico), and one is found in the Ministry of Justice (Costa Rica).

### *Eastern and Central European countries*

This area is the most problematic of the reform measures and illustrates the generally poorly defined situation, with few exceptions, in the structural formation.

There is a clear distinction in the concept and development of urban cadastral systems versus rural cadastral systems. Rural cadastral systems are favored, possibly due to the historic sense of land amongst country people, as well as the greater complexity of the privatisation and distribution of unparceled rural property.

The long-awaited integration of the Registry and the Cadastre, in some countries already defined and operative, is hampered by a lack of clear legislation. Among other factors, this is due to political struggles for influence between governmental ministries.

The conception of a unitary, uniform cadastre is difficult to make reality, again due to turf battles between large cities and the ministries responsible for these functions. The scarcity of financial resources in the central organisations also compels them to delegate these functions to the lower-level administrations (regional and local).

There is no uniform model in any of the countries analyzed of governmental responsibility for the subject. In general, urban cadastre responsibilities fall on ministries different from those that exercise responsibility for the rustic cadastre.

In some countries, legal registry responsibility resides with the same department that has the Rustic Cadastre assigned; in others, it resides in different departments, but with a mandate to coordinate, they are many times located in the same offices. One could compile a long list of ministries in the various countries that have cadastral or registry authority, either alone or in coordination with others. Additionally, in some of them, «ex-novo» organisations with ministry rank have been created, many times with independent structures that in some places act as coordinating staff of the various responsible departments.

The general impression is that the process of administrative structuralisation of the cadastre and the registry has not finished in the majority of the countries investigated.

## Execution

### *Latin American Countries*

Although considerable differences exist in the degree of execution of the cadastre in all Latin-American countries, in general the degree of introduction is low, with many countries where there is an acceptable level of medium-scale information about rural land and scarce information about urban areas outside the main population centres.



In some cases, for example Chile, there is good cadastral information coverage, but its scope is limited and it lacks a cartographic base. The most generalized model is one of limited coverage insofar as rural cadastres coexisting with some municipal cadastres implanted generally in the more important municipalities. And even in these cases there is frequently a disconnection between the cadastre and reality, given the intensity and speed of urban growth.

#### *Eastern and Central European countries*

The differences between countries in the degree of implementation of the respective models are notable. Generally, the greatest degree of execution is in the Central-European group, their size (physical and population) being a factor that has favoured this situation.

In the East (Russia, The Ukraine, Belarus, etc.) several pilot projects have been executed, as an initial step towards the definition of a model adapted to each particular country.

In any case, the large financial resources required for creating a cadastre and carrying out the topographic surveying, or bringing an old cadastre up to date and modernizing it, make the implementation of a cadastral system more difficult still.

#### **Financing**

##### *Latin American countries*

One of the recurring themes nowadays is the enormous amount of resources necessary compared to what these countries can afford. It is thus quite normal to find international financing in the majority of the efforts to implement and modernise cadastres in these countries.

Generally, cadastre financing is never planned to be self-sufficient. Rather, it is taken for granted that it should be financed by public funds. Not even in those cases in which cadastral information generates significant financial benefits does planning call for its own financing, although this subject has recently been discussed in some countries.

##### *Eastern and Central European countries*

A similar situation exists in these countries with regard to financial resources. There are hopes that international institutions will foot the bill, and the European Union and the World Bank are already helping to fund pilot or partial projects.

Some ideas are being put forward that a small degree of self-financing could be possible. Although people do not seem yet to take it altogether seriously, such an idea could be applied at least to title registration.

Property taxes could be used to produce sufficient income. This idea is mainly oriented toward rustic property, as in urban zones such taxes are not seen as major sources of income, unlike in the rest of Europe. In part this could be due to the primacy of the Rustic Cadastre, as indicated above.

#### **Summary and conclusions**

##### *Latin-American countries*

- General agreement exists between those responsible for cadastres that a modern, multi-purpose cadastre is needed. In most cases, this conviction has not led to a sufficiently strong commitment to set in

motion the necessary legislative, institutional, and financial drive. Consequently, there are few clearly defined projects for cadastral modernization.

- The urban explosion and the changes in land ownership over the last few decades have generated a demand for real estate title identification that overwhelms existing registry systems.

- At present, the fiscal objective is most important, but there is also majority recognition that the cadastre's role as a source of information for urban planning and natural resource planning, as well as the importance of sufficient co-ordination with real estate public registries does not merit their integration.

- The degree of cadastre execution is generally very low and is found mostly in larger municipalities where the importance of fiscal resources generated clearly justifies the effort. This major effort by municipalities is causing the State to shed its cadastral responsibilities and making fiscal income become the most essential element.

- In general the institutional panorama in Latin-America is very disheartening in regard to cadastres. Crossovers and duplication of responsibilities occur only too frequently.

##### *Eastern and Central European countries*

- Unanimity prevails in considering the cadastre as an indispensable instrument for country modernisation, development of a market economy. It is also seen as a basis for developing the land registry, with which there should be agreement, integration, or co-ordination.

- Cadastres must have objectives that initially prioritized the aspects that will help sustain land privatisation (rural zones), distribution, and/or restitution.

- Initially, there is little emphasis on the urban cadastre and on the potential earnings to be derived from land taxes.

- With few exceptions, there are difficulties in defining an operative model which can serve as a skeleton or backbone for a unique, specialized organisation. There are problems with defining organic responsibilities and a diversification of responsibilities between various departments, organisations, institutions and corporations as well as between different administration levels.

- Financial difficulties abound for creating or constructing a cadastre system. Amateur efforts at creating pilot projects. Dependency on exterior financing.

- There is a very strong (excessive?) emphasis on the use of new digital cartography as the factor conditioning the creation of the cadastre, as well as on technical aspects and technology tied to topographic and cartographic disciplines as well as to information technologies, so it can lead to situations of paralysis of some projects (see chart on pag. 20).

#### **Similarities and differences between blocs**

##### *Differences*

- Differing prioritized objectives, some assigned to economic reform, others oriented toward the modernisation of local systems.

- Less emphasis in Latin-American countries on the co-ordination or integration between land regis-

tries and cadastres. Also on the technical requirements of a topographic cartography base of the cadastre.

- Greater possibilities in Eastern European countries of obtaining integration or co-ordination between the registries and the cadastre, since they find themselves in an initial phase of administrative structure creation. On the contrary, in the Latin-American countries the land registry institutions are already consolidated, even though scarce co-ordination occurs with the cadastral institution.

- Incipient formulas for self-financing are being tried out in some Latin-American countries.

- A clear orientation in the Latin-American countries toward the urban cadastre and in the application of tributary figures that tax urban as well as rustic properties. In general, orientation of fiscal collection toward distribution of resources to the municipalities.

##### *Similarities*

- Consideration of the cadastre as an instrument for modernisation for the country, underscoring its multi-purpose concept and its application to territorial planning, environment, etc.

- Different treatment given to the rustic cadastre and the urban cadastre.

- Habitual use in the reform of agriculture structures.

- Difficulties in financing cadastral projects. Poorly consolidated planning with respect to formulas for self-financing.

- Diversity of jurisdictional responsibility between the various ministerial departments as well as the different Administration levels.

- Political weight of larger municipalities, with the resulting tendency to unilaterally assume cadastral responsibility. Difficulty in strengthening a standardized, coherent cadastral information system and of proposing investments in global projects at country level.

##### *Final conclusions*

1. The cadastre is an indispensable instrument for any country, with the capability of meeting diverse objectives.

2. Centralization of jurisdictional responsibility and an administrative structure capable of managing both the rustic cadastre as well as the urban, are determining factors in order to generate and maintain a cadastral system with national coverage, as well as for investment efficiency.

3. Legislative development and political agreement should guarantee point two above.

4. The participation and co-operation of local governments is indispensable for the functioning of the system, especially in reference to the urban cadastre.

5. The application of a real estate tax, supported by the cadastre, should be looked at within the context of tax policies in each country, as a formula for self-financing.

6. The cadastral system should support the land registry system. Both should be coordinated in those cases where they are different institutions and when, for whatever reasons, they are generated at different times. ■





## Financial Restructuring and Economic Development Program of the Argentine Provinces

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### What is the Cadastre?

The Cadastre is a public registry in which information relating to real estate is recorded, organized and publicized. Through it we learn about the land that makes up the province - its location, its makeup, its owners, its value.

Cadastre information provides the essential element for knowledge of the urban and rural systems, because the Cadastre has its zone of action in the basic territorial unit known as the land parcel. Aspects related to its physical, legal, and economic condition are collected, organized, and registered.

### What do we know with the Cadastre?

The surveying, organizing, and registering of information concerning the land parcel allows us to know about it in all its intrinsic attributes: form, dimensions, location, boundaries, titleholders; its recording in the Land Registry; if it is vacant or has construction, and if the latter the quality and age of the construction; use:

if cultivated, type of cultivation, surface and production applicability; if water rights exist (irrigation); if it has a measurement and/or construction plan, and its location within the Redistribution Department files; its appraisal separated by land and improvements (construction, crops).

After it has been surveyed we know about its extrinsic attributes: services it has (water, electricity, gas, sewers, telephone); communications (principal and secondary streets, avenues, routes); if it is asphalted; its location in relation to educational, safety and security, and health facilities; parks and sports complexes; if located in residential, commercial, or industrial zones, or whether it is part of the rural scene.

After we know the attributes, we can better define the land parcel and its contents in all its surroundings.

### Who prepares the Cadastre?

It is prepared by the Cadastre Directorate, a government entity belonging to the Executive Department.

### What Jurisdictional Responsibility does the Cadastre Directorate have?

Among others, the following are important:

- Determine the correct real estate location, limits, dimensions, surface area, and boundaries, with reference to legal titles or possession.
- Establish the real estate parcel status and regulate its development.
- Have knowledge of territorial land resources and their distribution.
- Prepare economic and statistical data bases for tax legislation and planning actions by national and local governments.

### What conditions have made possible the formation of a modern Cadastre?

In order for our country to have a Cadastre in each province in accordance with social desires and competitive needs in an international market, it has been necessary to take account of the following factors:

- The necessity for putting into practice social policies in housing, health, education, safety and security, the environment, and urban affairs. This requires exact knowledge of public and private net worth and allows for adequate planning.
- The political will to transform provincial tax systems in order to meet the need for increased tax neutrality in regional economies and a greater equality in sharing the tax load. A Cadastre would help tremendously by means of the exact valuation of real estate.
- The availability of computer technology that will allow the creation of a complete and up to date, efficient and reliable registry, of the size required by the Cadastre.

### Why is it necessary to have a Cadastre?

The Cadastre indicates physical, legal and economic real estate data; its quality, age, location, owners, uses, etc. Additionally, the Cadastre assigns a value to each property, known as the Tax survey. Such valuable information can serve multiple purposes.

The Cadastre is an essential information system, along with its computer support, that should be utilized by the Public Administration as well as by private citizens.

Cadastral information serves as a fountain of knowledge and valuation of real estate resources. It also serves as a means to prove the legal condition for the real estate owner and as a base for the determination of equitable and efficient taxation.

Presently the Cadastral institutions are experiencing great advances in their ability to fix the value of real estate, for which they were initially created. They are also being used in other functions related to development, which converts them into a multi-purpose instrument, thanks to computer technology.

### What functions does a Cadastre carry out?

The Cadastre carries out three basic functions:

- It is the physical, legal, and economic identification registry of all real estate in the provinces, and therefore in the country. It is decisive in the increase of safety and security in real estate transactions due to the data credibility of its files.
- The Cadastre is the essential data bank for the creation of the various economic and social policies. The decision making process in Public Administrations and in the private sector in modern countries makes necessary data banks and elements that guarantee the success of the decisions taken.
- It is an indispensable support for the tax system, because the Cadastral value is the objective, constant element that serves as the base for calculating taxes. The growing demands of our society require of public institutions the creation of just and objective processes for obtaining the necessary resources, a proportional distribution, and equitable fiscal obligations.

### What is the document base of the Cadastre?

Obtaining land information and its subsequent registration generates a useful product for other State organizations and for the community in general.

### Basic geo-referenced cartography

Cadastral cartography is made up of maps of different sectors in diverse scales that provide a joint vision about a particular territorial zone, and a large number of individual real estate measurement maps.

Basic geo-referenced cartography permits access to cartography by subject, i.e. services, communications, networks, surface, environment, safety and security, health, education, etc. and with it public works and private works projects.

### Alpha-numeric data bases

Alpha-numeric data bases provide legal information for each land parcel (owner, holder, recording in the Property Register), economic information for each land parcel (survey, crops), and physical information for each land parcel (surface area according to measurements, constructed surface, categories).

This data base is used in determining land values, sector qualities in specific zones, partial values for the study of economic resistance to expropriations, in the determination of the base to be used for taxes, etc.

All this data is conveniently processed in the corresponding computer bases, which allows for extremely timely answers to consultations.



### What is the possibility of optimising the use of this information?

The contribution of a geo-referenced cartography (tied to a network of trigonometric points with surveyed coordinates referenced to the national system) and an alpha-numeric database with all parcel attributes indicated in the administrative territory permits the creation of subject cartography developed by the Cadastre for use on behalf of the entities that serve the community. Some examples follow:

**Municipal Cadastre:** With a data base related to municipal services, urban planning, infrastructure works, commerce, industry, land use, etc.

**Pipeline Cadastre:** Includes water networks, sewers, gas, indicates trunk networks, secondary networks, regulating stations, etc.

**Irrigation Cadastre:** Indicates those land parcels that have irrigation rights, including canals, their names, type of right and surface, etc.

**Road Cadastre:** Indicates main roads, designation of road categories (main, secondary), if asphalted, garroted, etc., and their status.

**Mining Cadastre:** With location of properties, relating them to land titles where they are found, and determining the quality of minerals.

### What are the possibilities for integration of this information?

A Territorial Information System (SIT) is the correct tool.

Once the Territorial Information System (SIT) is constructed, the reconnaissance of the territory is performed by integrating the information provided by the different entities that participate in its administration.

The land parcel is the basic territorial unit. This element is provided by the Cadastre to the system. From it other attributes are added, including:

- Title (Property Registrar).
- Improvements (municipality).
- Public services: water, sewers (Sanitation works); electricity (energy company); gas (gas distributor); telephone (telephone company); etc.

This allows for, among other things, the creation and superimposing of subject maps from the information provided.

### How is the Tax Appraisal determined?

Generally, the value of the land parcels is determined by adding up the value of the land before improvements, corrected by coefficients (for example, of form in urban land parcels and of soil for rural land parcels), plus the value of improvements, affected by coefficients that take into account age and conservation state of the improvements, among other things.

Zones with standardised values are determined by taking into account town characteristics, service infrastructure, location within the territory, and other things.

The value of the land parcel, as determined by the Cadastre, is taken up by the General Directorate for Income, applies rates established in the Annual Tax Office Law, and thereby obtains the real estate tax.

### Is the Tax Appraisal or the Cadastral Value a Tax?

The Cadastral Value of a land parcel is an universal, objective system of valuation of the real estate resour-

ces in a province and eventually of the country. It is an universal system because it is applied to all land parcels that are part of it. It is objective because it is applied by means of a normalized, uniform procedure for them all.

The Cadastral Value has tributary effects in many taxes, as it can be a base, but it should never be considered a tax.

### Does the Cadastral Value have non-fiscal effects?

The Cadastral Value is considered, for example, in expropriation procedures in order to fix a fair price.

It is also used, in some cases, to fix the selling price of tax lands.

### What benefits accrue as a result of updating the Cadastral Values?

Updating the Cadastral Values produces benefits for society in general and for private citizens in particular. For example:

- The possibility for governments to create infrastructure plans, urban plans, and development plans with a sound knowledge of the economic effects.
- The transparency of transactions in the economic sector helps maintain a real estate market that is less speculative.
- The fiscal benefits of a truly honest value for real estate allows the distribution of the tributary load proportional to its actual values.
- The possibility of allowing companies and private citizens in general a correct programming, application, and management of their real estate investments.

### National Legislation

The creation of the Cadastres in the Republic of Argentina presents us with as much diversity as there are provinces that make it up. It is recognised that the territorial Cadastres in the country, in the federal capital and in some provinces, owe their origin to the need to rationalize and make more effective the land property tax. With this concept, the Cadastre was only a support for the tributary system.

The modern legislative antecedent goes back to 1952 when Law 14.159 was passed dealing with «The national Cadastre that determines the execution of the geometric parcel cadastre throughout the legal jurisdiction in its two fundamental aspects, physical and legal.» With this law the provinces were invited to adhere to the national Cadastre regime if proper authority so deemed it, keeping in mind that the cadastral police powers are within the purview of the provinces, not delegated to the central government.

After this, every province began to update its cadastres by legislative actions and execution in accordance with its possibilities and territorial reality.

In 1973, with the coming in force of Law 17.711, (reforming article 2505 of the civil code), that instituted the registry of acquisition or transfer of real estate rights, and Law 17.801 that spread the system of registration by royal folio nation wide, Law 20.440 was passed. This law specifies «that territorial cadastres in each province ... will acquire, register, and order information relative to real estate in each territory.»

The objective of cadastres, according to the law is to:

- Determine the correct location, limits, dimensions, surface area, and boundaries of real estate, with reference to legal title at hand.

- Establish the parcel state of real estate and regulate its development.

- Get to know the land resources and their distribution.

- Create economic and statistical data bases for tax legislation and planning by national and local governments.

### Situation of the provincial cadastres

A survey done at national level whose objective was to get to know the cadastral reality in the Republic of Argentina as well as of the concepts used in the modernisation projects of some provincial cadastres indicates that in all provinces there has been important parcel growth, administered by the various provincial Cadastre Directorates, with the same structural functions of twenty years ago, with the exception of computer support.

### Fiscal management

Real estate taxes represent approximately 12% of fiscal earnings in the provinces.

The majority is dependent on the communes for improvement information.

One finds in all provinces tributary and non-tributary income that depend of Cadastre information, such as municipal fees, stamp tax, transfer tax, expropriations, fiscal sale of land parcels, etc.

Cadastral information deteriorates as a result of outdated valuation methods.

### Physical management

All provinces have identification at the land parcel level, and they all have Cadastral zoning tied to provincial laws.

All have cartography that is incomplete, out of date, and manually operated, in spite of having authority to manufacture it up to E:1:50,000.

### Functional-organic management

In the majority of the provincial Cadastre Directorates, one can see a deterioration in organic structure, in operative management, and in out of date functions.

### Infrastructure

In various provinces one can see the deterioration and obsolescence of the automobile fleet and insufficient office space.

### Computerisation

In general, a technical deficit in computer support can be detected, as well as an incipient and anaemic computer equipment inventory, and incomplete data bases and electronic processes.

### Some concrete situations

In general one can see problems in land parcel administration common to most provinces.

Some concrete examples are:

*Land distribution has not had the support necessary for the success of the functions imparted by law, which has made it out of date, in spite of the efforts of the personnel involved.*



«Lack of resources has impaired the permanent, total updating of the Cadastre, which has resulted in lost efficiency and safety and security...» *Misiones*

«In spite of the clear absence of support by decision making political organisations, the technicians involved with the distribution have the aptitude to maintain the institution» *Santa Fe*

«The Cadastre and Geodesy Directorate have developed their activities in the framework of extremely lean budgets while accomplishing their mission and functions...» *Chubut*

«As for work experience, the institution has demonstrated its capability to design the principles of a territorial information system...» *Chaco*

*Fiscal appraisals are out of date and housing categorization is deficient.*

«The last Real Estate General Evaluation (1987) of all real estate in the province for tax purposes...the values of this massive revaluation...became outdated in spite of up to date coefficients.» *Formosa*

«There is a lack of equity in the valuation of urban, sub-rural and rural land parcels and their improvements.» *Rio Negro*

«The general revaluation was done ten (10) years ago and its updating was massive due to inflation and hyperinflation of past years...Observing neighboring properties one finds uniform indications of injustice in the application of the valuation.» *Corrientes*

«The last definition of basic unitary values dates from 1982, and to date one can say in general terms that the real estate valuation is very out of date...» *Tucuman*

«With respect to valuation of improvements, there is a disconnect found between the categorisation and its determination methodology and reality in the province...» *Neuquen*

«In declarations by taxpayers and after studying the results of direct inspections undertaken, discrepancies surface in regard to the categorisation, age, and status of the constructions, generally to the detriment of municipal and provincial governments...» *Entre Rios*

«As a result of the analysis undertaken, variables were identified that indicate where and how the differences came about that cause institutional problems...for example, the application of evaluation methodologies that do not meet current criteria and that provoke a lack of preparedness on the part of functionaries, are some specific factors that allow the Cadastral Registry to become out of date...» *La Rioja*

*Cadastral Directorates demonstrate relative accomplishment of their elemental objectives and a limited operational capability for meeting the incorporation of new land parcels and constructions.*

«These values indicate a deficit in our registration of 34,000,000 covered square meters that could be incorporated into the tax base...» *Cordoba*

«...on a base of 160,000 properties...there was incomplete census information on 72,344 additional who did not pay taxes due to lack of indispensable information such as the name of the owner, address, category of property...» *Tucuman*

«...35% of the surface area improvements are not declared by the taxpayers (8,200,000 covered M2)...» *Entre Rios*

«The outdated information in the graphic registries and the alpha-numeric base should be pointed out. This happens because the methodology used for the division of land does not bring the alpha-numeric base up to date with the new parcel status if no inspection has been carried out. The objective is the categorisation of the real estate and it is being held back by lack of resources...» *La Rioja*

*Modifications to the status of the land parcels is not communicated to the Cadastre.*

«In the case of improvements there are defects in the collection and evaluation because...of deficiencies and lack of communication between some municipal and provincial entities and the Cadastre...refusal of some to assume professional costs...as well as the existence of a custom or tradition of eluding municipal control and accompanying taxes...» *Formosa*

«Lack of information transfer between the two municipalities and between them and the province impedes reaching optimum predictions, making decisions, ...» *Tierra del Fuego*

«Cadastral information management is not uniform between province and municipalities, nor between municipalities ...» *Entre Rios*

*The percentages of real estate tax collected is relatively low.*

«...nevertheless, the levels of evasion are very high (it is estimated at 60% for Valle Central)...» *Catamarca*

«The relationship collected/billed... Income Directorate spokesmen estimate to be approximately 45%...» *San Luis*

«...with respect to the General Income Directorate, present collections are around 40%...» *San Juan*

«The present objective consists of surveying 17,820 land parcels that presently do not pay taxes, and their incorporation into the Cadastral Registries, and 14,067 homes into the real estate base...» *La Rioja*

*Construction of houses by the Provincial Housing Institute is one of the reasons the Cadastre is out of date, affecting parcel registration.*

«there are more than 20,000 parcels, the majority built-up, that for different reasons do not pay taxes due to ... official housing plans with diverse problems that impede their incorporation into the real estate tax base.» *Rio Negro*

«Notwithstanding previous considerations, there are many cases of lots that have been transformed into neighborhoods by the Provincial Housing Institute where to date no transfer of domain has occurred with their present owners. Consequently there are no Cadastral files that would allow parcel identification...» *San Juan*

«The findings indicated that about 14,800 housing units belonging to Plan FONAVI cannot be registered nor the owners incorporated into the real estate taxpayer census ...» *Santa Fe*

*The lack of a unique geo-referenced system.*

«There is a lack of a unique reference system necessary for implementing a territorial information system... errors in land parcel location can be greater than 2 kilometers ...» *Rio Negro*

There are areas in the province that lack any geodesic support.» *Chubut*

*The registration system is not the most adequate in order to best respond to the present parcel mobility.*

«The entire system is operated manually and analogically, filing in archives ... this manner of document handling results in outdated material as well as deterioration of the files. In many cases the files do not agree with what is registered in the data base, producing numerous problems.» *Cordoba*

«The greater part of information processing of urban plans is done manually. It lacks a control, analysis, and evaluation system. This results in an untrustworthy real estate registry and a large percentage of tax evasion due to non-declared construction, omitted improvements, new expansions and out of date construction qualities ...» *Santiago de Estero*

An outdated Cadastre affects the safety and security of the real estate business

«The eastern, central, and southern zone, mainly along national route 14 to the Brazilian border, is where properties predominate that are constructed on fiscal lands without ownership registration ...» *Misiones*

«As for rural parcels in the northern and north western zone of the province, there is an important deficit in graphic individualization, as 100,000 of them lack known planimetric positions in the pages of the graphic registry ...» *Cordoba*

«The nation, prior to the provincialisation of the Chaco and, after 1952 the province, have registered only half the rural land.» *Chaco*

«Additionally, the owners' or property holders' addresses, who are responsible for paying real estate taxes, are out of date due to omission and/or errors in the Cadastral Registries.» *Catamarca*

«As for the owners, holders, adjudicators, and/or those responsible for each parcel, many of them are unknown...» *Tierra del Fuego*

«Socio-economic indicators signal changes in what happens to the population, housing, land use, etc., but are not reflected in the physical, legal, and economic information administered by the Real Estate Directorate...» *Jujuy*

*Solutions offered by the provinces.*

In the Republic of Argentina there is a dire necessity for updating Cadastres adapted to the new concepts of land information handling, and prepared to respond to the requirements that modern society must face for its development.

The Ministry of the Interior, through the Secretaría de Asistencia para la Reforma Económica Provincial (Secretariat for Provincial Economic Reform Assistance) provides incentives for the execution and updating of provincial Cadastres. The solution to Cadastre problems is answered in most provinces by an update of the Parcel Cadastre under the Financial Restructuring and Economic Development Program for the Argentine Provinces, financed by the World Bank and the International Development Bank (IDB) (see pp. 28-29).

In general, the solutions to these problems are found by doing the following:

- Codification of Records.
- Aerial photography.
- Geodesic and topographic assistance.
- Land parcel census.



- Cartography distribution.
- Zone and parcel valuation.
- Acquisition of satellite imagery.
- Computer and geodesic equipping.
- Personnel training and preparation.
- Publicity.

#### Conclusion

The incorporation of computers in Cadastral management, of geodesy by satellite, of satellite imagery, and the electronic advances in the design of measurement instruments and cartography processing have changed the old filing system which was the Cadastre into a dynamic data bank that reflects territorial reality with ordered, trustworthy information about:

- The identification and localization of all real estate.
- The dimensions, surface areas and boundaries, and their graphic representation.
- The name of the owner or landholder.
- Its characteristics, advantages, use, crops.
- Its economic valuation, created from an exact data base using modern evaluation techniques.

With this new structure, the Cadastre becomes an indispensable tool for the Public Administration. It provides essential information to establish realistic economic and social policies.

It constitutes a backup to the interests of the private citizen by guaranteeing legal safety and security of real estate transactions and permits the creation of investment strategies supported by reliable data.

#### Annual increase in the collection of real estate taxes

The quantifiable monetary results that execution of these projects would reach are detailed in the following chart. Additional revenues are from the increase in the real estate tax base as a result of the incorporation of new construction and undeclared expansions, of unregistered land parcels, and of the updating of urban and rural land values (see chart on pag. 30). ■



## Cadastre and Land Registration Systems of the Republic of Belarus. State of art

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The Republic of Belarus is situated in Eastern Europe. The area of Belarus is 207,600 sq. km, population is 10,3 millions of people. Belarus has adjacent boundaries with Russia, Ukraine, Lietuva, Latvia and Poland. Belarus was part of the USSR until 1991.

In 1991-1993 Supreme Council of Belarus adopted land reform laws: «About property», «About Land property», «About privatizing of State property», «About privatizing of housing», «About pledges» and others. At the end of 1995 there were already 303,470 parcels in private property (no parcels in 1992), more than 50% of state housing were transferred to new owners.

Three Ministries are responsible for methodology of privatizing: Ministry for management of State Property, Ministry of Natural Resources and Environmental Protection of Republic Belarus, Ministry of Housing and Communal Services.

Ministry of Natural Resources and Environmental Protection of Republic Belarus and Ministry of Housing and Communal Services are responsible for development of the methodology and regulations on immovable property registration. Till now there are two separate systems of registration of immovable property in Belarus. The first one — registration of land and rights on land. The second one — registration of all others units of immovable property and rights on them.

Ministry of Natural Resources and Environmental Protection of Republic Belarus is responsible for the first system, Ministry for Housing and Communal Services for the second one. There is no separate organization for recording date about boundaries and parcels in separate register. This work is doing by departments of region Executive Committees (local Government). Recording data about legal rights on object attached to the land are accomplished by Republic Center for Registration of Immovable Property of Belarus and local Bureau for Registration and Technical Inventory. The main tasks of the Centre are to create national network for registration of immovable property and rights on immovable property, national data base, new legislation, education of staff of the system and so on.

There is not any laws on cadastre and registration systems. The Law «About registration of rights on immovable property» was developed only in 1995 with the assistance of World Bank, Mr. S. Butler from USA, Ms. K. Huldrip from Kampsax Geoplan, Denmark and Mr. H. Larsen from National Survey and Cadastre, Denmark, consulted the project. This Law consists of 8 sections as follows: (1) General provisions, (2) Administrative Structure of the Registration System, (3) Registration Book and Procedures of Registration, (4) Legal Effects of Registration, (5) Transitional Provisions, (6) Rules Affecting Specific Types of Rights to Immovable Property, (7) Registration Fees and (8) Guarantees and Compensations.

By this Law integrated systems for registration of land and attached object will be created, general and fixed boundaries, sporadic and systematic adjudication are proposed. System of rights registration is supported by cadastre Registry, Registry of building and construction, Registry of State Property. The registration of rights on several types of unit of immovable property is proposed, namely:

- a land parcel;
- a land parcel and the objects attached to it which together are held in unified ownership;
- an objects attached to a land parcel which is in the ownership of someone other than the owner of the land;
- an objects on non registry land;
- portions of buildings or structures which under law may be separately owned; and
- two or more land parcel, which or without the objects attached to them, which form a functional unit and which the owner chooses to register as a single unit of immovable property.

Pilot project of the system is developed in Minsk city, capital of Belarus, and in several others Belarus cities. With such pilot-projects the main problem is the fact that the new system must not to be in contradiction with old legislation that is active in country. Pilot —project system have a client/server architecture, AN— data base and GIS to generate registry map and to compile records for new Registry Book. ■





## The Cadastre and the treasury in Colombia

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### What is the Cadastre?

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The Cadastre is defined in Colombia as: An updated, classified inventory or census of real estate belonging to the State and to private citizens, used for correctly identifying this real estate physically, legally, economically and fiscally.

The physical aspect is understood to mean graphical identification of the land and building boundaries or identification by aerial photographs (orthophotography), and a description of the land and buildings.

The legal aspect consists of noting on cadastral documents the relationship between the active subject in law, that is, the property owner or property holder and the object or property, by the documentary identification or taxpayer identification of the property owner or property holder and the deed and registry or real estate license of the property.

The fiscal aspect consists of the preparation and delivery of appraisals to the respective municipal treasuries and the National Tax Administration. These cadastral appraisals are the base on which the rate corresponding to the unified property tax and other taxes is applied in accordance with prevailing legal provisions.

The economic aspect consists of the determination of the property cadastral appraisal. It is necessary to clarify that Law 14 of 1983, the latest bill modifying cadastral regulations, establishes in article 4 that for the constitution and conservation of the Cadastre, the appraised value for each property is determined by adding partial appraisals (done independently) for the land and for the buildings. This way, permanent or semi-permanent crops and designated real estate are eliminated from the cadastral appraisal.

The Cadastre in Colombia has traditionally been oriented toward legal and fiscal objectives and today its multi-purpose character and its importance for territorial re-ordering is widely recognized. A good Cadastre is an instrument of great utility for economic

and urban planning and for designing housing and agrarian reform policies.

The real estate property census has aerial photographs and maps containing information on agrological, topographic and weather conditions, capacity and limitations on the uses and exploitation of the land, and its possible economic uses. Subject maps indicate the existence of any running water, roads, public services and land use. The property file, in addition to information on the property owners or property holders and the method of acquisition of the property, also contains a description of the buildings or constructions, with the following details: information on the status, quality and materials of the structure, the main finishing materials, and bathrooms and kitchens; and general information such as: the number of stores, businesses, garages and year of construction.

The great majority of data mentioned is already available as a computerized list of property attributes, which relates to the entire property inventory managed by the Institute. Cadastral data bases are thus considered privileged information for the various users, especially the municipalities, particularly when they create their development plans.

The Cadastre makes it possible to know the production potential, the prevailing business of a municipality. That is, it is possible to discover the role or mission of the urban and the rural areas, within the region and the country. It also makes a large part of the information necessary available for creating development plans.

### Cadastral projects

Law 14 of 1983 bestowed three main activities on the Agustín Codazzi Geographic Institute (Instituto Geográfico Agustín Codazzi): Constitution, Conservation and Updating.

#### Cadastral constitution

This is the process for obtaining information on property of an organic cadastral unit or part of one, taking as a base its physical, legal, tax and economic aspects, in order to accomplish the Cadastre's general objectives.

#### Conservation

This is the process that maintains cadastral documents updated as changes occur to the real estate. It assures the inter-connection between Notaries' offices, the Registry and the Cadastre.

#### Updating the Cadastre

This consists of the various operations for updating cadastral data, by revising physical and legal elements of the Cadastre and eliminating (in the economic element) disparities originated by physical changes, variations of use or productivity, public works or local conditions of the real estate market.

Today, the Institute handles the Cadastres of 942 municipalities, i.e. approximately 90% of all municipalities. It has constituted and put into practice, according to criteria established by Law 14 of 1983, 6,486,212 properties in 911 municipalities, and updated 3,473,739 of these properties, whose appraised value as of the first of January was 43,100,000 million pesos.

In 1996, it is expected that 25,397 properties in 24 municipalities will be constituted, and 906,639 properties in 137 municipalities will be updated. At this rate, by the end of the year there will be approximately 6,511,000 properties constituted in accordance with regulations of Law 14, 1983, and thus 99% of the properties and 95% of the municipalities that the Agustín Codazzi Geographic Institute is in charge of will be constituted.

The impact of the Cadastre within the framework of Law 14 of 1983, in relation to cadastral appraisals, can be analyzed comparing the current situation with that of thirteen years ago. In January 1982, 3,981,545 properties were incorporated and their appraised value reached 612,905 million pesos. Data on the first of January 1996, shows 6,683,612 properties incorporated with an appraised value of 43,478,300 million pesos. 2,702,067 properties have been added to the cadastral registers and the appraisals, in constant pesos base year 1982, have gone from 612,905 million pesos to 2,447,417 million pesos, a four-fold increase. The efforts of the Agustín Codazzi Geographic Institute, with the economic support of the National Government, during the last five years have led to a substantial increase in constituting and updating, as well as in modifying the appraisals of 6,165,950 properties.

700,000 changes to the property registers are expected within the conservation program for 1996. These changes are related to sales, unifications, divisions and new construction.

#### Other projects

This year the Cadastre Sub-Division has planned the following projects:

- Establishment of the Cadastral Geographic Information System (CGIS).

The Institute has created a digital map with a scale of 1:2,000 for 15 cities in Colombia, and digitalization of cadastral graphic information (lot boundaries, constructed area boundaries, etc.) is being completed. We hope to digitalize 600,000 properties by the end of the first trimester this year and, if resources permit, digitalize 500,000 more properties by the end of the year. The CGIS data model has already been validated with very good results.

Within this activity, the program of Cadastre support to municipalities is being promoted to zone the territory. The inventory of territorial requirements is already being created. The exact geographic information systems and the technical parameters required for compatibility with other systems in the Geographic Institute are being determined.

A committee has been created whose main function is the standardization of cadastral digital data. Thus an excellent tool will be created for Colombian municipalities, and information will be customized to users' requirements. These activities form part of the Technology Modernization Program being carried out by the Institute in all areas.

- Large-scale Title Claims

The Colombian government established a large-scale title claim plan for those properties where squat-



ters live precariously. The Cadastre is responsible for delivering the "map certificates" for 500,000 properties in urban and rural areas that will be an integral part of the title deed.

The government proposes to change squatters into property owners. At present these do not have access to the different government credit plans due to lack of land titles to guarantee them.

These certificates will contain information on the squatters; to whom the land is adjudicated and the title documents; the surface area and a map showing coordinates of boundary points (10), thereby eliminating all ambiguity in describing boundaries and constructed areas. To date 8,000 certificates of property that was issued title have been delivered in Cartagena and Montaria.

#### • Socio-Economic Stratification

The National Department of Planning established a methodology for indicating socio-economic stratification in urban and rural areas. This methodology uses cadastral information (physical, economic and property attributes area maps). This year, work was begun for their execution and the Cadastre is responsible for supplying all referred documentation.

The government also defined a methodology to determine family agriculture units (FAU) for use in all matters related to the farming sector. It is important to underscore that the basic map for determining these units is the map of homogeneous physical areas created by the Cadastre.

## Cadastral organization

### Cadastral authorities

The Cadastre in Colombia is carried out by the following authorities: the Agustín Codazzi Geographic Institute (GIAC) (*Instituto Geográfico Agustín Codazzi*), which handles 90% of municipal Cadastres, the Administrative Department for District Cadastres (ADDC) (*Departamento Administrativo de Catastro Distrital*), in charge of the one in Santa Fe de Bogotá; the Departmental Cadastre in Antioch and the municipal Cadastres in Cali and Medellín.

The GIAC reports to the Ministry of Finance and Public Credit. The Executive Committee has representatives from the Ministry of the Treasury, from the National Department of Planning, from the Ministry of the Environment, from the town halls and from the governors' offices. The ADDC is a decentralized agency of the Capital District and the others belong to the Departmental Treasury and Municipalities Secretariats.

According to Law 14 1983, cadastral work should be tied throughout the country to technical standards established by the GIAC. The GIAC is responsible for overseeing this and advising the rest of the cadastral agencies.

The GIAC carries out the Cadastre under its jurisdiction through the Cadastre Sub-Directorate. It has 7 regional offices, 21 section offices and 45 Cadastre representative offices within national territory. Each of these agencies has its cadastral inventories of real estate

properties (aerial photographs, maps, cadastral maps, ownership files, subject maps, computerized archives of cadastral attributes) and, in the case of the Institute, the section offices have the computerized archives of attributes handled by its representative offices and in turn the Cadastre Sub-Directorate has the national archives.

The Public Instruments Registry is a State service and is directed by the Superintendency for Notaries and Registry, part of the Ministry of Justice. It has 200 offices in the country. They are in charge of keeping the pages of real estate matriculation and notifying changes in real estate ownership to the Cadastre offices.

The exchange of information using computers is being studied today and automatic downloading is already being talked about. Co-ordination between authorities is done through GIAC, that has a seat on the Directorate Council of the Superintendency for Notaries and Registry.

### Land administration

Colombian municipalities are responsible for promoting, as part of their autonomy, the ordering of their territory, the equitable and rational use of land and carrying out efficient urbanistic actions. They are also responsible for the creation and protection of urban public spaces, as well as environmental protection. In the majority of the larger municipalities there are agencies charged with land administration for the different spatial objectives such as: housing, recreation areas, sports parks, environmental protection and land banks.

In rural areas, the administration of uncultivated territory is a function belonging to the Colombian Institute for Agrarian Reform. National parks and reserve areas are administered by the Environment Ministry. The Interior Ministry is charged with handling native reservations and establishing general policy for the administration of Negro communities. The Cadastre is charged with doing the land inventory and all State agencies supply it the pertinent information.

## Cadastral valuation

Cadastral authorities have two main areas within their organizational structure: Constitution and Updating, and Cadastre Conservation. Additionally they have support offices such as: Legal office, Systems, Finance and Administrative.

### Cadastral Constitution and Updating

The first area, dealing with Cadastral Constitution and Updating, is for promoting all the processes and studies for complying with standards established for these activities, to wit: 1) verification of municipal boundaries, urban limits and general nomenclature; 2) property identification; 3) property location and numeration in the cadastral map; 4) diligence concerning the property file; 5) determination of physically homogeneous areas and the study of the real estate market to determine land and building values; and 6) settlement of cadastral appraisals.

### Cadastral Conservation

The other area, Conservation, is for maintaining all cadastral documents up to date, and attending to requests for revision of appraisals, registration of changes, admission or refusal of voluntary appraisals, motions to set aside judgements and appeals against court orders. Additionally, it is required to conduct the annual readjustments requested by the National Government, for all properties. As can be seen, this is the agency charged with maintaining the cadastral inventory.

These two agencies belong to the Director, Cadastre Sectional Office or Municipal Office.

### Valuation of urban and rural real estate

Law 14 1983, establishes that, for cadastral objectives, the appraisal of each property is determined by adding the partial appraisals done independently for the land to the ones done for the buildings. The cadastral appraisal determines the value of the properties, obtained by research and analysis of the real estate market, and should be done for homogeneous areas, where unitary values are determined for land and buildings that, multiplied by the respective areas, yields the appraisal (see pág. 37).

The appraisal is based on field and office observations, done in a brief period. Detailed investigations are done of a reduced sample of properties to be appraised. The normal mean price is looked for of the lands and buildings.

The classification of land for the determination of physically homogeneous rural areas is obtained based on agrologic, topographical and weather conditions of the land and its capacity and limitations of use and handling. For urban areas, topographic conditions are utilized based on the economic use as well as future use, public services and roadways.

Subject maps resulting from this process are: for urban areas - classification of the constructions (housing stratification), land use and municipal regulations, public services, roadway status, topography, physically homogeneous areas and geo-economic areas. For rural areas - areas of land similarity, land use, lines of communication, running water, municipal regulations, and geo-economic areas on physically similar land. Subject maps are also being created of public services (telephone, energy and water mains).

For building appraisals, the quality of construction and construction materials are taken into account, as are wallcoverings, floors, bathrooms and kitchens. For industrial buildings: lights and height.

### Determination of unitary prices

To appraise constructions, we have come to the conclusion that each type has its own market, with proper tendencies and behavior, framed within the dynamic of each city. Therefore the selection of the appraisal samples and the real estate market research is done and processed independently.

The indicators and inputs are the same as those utilized for establishing land values.

Statistical processes and regression analysis determine the curve equations that relate the unitary price



with the referred scores. Constructions that have scores higher than their unitary appraisals, that is, similar characteristics and the same location, have the same appraisals.

By this process the equations are established for the different adjustment curves (potential, exponential, straight, logarithmic, etc.) and keeping in mind the statistics such as standard deviation, determination and typical error coefficients of the estimate, the curve that best explains the appraisals is selected. The unitary price of the different types of buildings for all the scores found is thus determined. This process, the same as the others, is supervised and controlled by functionaries of the central part, of the regional part and of the sections of the Institute.

Finally, in order to determine the appraised value of the construction, one simply multiplies the unitary value, keeping its score in mind, by the area.

Obviously, using multiple regressions one can select other variables such as the age, area of construction, etc., in order to improve the statistics.

#### Fiscal aspect

##### *Unified Property Tax*

Law 14 of 1983, assigned the function of fixing property taxes to municipal councils. General parameters were established, such as: to be differential, keeping in mind the economic objective of the property; low-income housing and small rural properties, for agriculture production, should be charged the lowest rates.

Afterwards, Law 44 of 1990, united four taxes into one, called "the unified property tax". These taxes were: the property tax, the reforestation and parks tax, the socio-economic stratification tax and the cadastral surcharge, focused towards the nation.

It modified the rate brackets (between 1 and 16%, and up to 33% for lots). The base subject to tax is the cadastral appraisal and it is the responsibility of the cadastral authorities for establishing it. This tax is charged and collected by municipalities and is part of its own resources (see pág. 38).

##### *Environmental Levy*

Law 99 of 1993, established an environmental levy or environmental surcharge on real estate ownership, for environmental protection and for renewable natural resources. This tax is collected by the municipality and is transferred to the Regional Autonomous Corporations, which in turn use it for programmes and projects for protection and restoration of the environment and renewable resources.

##### *Presumed Income*

The State presumes that the cash income of taxpayers is not lower than between 5% of their cash and bank balances or 1.5% of their gross net worth. The first 100 million pesos of the value of the taxpayers' houses and the first 150 million of assets for the agricultural sector are excluded from the base used to calculate the presumed income. This tax is collected by the nation. Minimum figures to establish net worth are the cadastral values.

## Multi-purpose applications of the Cadastre

### Updating the cadastral inventory

The cadastral authorities are responsible for conserving Cadastres. As has already been said, this consists of keeping all documents up to date (aerial photographs, maps, property files, IT archives).

One of the main managers of conservation is the Registry of Public Instruments, which is obligated to inform the Cadastre of modifications of real estate property. Cadastral authorities thus can continue to update their registries. Another update source are the owners, who come to the Cadastre to obtain the necessary certificate in order to legalize before a Notary all transfers, constitution or limitations of domain of their real estate (see pág. 39).

### Users of cadastral information

The main users of cadastral information are (see pág. 40):

#### Use of cadastral information

The information collected by the Cadastre was established keeping in mind multiple objectives, especially for the municipalities. These use it to establish and update development plans, territorial ordering plans and socio-economic stratification of housing for public services and transfers. Cadastral agencies turn over and update the basic information for these objectives and the municipalities complement it for their own needs (telephone, energy, gas, water mains, sewers, etc.). With the creation of digital plans and the use of cadastral geographic information systems, municipalities can also keep watch over the creation and the protection of public space as well as the protection of the environment in a timely and efficient manner.

## Conclusions

In this way the Cadastre is accomplishing the mission of producing, analyzing and divulging information in order to support planning and territorial ordering processes.

One of the strengths of the Agustín Codazzi Geographic Institute is in being able to count on four technical areas, Cartography, Agrology, Cadastre and Geography, under its care. It is one of the few agencies in the world with this structure.

The Cadastre is very important in inter-governmental relations because of its utility as a tool for planning government policy. It has been said that "When a country knows what it has, what it can count on, then can it begin to plan based on its capital". When investment development policies begin to be based on approximate data and oftentimes on mere expectations or speculation, a less solid support is generated that can lead to failure. ■



## Reforms to introduce to the National Cadastre of Cuba for fiscal, economical and juridical goals

RAMON NODAL JORGE  
*Chief of Geodesy and Cartography,  
Hydrography and Geodesy Directorate,  
CUBA*

Accurate knowledge of the country's real estate information is an indispensable base from which to meet new requirements in the economic and administrative management of organizations within national territory. Changes in the economic and social order lead to the enrichment and transformation of the National Cadastre, the most comprehensive real estate information system at Cuba's disposal.

The Hydrography and Geodesy Directorate and the business group GEOCUBA, jointly with the Ministry of Finance and Pricing as well as other agencies within the State Central Administration, have begun a project to determine the reforms that should be introduced to the National Cadastre, with a view to achieving a more universal operation that satisfies society's needs today.

In response to a suggestion from María José Llombart Bosch, we decided to present our cadastral project to the «workshop on Reforms of Cadastre and Land Registration Systems in Central and Eastern Europe and Latin America», sponsored by the General Directorate of the Center of Cadastral Management and Cooperation of Taxation, of the Ministry of Economy and Finance and backed by the Committee for Human Settlements, of the United Nations European Economic Commission.

## Overview of the National Cadastre of Cuba

The National Cadastre was completed in 1992 in 161 municipalities with rural areas. It constitutes the primary information system, where one can see graphically and in written form the country's real estate and the people and corporations that use it (whether or not they have title or are in legitimate possession of it), in



order to obtain real knowledge of the national territory. It will serve as a guide for the objectives of economic and social development in all aspects necessary.

The National Cadastre was formulated on the basis of the Socialist countries' experiences. In fact, it was begun using the former Socialist Republic of Czechoslovakia as a model. This cadastre was considered one of the best and most advanced in the world, having been actively operating for over 300 years. It was inherited from the Austro-Hungarian empire, which conducted such cadastres in all its domains.

Cadastral documentation is made up of graphic documents (maps) and written documents. The National Cadastre is represented mainly by maps with a scale of 1:10,000 for 93% of the national territory (rural), and on a scale of 1:25,000 in those areas where parcel density is very low (marshy areas), which account for the remaining 7%.

The Cadastre in urban areas was only created experimentally. It was discontinued due to lack of resources, and was only completed in the municipality of Varadero and in various Popular Councils in Havana and other main cities in the country, covering only 1% of the urban surface area within the national territory. In the rustic Cadastre nine types of areas are represented: one agriculture and eight non-agricultural. Agriculture zones include land dedicated to farming and activities directly tied to farming, as well as idle land. This type of area is classified by fourteen land-uses: for sugar-cane, citrus fruits, coffee, cocoa, fibers, rice, tobacco, other fruits, a variety of crops, subsistence farming, uncultivated grazing, cultivated grazing, other crops and idle land. All these land uses are assigned to the landholders according to land occupancy rules.

At present, the Hydrography and Geodesy Directorate, of the Revolutionary Armed Forces Ministry (MINFAR), is responsible for the direction and control of the National Cadastre, proposing the policies to follow in the country for development of this activity. The business group GEOCUBA is in charge of the execution of the Cadastre, which includes all measurements, research on the land, and cadastral cartography, done on the basis of tasks contracted to it yearly.

Updating of the Cadastre is done by a network of offices created at municipal level for this, that work with the minimum required equipment and trained personnel.

Cadastral data are updated interactively with the landholders, by experts located in these offices. They make it possible for anyone to obtain cadastral information. The Cadastre measures land parcels and properties in general, and therefore the information it provides is accurate and precise.

Information contained in the National Cadastre, whether in graphical or written format, is used in three fundamental ways: as the base for the Land Use Annual Balance; for the emission of cadastral certificates for registering rustic property; and as the base for specialized registration for agricultural and forestry purposes that are requested by different entities; in statistical information on land use and landholding; in the production of the population and housing census; in concrete informational tasks for the government and studies for the betterment of the politico-administrati-

ve division. Even if it lacks cadastral valuation, it is used in the physical planning of rural and urban areas.

In spite of all the uses already mentioned, the universal use of the Cadastre is not yet a reality.

## National Cadastre reform project for fiscal, economic and legal reasons

Maintaining adequate control of the country's real estate would allow better gathering and processing of the information required by agencies of the State Central Administration. This information is used for the proper direction of its activities, such as tax collection and registering housing properties, among other activities, requiring continuity and continuous adjustment of the National Cadastre.

To analyze this subject, the Ministry of Finance and Pricing, and the Hydrography and Geodesy Directorate organized a work group that included the Ministries of Justice, Agriculture and Sugar, as well as the Cuban National Bank, the National Statistics Office, and the Institutes for Physical Planning and Housing, and the business group GEOCUBA, that came to the conclusion that it was necessary to involve the Cadastre immediately in the tasks detailed below.

### In the Tax System

The Cadastre is of capital importance because of the information it can provide the tax system.

One of the fundamental benefits that its introduction would bring, in rural as well as urban areas, is that it would offer indispensable data to guarantee tax system principles such as generality and impartiality of the tax burden, based on modern, easily accessible information.

Appropriate real estate registration helps in reducing tax evasion; additionally, it serves as a source of complementary information for taxes levied on the income of people and corporations, as well as transfer of property, especially concerning property taxes. The National Cadastre, after the necessary modifications to its structure and work technology, could offer all data related to the base subject to tax, surface area measurements, exact geo-referencing and real estate property characteristics. In the mid-term, it would become the fundamental base for the valuation of property.

The Cadastre allows us to count on location data, measurements and other information for fixing real estate and other land boundaries, including all types of man-made works and exploitable resources; harmonize real estate and land values that are part of businesses, associations and foreign capital investments; and create data bases for appraisals, as well as for State control of its goods and their utilization at territorial and national level.

### In the country's legal conversions

The National Cadastre's value, from a legal viewpoint, allows us to know the real area of urban and rustic real estate, its boundaries, lineal and surface area measurements, check the data with the titles brought to the Property Registry dealing with real estate, verify the titles, and allow or deny their inscription by correcting the titles when a correctable fault is detected, such as correction of real estate areas.

Another aspect of the urban Cadastre to keep in mind is its importance as a notarial instrument, providing the notary the security of working with exact data concerning the area of real estate in international transactions, transfers, adjudications, divisions, and others.

### In the cane and non-cane agriculture industry

The engineering system that constitutes the National Cadastre, used to benefit agriculture, allows its immediate conversion into the permanent official obligatory information base for the correct planning and transformation of agriculture; forecasting and control of farm yields; analysis of the economic potential in determining subsistence farming plans; feasibility studies of land exploitation with different crops of specific interest and establishment of the required crop rotation; integral studies of land with subject representation of limiting factors and aptitude for different crops; planning and cultural treatment by areas such as the volume of fertilizers, the use of insecticides and fungicides, allowing the land to rest and rotation of the land, crops, planting and harvest.

### In support of banking

The cadastral certificate can be used as an instrument of guarantee for requesting bank credits related to real estate. It can be used now in rural areas, and in urban areas once they acquire the Cadastre.

### Other general applications of the Cadastre

Use of proven measurement and research techniques that help obtain maps and cadastral information of real estate properties along with large scale topographic mapping allow for, in addition to the utility given the National Cadastre and other subjects mentioned previously, other applications of specific interest such as: defining geographic courses, national parks, urban and rural inhabited areas; planning, locating and controlling social services; planning for community services (solid waste and sewer management, street paving, supplying drinking water, urban electrification); in ordering, using, protecting and sustaining development of forests and wildlife; in controlling the protection, use and conservation of land, and detecting violations, in support of different aspects of environmental protection and the rational use of natural resources; in defining water surface areas and in support of regulations established for the protection of interior waters and coastal areas; and in the delineation of mining areas and evaluation of the effects caused by exploitation of these areas.

## Actions to be taken in updating the National Cadastre

The objectives to be reached by the development of the National Cadastre are of vital, far-reaching importance for the State. This is why reforms are needed.

We are currently in a study and decision-making phase to upgrade the National Cadastre so that in the short-term it can be modified to today's needs. Our country's needs include real estate legal aspects, needs of the tax system and exact knowledge of property in



the national heritage. This is why the following are analyzed:

— The country's cadastre development policy and its up-to-date maintenance, that foresees the formation, conservation and renovation of rustic and urban real estate, as well as the rest of its applications.

— The regulations and systems relative to the formation, conservation and revision of the real estate Cadastre.

— Elements to consider in the cadastral valuation process, which up to now have not been accomplished, and will be gradually implemented until they reflect the country's riches.

— Information systems and computer means necessary in accordance with the complexity and multiple uses that the Cadastre will assume.

— The standardization of cadastral documentation, keeping in mind the different ends to which it will be used, and everything relative to publications, their content and currency.

— Cadastral techno-economic, administrative and inspection planning.

— The human, material and financial resources to be guaranteed for this activity.

— Personnel training required due to these new requirements and the determination of how much technical assistance will be given to the different offices that carry out the Cadastre.

— Developing the concept and function of co-operation procedures with agencies of the State Central Administration.

On the basis of this study, the general program for the introduction of fiscal, legal and economic ends to the National Cadastre will be created. It will outline the phases required to accomplish its modernization and thus achieve the diversity of applications foreseen. It will be necessary to adjust legal regulations as well as the standardized technical base that will direct its performance.

It is necessary to strengthen the activities in the Cadastral municipal offices, providing the required personnel, means and equipment on a priority basis. This must be accomplished in order to introduce the reforms step by step. As for the work force, the mid- and high-level technical staff, specialists in geodesy and cartography who currently work with the Cadastre, must be augmented with agronomists, architects and other professionals such as automation systems specialists, lawyers and economists.

Our Cadastre is characterized by the high level of manual labor used, fundamentally during updating. Different ways must be found to achieve a modern, completely computerized Cadastre.

While the rustic Cadastre, finished throughout the country, contains reliable, updated data, once it assumes new tasks and is used more extensively it will require the massive use of computer technicians. This is a direction that requires special attention and a plan for international co-operation, which will help to diminish the time of execution and increase the potential of information processing and exploitation. An information system must be established that includes all the organization and operative structure that works on the Cadastre.

It is evident that the re-sizing of the country's Cadastre will lead to adjustments in direction and production, as well as in the organization of the activity. This will all be defined once the study is concluded.

## Conclusions

Time is needed for adapting the National Cadastre in stages, for carrying out the pending transformations based on State requirements. In 1996 conditions are right for assimilating the gathering of all information required by the Land Balance to input to the Annual Statistical Summary of the National Cadastre, due to be edited and distributed in January 1997. Cadastral certificates will continue to be issued by municipal cadastre offices, for property registration and any taxes that require its presentation.

It is vital to complete the urban cadastre in order to count on exact data bases for houses and empty lots, correctly geo-referenced, fundamental for tax and legal purposes. At the same time it is necessary to implement property valuations. In order to achieve these objectives and all the others touched on in paragraph three of this presentation, all the measures discussed must be taken to reform the Cuban Cadastre.

Experience shows that in Europe and America the Cadastre has developed as a multi-functional inventory, whose objective is to guarantee the governments' control and management of real estate as part of the national heritage.

We have attempted to indicate the importance of exploiting the National Cadastre of Cuba, once modifications have been made to the structure and content, legislation approved, indispensable investments made and qualified technical personnel re-trained. It will help strengthen the country's legal system, and help attain higher levels of social discipline in registering, taking care of, and exploiting the country's heritage. It will also contribute to equity and generality in application of taxes, and in a more rational use of land resources and real estate in particular.

We wish to thank the Spanish Center of Cadastral Management and Cooperation of Taxation, and the Institutes of Fiscal Studies and Latin-American Co-operation, for the co-operation provided since last year which has allowed us to begin to plan the changes required to our country's Cadastre.

As international co-operation increases we hope to be increasingly successful in acquiring the most advanced technology, equipping our specialists with knowledge possessed by the most advanced countries, and modernizing the National Cadastre according to today's international criteria.

An objective of our Cadastral service is to establish co-operation with countries of the European Economic Community and the rest of the represented countries here.

We consider that the Cadastre is a fundamental instrument in our present economy and its development in all its magnitude is of utmost necessity. ■



## Organization of Lithuanian land reform, land cadastre and land registration system

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*Chief of Division Information  
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LITHUANIA

### Integration of cadastres and registers on GIS base Land reform

In 1990, when Lithuanian State has restored its independence, a very important, complicated and urgent task which was among other issues that the state had to solve was the restitution of private land ownership. State ownership that had lasted for fifty years changed, in the main, economy system and legal land relations both in the rural areas and in the cities.

According to the laws adopted in Lithuania land reform covers the whole territory of the Republic of Lithuania and the ownership right is being restored in the following ways:

- Restoring previously owned land or forest in kind or granting gratuitously land or forest parcels of the same value in another place;
- Granting State lump-sums which can be used in acquiring state property, or granting shares belonging to the State;
- Buying land or forest for cash.

The volume of land reform works is very large. In accordance to the information from land surveyors it would be necessary to form about 2,5 - 3,0 million land parcels during land reform and land privatization.

When private ownership was introduced, the necessity to create a reliable land cadastre and land registration system arose. At present with the help of foreign countries a unified land cadastre system is, practically, implemented in all Districts (44) and ad-



ministrative Cities (11). A legal land registration system has been created. It is being carried out by the same authorities in 44 Districts and 11 Cities as a land cadastre. Land registration system is likely to be improved when a new Land Register Law is adopted. At present a bill of Land Register Law is under debate in the Seimas (Parliament) of the Republic of Lithuania.

The speed of land reform and land privatization is not sufficient for the quicker integration in European Union. We need assistance from foreign countries because when it is coordinated with financial resources of our country it speeds the land privatization, helps master new parcel measurement and map production technologies, speeds the registration of land ownership rights, and helps develop the land market.

#### Land cadastre

Land cadastre works are carried out by:

- State Land Survey Institute and others, involved in the land reform works;
  - State Land Cadastre Enterprise;
  - Districts, Cities Land Management and Geodesy Boards;
  - Agrarian Reform Services
- The National Land Survey under the Ministry of Agriculture coordinates cadastral works.

Main land cadastre works are:

- Valuation of land parcels;
- Preparation of land cadastre data for the calculation of land taxes;
- Preparation of land cadastre data for the restitution of ownership to owners and land privatization;
- Preparation land cadastre maps and other cartographic materials;
- Preparation of land cadastre summary data for state institutions and Government.

Land cadastre is being established on the basis of the following legislation:

- Land Law;
- Civil Code;
- Law on Land Tax;
- Forestry Law;
- Law on Land Reform;
- State Land (with Real Property Elements) Cadastre Regulations, confirmed by the Government;
- Directive documents of National Land Survey.

The main purpose of land cadastre is:

- To form land parcels and mark them on the ground;
- To prepare data necessary, for the calculation of land and land lease taxes;
- To provide reliable information for the restitution of ownership right to land parcels and the privatization of land parcels;
- To produce land cadastre maps.

Land cadastre relationship with the land register:

- A central database in Vilnius
- Close relations are established between land cadastre and land register;
- Land cadastre data related with land ownership are stored in Vilnius and the Districts, Cities Land Management and Geodesy Boards (55);

- Preparation of land cadastre data and land ownership registration is done in local offices (55 offices in Lithuania).

At present for the creation of land cadastre, maps made by using old technologies and also new maps are used:

- for rural areas-M 1:10 000, 1:5000;
- for urban areas-M 1:2000, 1:1000, 1:500.

Digital data of land cadastre maps

The State Land Survey Institute established five regional groups for the production of digital land cadastre maps: centre - in Vilnius, Kaunas, Diauliai, Panevėpy, Klaipėda. After geodetic measurements coordinate points of each parcel are entered in data base of regional centers and also graphical location of a parcel is checked. A unique cadastral number is given to each parcel and it is recorded in the land register (see pág. 49).

Districts/Cities Land Management and Geodesy Boards are involved in the accumulation of digital land cadastre data:

District/City Land Management and Geodesy Boards carry out functions:

- Checking of land parcel measurements;
- Designation of a land parcel identifier (number);
- Transfer of data to regional cadastre center.
- Regional Cadastre Centers carry out functions:
- Updating of transformation and central cadastral data base;
- Overlaying of information on orthophoto maps and other raster and vector information;
- Compilation of cadastre maps;
- Link to land register.

#### Land registration

Land registration is carried out in 44 district land management and geodesy boards and 11 city land management and geodesy boards which are in the county manager's administration.

Central land register data bank is designed at the State Land Cadastre Enterprise.

The National Land Survey of Lithuania methodically guide the land registration.

The following information is registered in district/city land management and geodesy boards (55):

- Owner (co-owners);
- Land parcels;
- Ownership (lease) rights to a land parcel;
- Restrictions on land parcel usage;
- Information about mortgages.

Ownership (leasehold) rights to land parcels and land parcels are registered in one office.

The following legal documents are used for the registration:

- Decision of a country manager's administration regarding the restitution of ownership;
- Selling - purchase agreement;
- Leasehold agreements;
- Inheritance documents;
- Certificate of property arrest;
- Court decisions;
- Certificate from buildings inventory bureaus;
- Other legal documents.

By 1996.01.01 there are 339,6 thousand owners who registered their ownership rights to land in the land register.

The changes of land owners and other land transactions show that the land market has started.

By 01.01.1996 land registration offices registered the following changes of land use:

sold land parcels	16.000
land parcels given as a gift	5.000
inherited land parcels	4.000
mortgaged land parcels	2.000

The main users of land register information

- Citizens;
- Legal persons;
- Notaries;
- Banks;
- Property appraisers;
- Buildings inventory bureaus;
- Courts;
- Governmental institutions.

#### Orthophoto maps as cadastre maps base

##### Principal factors

The orthophoto map production technology was selected for its effectiveness and economy. The choice was based on the results of a separate bilateral Lithuanian - French Project «Orthophoto Technology». The project demonstrated effectiveness of several alternative technologies applicable in Land Reform and land cadastre and provided economic indices to prove the strong advantage of the orthophoto technology.

Orthophoto map production is a fast method to be used to cover vast areas with reliable cartographic data. The orthophoto map has the same accuracy as the topographical map and represents the situation in the area at the time of taking aerial photos. Such a map serves as a base for topographic, cadastral and thematic mapping. The orthophoto method has been chosen as the most suitable one to supply Land Reform processes and cadastral work with a reliable cartographic base. The principal aim of the orthophoto map production is as follows: orthophoto maps will be used as a digital or analogous base for land use or forest management project design, register and cadastre map compilation and used map updating. The essential point is that Lithuanian Laws provide for the title restitution that is based on preliminary surveying, without precise field measurements, where accuracy to the most extent depends on the accuracy and age of base maps. The new orthophoto map would allow to considerably increase the quality of preliminary surveying and to ensure fair ownership restitution. The latter conclusion has been based on the results of an experimental work. The main product of the orthophoto map production technology is a digital orthophoto map. As derivative products, analogous orthophoto maps at the selected scale and a Digital Terrain Model (DTM) are produced. DTM is produced automatically during the orthophoto map creation process.

Production of orthophoto maps cannot be separated from development of Land Information System (LIS) and one of its structural parts - a register of titles



and cadastre of real property. The successful functioning of a land and real property market will depend on the mentioned data reliability.

#### **Lithuanian - Swedish project «Orthophoto Map Production»**

The project started in 1995. It was preconditioned by the development of land and real property markets and LIS, where property formation appeared to be one of the most significant processes. Both property restitution to former owners and new land property formation is based on orthophoto maps and design of land use projects.

The other very important precondition is the fact that until the Independence of Lithuania, aerial photos were taken by Soviet military organizations. No aerial photos have been taken during the five years of independence. Lithuania has no technological potential for taking aerial photos and they are impossible to develop at the moment due to the following reasons: first, Lithuania is a small country (65.000 km<sup>2</sup>) and it would not be economical to maintain a Unit for Aerophotography and second, development of aerophoto technologies is directly linked to the development of Lithuanian aviation which, in its turn, needs considerable financial investments.

With regard to the mentioned preconditions and circumstances and aiming at harmonious development of LIS (Lithuanian - Swedish Project «Land Information System» lasting for 4 years already), a new project «Orthophoto Map Production» was launched.

In 1995 aerial photos were taken for 14000 km<sup>2</sup> of the territory of Lithuania. The work was carried out by Swedesurvey according to the common work plan of flights and measurements of control points for aerial photos, drawn up by Lithuanian and Swedish specialists. Besides, Lithuanian specialists executed inside preparatory work of aerotriangulation, i.e. marked the control points on the copies of aerial photos. Aerotriangulation, transformation of DEM (Digital Elevation Model) and orthophoto rectification was carried out at Swedesurvey company in Sweden. For orthophoto map publishing and their further use in analogous form, the orthophotographic image is not enough. In addition, minimal vector information - points of geodetic network as well as administrative and cadastral boundaries - are necessary. The vector information was developed in Lithuania. For this purpose and with the help of Swedish advisers, preparation of standards for orthophoto (1:10000 and 1:5000) and cadastral maps was carried out. A digital production line with 11 work places was established for accumulation of vector information and compilation of a data base. This digital technology was introduced in the middle of 1995 within the frame of the Lithuanian - Danish Project «Digital Cadastre Production Line» and in fact, had to completely ensure the process of orthophoto map production. This work will continue in 1996 and the planned orthophoto map production scale will be achieved during the first quarter of 1996.

After the development of vector information and its delivery to Swedesurvey, production of both digital

and analogous orthophoto maps was put to practice. The scale of analogous maps is 1:10000 and 1:5000. For analogous map reproduction, Swedish partners delivered requisite reproduction equipment. The equipment was installed and it will be used for production in March of 1996. Digital orthophoto maps are provided on CDs.

Results of the complete implementation of the Project of 1995 are planned to be as follows:

- aerial photos covering the territory of 14000 km<sup>2</sup>, that can be used for general mapping purposes;
- 500 orthophoto map sheets in digital and analogous form at a scale of 1:10000;
- 270 orthophoto map sheets in digital and analogous form at a scale of 1:5000;
- DTM (Digital Terrain Model) covering the territory of 14000 km<sup>2</sup> (only for the production of those maps).

The idea is that the contribution of Lithuania to the production process in this project will increase. New plans of the project of 1996 was drawn up with regard to economic and technological possibilities of Lithuania and its striving for gradual introduction of new strategic technologies. With considerably developed sphere of analytical photogrammetry and without any possibilities for orthophoto map production in 1996, Lithuania plan that all the possible work could be carried out in Lithuania. Apart from all the work, carried out by Lithuanian partners in 1995, in 1996 Lithuania carry out all the block aerotriangulation work.

According to the program, 1996 would witness the production of aerial photos covering 18.000 km<sup>2</sup> of the priority territories. These territories would be covered with orthophoto maps at the scale of 1:10000 and 1:5000 (for settlements). The total number of map sheets, based on new flights, would be around 970.

To ensure production efficiency, additional territories of 5.000 km<sup>2</sup> were also included into the plan of 1996. Those territories were covered in a frame of the project with DMA (Defense Mapping Agency) in 1994 and 1995. This material would serve as a base for production of 300 additional map sheets. Lithuania would finance the block aerotriangulation, measurements of control points and generation of vector information covering all the areas. Realization of the program of 1996 would end in 50% of Lithuania covered with new orthophoto maps.

#### **Training and Pilot Project**

In the program of 1996 a special significance is attached to the pilot project. The objectives of the pilot project comprise the effective use of digital and analogous orthophoto maps for cadastre and base mapping. The pilot project is necessary for efficient employment of project results of 1995 and 1996. A successful implementation of the pilot project would to a very great extent determine the efficiency of the overall orthophoto map production project.

Digital and analogous orthophoto maps have different use possibilities and require a special competence from the staff. The first users of orthophoto maps - land surveyors should have relevant knowledge of

orthophoto map application possibilities and should be able to exploit them. There is no clearly defined technology on the use of orthophoto maps for project design and cadastre. Therefore, a new pilot project is necessary to strike a balance among different technologies and to prepare relevant directives and rules. Majority of land surveyors working with Land Reform are not completely aware of computerized project design systems. They by all means have to be trained to use orthophoto maps in project design work. During the pilot project, such technologies would be worked out and implemented and a group of specialists would be trained to work with them. The specialists would pass their knowledge and experience to other specialists.

Another very important point is that orthophoto maps in Lithuania could be successfully used not only for base mapping, but also in other spheres of activity such as forest management. Organizations of forest management are open for cooperation in the sphere of effective orthophoto map use and future production. However, to achieve such cooperation, all possibilities of orthophoto map use have to be demonstrated and tested in real life. Even though the possibilities seem to be theoretically acceptable, lack of real life experience, unfair evaluation of existing competence and potential could make the application of orthophoto maps in various spheres quite complicated. The pilot project would speed up the process and would enable the use of the latest material in the production process.

Another very important issue not only for the pilot project, but also for the whole project of orthophoto map production is technical means. Orthophoto maps require lots of computer resources. The National Land Survey within their financial limits, will invest in such technical means to ensure a successful realization of the project.

#### **Integration of various cooperation projects to ensure orthophoto map production and use**

As mentioned above, to ensure orthophoto map production, the attempt is made to employ all the possible resources and data, even though acquired through other projects. Every project has its individual aim, but it is efficient to use their results to guarantee a successful achievement of priority projects.

The common Lithuanian-French project allowed to produce an economic evaluation of various technologies for achieving the goals of land cadastre and Land Reform. The outcome of the project is as follows: orthophoto map production, as the most efficient in the present economic situation of Lithuania, was selected to be a priority activity.

The goal of the common Lithuanian-Danish project was to establish a digital cadastre production line that would process vector data, necessary for the production of highly demanded orthophoto maps. This production line is not sufficient and is developed through other projects.

The PHARE Project «Land Information System» is also partially concerned with further development of the digital cadastre production line and would serve the above mentioned aim.

The common Project with DMA (main objective - production of topographic maps) allows for a chance



to use aerial photos and other materials for orthophoto map production (5.000 km<sup>2</sup>).

So, the production of orthophoto maps is a priority. Therefore, objectives of other projects were as closely as possible adjusted to the common Lithuanian - Swedish project «Orthophoto map production».

#### Projects for orthophoto map production in Lithuania

Having in mind that orthophoto map production is one of the most efficient technologies in the sphere of cadastre and mapping, Lithuania is aiming at its development. The technological equipment is expensive and its introduction is complex from the economical and professional point of view. The study of the possibilities for technological development started even at the beginning of 1995. The attempt is made to do this work through the bilateral projects with foreign partners and PHARE.

In 1995, negotiations with Switzerland started concerning their possible assistance to the introduction of map production and publishing technologies in Lithuania. At the same time this technological line could be used for publishing of orthophoto maps. In 1995, the assistance for obtaining field surveying equipment through PHARE was reduced. The remainder of the financial assistance was allocated for the establishment of the initial technology of orthophoto map production. The planned funds would only allow the purchase of the equipment for the production of digital orthophoto maps and a corresponding retraining of specialists. However, publishing of analogous orthophoto maps, so necessary for the majority of users, is only possible through the project with Switzerland or some other bilateral partnership.

With regard to the structure of project implementation by PHARE, the requisite equipment is expected at the end of 1996. Having in mind the retraining of specialists, preparatory work for the production of digital orthophoto maps would take 6 months. It can be expected, that in the middle of 1997, Lithuania will start the production of digital orthophoto maps.

Lithuanian and other countries cooperation prospects for 1997 would allow a partial production of orthophoto maps and, if circumstances allow, publishing activities. The scale of the project in 1997 is expected to remain similar to the program of 1996, so the contribution of the Lithuanian partners to the project would amount 50-60%. The Swedish contribution should mainly comprise production of aerial photos and technological development of orthophoto map application.

#### Integration of cadastres and registers on GIS base

This is an ongoing project in Lithuania started in 1995. The project accumulates available people resources from various organizations such as National Land Survey, Geological Survey, Ministry of Environment Protection, Ministry Physical Planning, Department of Culture Heritage, Ministry of Transport, etc. The project is supervised by the Ministry of Communication and Informatics and managed by the private company HMIT-BALTIC GeoInfoServisas.

The project idea is to establish the organization and management structure for the most efficient use of

geographically based information. At present the state cadastres and registers are maintained in separate organization. To fulfill their tasks every cadastre and register collects geographically based information using different map sources. It raises often a work duplication and inadequacy of the same geoinformation in different cadastres or registers. Often it is so that even different classification of the same geographic features is used raising a problem of data heterogeneity. Consequently, the project was started to harmonize all the processes around geoinformation in different organizations. It concerns all the related questions to fulfill main task of the project and namely standardization of geographic features, technological solution, organizational questions, data flows and procedures.

In practice the project idea gives a completely new point of view to the mapping in concept. Geographical Information System (GIS) gives us a good opportunity to look at the map as an geographically based information source in general information system. No more map should be used (even in computer) just as a map, but it should support a solving of practical informatic tasks. The main engine of changes in the real world is a human activities that in turn are legalized by means of physical planning. All the changes of the real world should be formalized in a cadastre as general. So, mapping is a part of physical planning and cadastre. Following this idea early called base mapping become a part of GIS as a cadastre of georeferenced features, that are maintained in general procedures of physical planning and cadastre. The so called mapping circle for map renewal is also important in a new concept because of natural changes in the real world. In this case it concerns of geoinformation renewal in general integration process. It will mean that any organization working in certain area is responsible to update specific features in general geoinformation system and a general geoinformation renewal within a certain period of time will be performed as well, where no human activities are presented.

Integration of cadastres and registers based on GIS practically concerns any organization dealing with maps in traditional understanding or information derived from maps. So, it is quite complicated and complex process. This project is to give a conceptual model of integration and gives guidelines for implementation. The implementation process will need some time and will be performed step by step. Changes in legal base or regulation are necessary and should be made at first in accordance with integration idea. Implementation demands also a lot of investment in technology that could very problematic at present. Generally, it is expected that the integration will allow to save a lot money as well. Estimation of cost performance should be made within the project as well. ■



## Valuation of Real Estates and Cadastre in Slovakia

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The origin and subsequent development of cadastre of real estates were influenced by practical needs of both individuals and state administration. The effort to mark out the boundaries of real estates, to find out their value and to have the rights to them registered can be seen as common not only for owners but for other persons entitled to the rights to real estates as well. On the other hand one of the basic state's interests is fairness of levying taxes on real estates according to their kind, quality and way of use.

Taking into account the fact that valuation of real estates is unavoidably connected with cadastral data (or real estate register data) and I have no information, whether the Slovak cadastre will be presented in another working papers within the workshop, I see no other choice than due to better understanding of related problems in Slovakia to mention also a few historical as well as present facts referred to the Slovak cadastre.

In the paper are used terms «plot» (piece of land), «real estate» (piece of land or building) and «parcel» (piece of land delineated in the map).

#### History

##### Before 1918

Originally, the cadastre in Slovakia had been developing within the Hungarian Empire. So on territory of present Slovakia the origin of the cadastral land tax can be traced back to the year 1342, when king Charles I. stated to pay tax for each piece of land pertaining to the certain house. The tax was called «Lucrum Camarae» and was levied according to the king's discretion.



Productivity of land has been generally considered since the year 1755 according to patent of emperor Jozef II who stated to measure, delineate and examine a rough yield according to fertility of land. The history of registration of real estates and ownership rights by means of state information system dates back to first half of the 19th century it is more or less known. That this history is similar in countries of the former Austria and since 1867 of the former Austria-Hungary, and in countries of the former Hungarian Empire it is almost identical.

Registration of real estates in the land register began in 1852 by the emperor's patent and subsequent decrees of the former Hungarian Ministry of Justice in 1853-1855. They regulated acquiring of the ownership rights to the real estates as well as encumbrances of the real estates by mortgages.

Actual inventory then consisted of two parts:

- the land register which registered the real estates according to municipalities or cadastral areas and owners. The land register kept records of ownership rights and other real property rights. A contribution (intabulation) to the land register guaranteed the ownership rights to the immovable assets what in fact, materialized the intabulation principle as the basic principle of the land register. This principle proclaimed that the ownership of a real estate would be gained only by entry to the land register and not by subscription to the agreement or deed. By means of this principle the state materialized one of its functions, i.e. that of protection of real estate ownership.

- the land cadastre which was in fact the land inventory. We can understand it as an inventory which recorded data on each parcel, on each plot, data connected with the land and its way of use.

The land register implied a lot about the owner of land, about his rights and facts that influenced these rights (mortgages, warranties, easements...). All real estates excepting the so-called public property (roads, streets, squares, public gardens, drains, etc - the so-called non-registered property) entered the land register. The land register map was a part of the land register.

The land cadastre was primarily the state land inventory. It provided information on all-round surface of the country obtained on basis of information on particular plots. The land cadastre implied the dimensions, shape, location and circumference of each registered plot. The principal attributes of the inventory were area, sort of plot, value of plot (cadastral yield).

Generally speaking, the original registration tools were of single purpose with the function of protection of ownership right and the function of application to tax purposes. An individual inventory was kept for each purpose. Property right purposes were covered by the public registers (land register as well as a less frequent railway register, water register and mine register) while the land cadastre served to tax purposes. The land cadastre was an institution built up on former fiscal cadastres.

Taxation of plots had developed from taxation of large agricultural areas (used as tax units) to taxation of particular plots. Land tax was levied according to

the so-called net cadastral yield of plots, that was an arithmetical product of the plot area and the rate stated for net yield of area unit for various kinds of plots and various grades (classes) of fertility (value of soil). Both classifications of plots according to their kind and quality and calculation of net yield of the area unit for various kinds of plots and for value classes were carried out on the basis of the cadastral valuation. For a better illustration, the original basis for taxation was determined without any maps. This matter had not changed sooner than in 1856 when the cadastral measurement was initiated.

The former Austrian and Hungarian cadastres (and consequently later the Czechoslovak one as well) were the parcel based systems that recorded the yield ascertained by the classification. The parcel cadastre was able to give a graphic representation when the measurement was required and, moreover, it had an advantage of stability of the land tax.

The other milestone in the land valuation in former Hungarian countries was the legal article No. VII on modification of the land tax and administration of the land cadastre in 1875. According to that article, the Ministry of Finance decreed «the calculation of net yield and its entry into the cadastre of land tax» as well as creation of the original operates of cadastral valuation. In «stable cadastre» (the forerunner of land cadastre) the plots were classified into taxable and non-taxable ones. The fields, meadows, vineyards, pastures and forests ranked among the taxable plots while the plots of other than agriculture use, infertile plots, rocks, public tracks and roads, rivers, canals and cemeteries belonged to the non-taxable plots.

In the Hungarian Empire the cadastral map had exclusively served for the tax purposes up to 1886. After the legal article No. XXIX/1886 on the establishment of land register insets was issued, the copy of cadastral map that represented the actual state after establishment of the land register insets became the authentic map of land register. The area and cadastral yield of parcel were marked out in the insets according to the operatus of the land cadastre. This way the land cadastre has converged to the land registers and both institutions became dependent on each other since 1886 (the united operatus). The cadastral map was no longer of exclusively tax character and at the same time, it became a tool for legal arrangement of real properties.

#### 1918 - WW II

As soon as in 1918 after establishment of the Czechoslovak Republic, efforts occurred to integrate the land cadastre with the land register into one public register owing to its legal importance. However, the public had to wait for implementation of the given intention for several decades. A precondition of establishment of a technically more sophisticated land cadastre was created only by the cadastre law No. 177/1927 Coll. Acquiring of the ownership rights to real estates continued to be tied up with the entry to the land register which preserved its constitutive character so the intabulation principle was still accepted.

From point of valuation, the act introduced a change in provisions concerning the classification of soil value. The act stated that «...the land cadastre is geo-

metrical representation, list and description of all plots in the Republic and it has to serve as a basis for levying public taxes and rates related to plot tenure...». Among the subjects of cadastral ascertainment, there were also the cadastral yield (ratio number expressing the production abilities of the soil and so its economic value used when determining the basis for taxation, determining the compensation in the cases when the plot was expropriated by the state, determining the court and inheritance charges, writing the mortgage bonds etc.), the rates of soil value classes and the kinds of plots (both with and without cadastral yield). The cadastral valuation of plots executed in the Austro-Hungarian monarchy and its results were adopted, nevertheless, new valuation also occurred. Classification was carried out by comparing the outer features of the plot to a pattern plot. For each pattern plot was required a pedologic analysis of soil and at the same time the general data on the country, plot location and soil characteristics were ascertained.

Despite the fact that activities connected with building of cadastre and land registers went on for more than hundred years and demanded vast financial costs and huge amount of work, they did not result in a homogeneous and reliable basis for the cadastre of real estates.

#### WW II - 1964

After the World War II the conditions of two registration tools, the land cadastre and the land register were not good. On half of the territory the operatus of the land cadastre was not founded, a considerable part of the cadastral operatus was not projected into the land register by contribution doings, a considerable part of consolidations did not pass the contribution dealing, war events brought about loss or destruction in both operatus of the land cadastre and the land register from territory of 376 cadastral areas and division of real estates into ownership shares reached an unbearable extent (even millionth parts occurred). Despite of the intabulation principle of entry of the ownership right, in a certain amount of cases the change of ownership right did not enter the land register for the most various reasons.

In consequence of the social turnovers after the World War II and especially after February 1948, substantial changes occurred in the system of ownership relations as well as in integration of ownership right to real estates. The Code of Civil Law No. 141/1950 Coll. abolished the intabulation principle used until then. Acquiring the ownership right to real estates on basis of contract - agreement or other real property rights began to be regulated by the consent principle. Entry to the land register kept being permitted, however, it lost its constitutive character and it was left up to initiative of the acquire of owner right. The reliability of hither to land register entries was discontinued.

#### 1964- 1992

Since 1 April 1964 the entries to land register ceased to be performed. Having published the Code of Civil Law No. 40/1964 Coll. and the Law No. 22/1964 Coll. regarding the real estate inventory, the depart-



ment of geodesy and cartography was entrusted with registration of ownership relations to the immovable assets. However, in reality this registration covered only the built-up areas as in the collectivized forest and agriculture rural areas the use relations were registered instead of ownership relations to real estates. From 1964 up to 1992 dealings and making decisions on registration of agreements was conducted by a body of justicial character - the state notary's office and only the agreement registered there could be projected into the real estate inventory.

One of the main functions of these laws was to suppress the owner's consciousness of his ownership rights and to prefer the use relations to the real estates in the collectivized rural areas. The set of their functions lacked the role of protection of the private property.

#### Present state

##### Cadastré of real estates after 1992

New legal regulations valid since 1 January 1993 (Act No. 265/1992 Coll. on the entries of the ownership and other real property rights and Act No. 266/1992 Coll. on the real estates cadastre in the Slovak Republic), respectively since 1 January 1996 (Act No. 162/1995 Coll. about the real estate cadastre and entries of ownership and other rights to the real estates) completed more than twenty-year long effort to change the previous law. It was only granting of equal rights to all forms of ownership, restoration of social importance to the ownership relations to real estates, and inevitability of reinforcement of the legal state's functions after November 1989 that enabled successful accomplishing of these efforts. The new enactment has been built on three basic principles:

- principle of constitutionality (i.e. intabulation principle) of data entry into the cadastre (the real estate ownership right originates by resolution of the cadastre office about the entry contribution to cadastre).
- registration principle, according to which entry - record in cadastre has a registration significance,
- information - prenotation principle which is materialized by the notice.

The new enactment has adopted integration of two previous registration tools (land cadastre used for real estates registration and the land register used for recording the ownership relations to real properties that have not been updated since 1951) into one single tool. One of the defined objectives according to the new enactment is the supply of data for tax purposes and for valuation of real estates.

The area of Slovakia is 49.036.040.000 m<sup>2</sup>. There are approximately 5 million registered real estates that physically exist in the field in Slovakia and 1.900.000 of them are in rural areas. These rural real estates (that has originated mostly since 1949 as a consequence of collectivization) consist of more than 9.000.000 original plots that belong to their original owners or their heirs. The basic problem is that boundaries of original and present plots usually do not correspond (the present plots were not created according to boundaries of original plots). This legally and technically complicated (and unbearable) status has been temporarily solved by existence of two systems of recording the legal relations to real estates both original and physically

existing ones in the field. That is the reason why two kinds of map are used and this situation makes also valuation of real estates more complicated.

We rank among our crucial problems the unbearable fractionation of land ownership that has even increased since 1945 due to the fact that splitting of plots in the case of inheritance has not been regulated. There are frequently unbelievable co-owner shares registered in cadastre (e.g. in cadastral area Rudina, district cadca is registered a share 88.800/14.745.600 on certificate of ownership No. 208).

Presently, there are 2.848 municipalities and 3 520 cadastral areas in Slovakia. The original real estates are delineated on circa 40.000 map sheets and the number of continually updated cadastral maps displaying really existing real estates in the field is similar.

For running of cadastral information system the PCs were introduced (practically for the whole set of descriptive data) in 1993. In 1995 we began to convert graphic information into computer readable form (and update by means of computers) and within the year 1995 we managed to convert maps from circa 140 cadastral areas (4 % of the total area of Slovakia).

The cadastre of real estates into which the relations to immovables are recorded is administered at 55 local cadastral authorities, that are in fact branches of 3 cadastral offices. The cadastre of real estates in Slovakia is supervised by the Geodesy, Cartography and Cadastre Authority of the Slovak Republic that is the central body of state's administration and is subordinated directly to the Presidium of Government. The offices of the Geodesy, Cartography and Cadastre Authority of the Slovak Republic employ 2.755 people (information from 1995) and more than 90% of them are more or less dealing with cadastral matters.

##### Value and market of real estates

An existence of any market is possible only on condition of presence of market principles and respecting of market relations. Much like on the stock market, the principles of supply and demand function also on the market of real estates. Many a factor influences the value of plot. They are especially, the fertility of land (interesting mostly with regard to agriculture and forest plots), the level of urbanization and its prospects, the availability of communications and utilities (gas, electricity, water supply, sewage system) et cetera (interesting for plots in urban areas). An important factor in determining the market value of the plot (or real estate) is the legal purity of previous legal transactions (it is difficult to sell the plots that are disputed over) or encumbrances. The revival of real estate market can be illustrated on the amount of contracts of purchase. While before 1992 the state notaries used to register circa 40.000 deeds in Slovakia per year, after the new cadastral legislation came into use (in 1993) the amount of affirmative resolutions on contribution into cadastre was as follows: (see chart on pág. 57).

Similarly to the former status, even if the value is assessed by an expert (valuer), the market price of real estates being sold is a matter of agreement between buyer and seller. These market prices based on agreement are according to the preliminary poll different from those assessed by experts (valuers) in 94 per cent

of all cases. The cases when the actual price is even several times higher than the value assessed by experts (who use besides others the quantitative cadastral data - areas to elaborate an assessment) are no exceptions.

##### Evaluated soil-ecological units

A consequence of application of overcome and no longer fashionable Marxist theories (claiming that the price of land cannot exist only the use value can because it is not goods), was the fact that use of cadastral yield was not long ago principally rejected. In spite of mentioned above the practical needs called for a definition of new qualitative soil characteristics.

In 1972 the Czechoslovak Federal Government launched the process of «Valuation of agricultural land fund in the Czechoslovak Socialist Republic». Its main task was to acquire results usable not only for tax purposes but especially for agricultural purposes of the central planning and protection of land fund as well.

Evaluated soil-ecological units are represented by the seven-place code with following meaning (see pág. 58):

The definition and graphic representation of evaluated soil-ecological units in state map series at the scale 1:5000 was a demanding job but as a tool for valuation of plot it is only an auxiliary information.

##### Valuation of real estates

Official value of agricultural land is derived from the value of each evaluated soil-ecological unit and these values are stated in the Decree of Ministry of Finance of the Slovak Republic No. 465/1991 Coll. on prices of buildings, plots, permanent growth, charges for establishment of the right of personal use of the plots, (this ferm and state no more legally exist and it has been replaced by ownership right) and compensations for temporal use of plots (replaced by lease) - in the version of latter rules. This value is applied anytime provided an individual (market) value of land cannot be applied, especially for:

- statement of basis for taxation of real estates (plots),
- calculation of inheritance tax, transfer tax, gift tax,
- calculation of income tax (when property is sold),
- calculation of compensation when land is expropriated for public purposes,
- reallocation of plots or their changes in the process of land consolidation,
- calculation of charges for removing of agricultural land from agricultural land fund,
- valuation of real estate when the Act on Bankruptcy and the Failure is applied,
- calculation of administrative fees.

The value of the arable land, hop gardens, vineyards, orchards and permanent grass growths is computed as an arithmetical product of the value of evaluated soil-ecological unit per 1 m<sup>2</sup> and the area.

The value of forest plots is computed as the sum of the basic value of forest plot according to the type of growth and the value of location factor (the approaching and transport distances). The minimum value of a forest plot is 0.30 Sk per 1 m<sup>2</sup>.



As far as other than agricultural land is concerned, the Decree on Prices states the basic rates in Sk per 1 m<sup>2</sup>. In cases of plots intended for construction or for establishing a garden or plots that are recorded in real estate cadastre as a built-up area, courtyard, garden and plots under the roads, the rates are as follows:

- 1.500- Sk in Bratislava, the capital of the Slovak Republic
- 800- Sk in Kosice, Banská Bystrica, Piešťany, Starý Smokovec, Strbské Pleso, Tatranská Lomnica and in Trencianske Teplice,
- 500- Sk in Trnava, Trenčín, Nitra, Zilina, Prešov, Poprad, Zvolen, Liptovský Mikuláš and in Martin,
- 150- Sk in municipalities with more than 15.000 inhabitants,
- 100- Sk in municipalities with more than 5.000 inhabitants,
- 70- Sk in municipalities with more than 2.000 inhabitants,
- 20- Sk in other municipalities.

The value of a family house is calculated as the sum of valuations of particular storeys (according to area and assessed number of points; value of 1 point is 1 Sk). The value of the building is influenced by depreciation (1 year is equal to 1% but the maximum reduction is 80%). In case of other residential houses the reductions are considered (coefficient 1.00 - 0.85) according to the area.

The value of an apartment including the amenities and share in common parts and other building features is calculated according to the apartment category as an arithmetical product of the value per 1 m<sup>2</sup> (5.300 Sk - 2.200 Sk) and the area considering also the depreciation and the attractiveness of location.

The value of 1 m<sup>2</sup> of a non-residential room is 5.300 Sk.

The value of a weekend cottage, garden cottage or a garage is calculated similarly to that of the family houses; the value of weekend house with area more than 80 m<sup>2</sup> is reduced by 50%.

#### **Valuation of real estates for foreign persons**

In accordance with § 22 of Decree No. 465/1991 Coll. - in the version of latter rules, if the plot is transferred to a homestic legal person with foreign persons' capital participation, or to a foreign person, application of the method for valuation used in Federal Republic of Germany or Austria is prescribed. According to experts' opinion, the most frequently and with good results is applied the German method, i.e. valuation by means of Ross-Brachmann methodology where value of the plot is derived from the value of the building as a whole and it represents a share in the total value according to particular criteria. This method is known as the method of location class because it is dependent on location and the way of use of the plot. (Experts in Austria use in limited extent the same method or the comparison method.) Contrary to Slovakia the selling prices are known in these countries.

#### **Valuation of real estates in the process of large scale privatization**

Valuation for large scale privatisation purposes (where market value is assessed) is performed according to so-called Expert Standard.

Obligatory implementation of this Expert Standard is prescribed by Decree of Ministry of Finance of the Slovak Republic No. 6/55/1992. This valuatary, is based on so-called Index Method. By means of indexes are considered: territorial structure, kind of plot, number of population of town (municipality), location inside the town (municipality), readiness for constructing, communication facilities; in justifiable cases reductions or surcharges are applied.

#### **Value of plot as a basis for taxation**

In the tax system of the Slovak Republic the property taxes are represented by real property tax, inheritance tax, gift tax and transfer tax (calculated more or less on the basis of the area and tabular values). Particularly, there are many legal and natural persons involved in paying of real property tax and this tax is levied in accordance with the legal regulations by municipal or town authorities. In all cases a «clerical» and not market value is used as a basis for taxation. As a rule, primarily an owner of the real estate is supposed to pay the tax, or secondly, who has the right to administer the state's property, the municipal property, tenant or lessee. It is worth mentioning that real estate tax is paid only if it exceeds 100,- Sk within a fiscal period. There are of course many exceptions from paying taxes from real estates for schools, hospitals, nursery schools, municipalities, state authorities, parks, cemeteries, etc.

In practice, arable land is taxed in a way that an average value on the basis of presented evaluated soil-ecological units is calculated for every municipality (one or more cadastral areas) and from this value a financial equivalent per square meter for taxation in every municipality is determined.

#### **Who is entitled to evaluate real estates?**

Valuation of real estates is performed by experts (valuers) who are qualified to do it. Actual process of valuation is regulated in the Act No. 36/1967 Coll. in version of latter rules. Any citizen of the Slovak Republic can be appointed the expert (valuer) on the basis of his employer's or other organization's proposal or as the case may be on the basis of his own request. The expert (valuer) is appointed by the Chairman of the Regional Court (there are 3 Regional Courts in Slovakia) or by the chairman of the Town Court in Bratislava. Employees of universities or central bodies of state administration are appointed by minister. The expert (valuer) is supposed to be practised (at least 7 years) in chosen field of activity. From 1995 only a graduate of so-called Lifelong Education at the Institute of Court Engineering in Zilina can be appointed the expert (valuer). The experts (valuers) are examined once in every 5 years by means of certificate examinations. In 1995 Slovak experts (valuers) became members of the international association of experts that prescribe certificate examinations every 2 years.

Assessment of market value in process of privatization can be performed only by an expert organization appointed by the Ministry of Finance of the Slovak Republic. List of these organizations is regularly announced in the press. List of experts (valuers) is available at the Regional Courts and anyone can obtain the name of expert (valuer) according to required qualification for a fee in case of interest. Experts (valuers) are entitled to elaborate assessments for private persons (for inheritance, restitution, mortgages and other purposes) but primarily they are obliged to elaborate assessments for requirements of courts.

**Disadvantages of present state**

Present system of taxation on basis of tabular (and not market) value does not guarantee the fairness in taxation and was chosen only for a temporary period. This disadvantage is more or less compensated by various rates, surcharges and coefficients, what is criticized especially by municipalities and towns. The Act No. 317/1992 Coll. on real property tax does not create preconditions for regulation of inner urban proportions in relation to territorial and economic development of urban areas. This state is caused by an absence of value criteria in the process of calculation of tax basis. The values of plots do not consider factors such as location of plot, attractiveness of locality, etc. Real estates of different market value are frequently taxed equally. Insufficient pressure is exercised on economical use of real properties.

Original intention to assess values of real estates on market price basis (sales comparison approach) has proved to be unreal in our conditions. From available information it can be seen that despite the revival of real estate market only some 0.1 - 0.5 % of all plots is sold per year. In such a way one would not be able to elaborate one land value map earlier than in 900 years time and samples in 50 years time.

One of the basic problems that originated in the process of creation of evaluated soil-ecological units system seems to be the fact that boundaries of evaluated soil-ecological units were chosen in the field to define particular soil areas without any relation with boundaries of rural parcels registered in cadastre: the only exceptions were boundaries of forests, of important waterways, of cadastral areas or sometimes also that of built-up areas. Consequently, one parcel may consist of more kinds of evaluated soil-ecological units. Actual information about detailed occurrence of evaluated soil-ecological units is administered and provided by local land offices and this process is performed on the basis of painstaking manual comparing of map sheets containing evaluated soil-ecological units and related copies of cadastral maps (in coincidence with new regulations, the cadastral authorities are going to take over the responsibility for administration and providing this information and this process should be performed mostly when the results of land consolidation will be incorporated into the cadastre.

Our experts (valuers) are more or less experts for valuation of buildings and not of plots. Obviously, the Decree No. 465/1991 Coll. underestimates valuation of plots and only 14 various coefficients are applied to valuation of plots and this, of course, harshly influences the quality of assessment.

#### **Future?**

It is obvious that introduction of a perfect or fair model of valuation and taxation is extremely difficult.



There is an effort to introduce the value register of real estates and to elaborate the value maps in Slovakia. This register should incorporate values of all plots and buildings according to blocks and zones and simultaneous use of area from cadastre.

There are more elaborated samples of value maps in Slovakia at present, but the approval of the Ministry of Finance is prior to their use and they have not approved them yet, (e.g. proposal of land value map for Bratislava is comparable with the land value map for Brno - the Czech Republic described in the Theory of Valuation of Real Estates by M.D. Albert Bradác). Project of creation of value registers and value maps is being prepared within broader intentions of the Ministry of Finance. - Regardless the final form of approved variant it is obvious that there will be a direct relation between the cadastral authority and the process of valuation. One of the main tasks of tax authorities is to introduce a fair taxation (to pay a higher tax from the real estate of higher value and viceversa).

To elaborate the proposal of the new system for valuation of real estates, determination of basis for taxation is the key question. Several countries (USA, Denmark) are said to determine this basis as the capital value of the property defined as the possible obtained price that the owner should receive if the property was sold on the free market while having reasonable time period for finding a buyer. In other countries (UK, France) the basis is the rental annual value expressed by the annual possible rent on the free market. Difference between these approaches is that when using rental value an actual use of the property is considered whilst capital value is derived from the future possible benefits of property ownership.

Taxation of real estates according to the area has advantages of objective comparability and administrative simplicity. Comparatively, a small amount of disputes with tax payers follows from such taxation. On the other hand, taxation based on a value basis has advantages in higher rising tendency and better fairness provided that frequency of revaluation is sufficient.

Among a part of experts prevails an opinion, that taxation of real estates according to their value should proceed from the value maps system that has already been elaborated and this system is based on the methodology of the Point Value Differentiation. This methodology can give a real picture about different conditions of plots resulting from 6 basic factors (location, technical infrastructure, environment, building funds, verdure and attractiveness). It comprises evaluation of more than 80 basic territorial, technical, social, economic and natural coefficients influencing the different value of points from which is derived the general value. This methodological solution of point differentiation of the territory is based on knowledge of international experiences gained in developed countries and on comparison of 24 methodological valuations with incorporation of special features resulting from the domestic knowledge. The values derived from the value map would serve for purposes of the market evaluation of plots as the recommended prices for the price negotiation. Modifications of the point values should be determined by the Ministry of Finance depending

on inflation and stability of the currency. The result as the basis for taxation should be the Value Map of Towns and Municipalities. After connection of points with the financial values, this map would turn to a value map with financial equivalents.

Creation of value registers and value maps is a prospective method that repeatedly lays demands on the input/output of real estates cadastre from points of both reliability and form of computer processing. ■

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## Valuation of Real property, land-cadastre and land-registrer in the Republic of Slovenia

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### Valuation of Real property

A piece of land, called a parcel, is shown on the cadastral plan with its shape and situation on the site. In the attribute part of the Land Cadastre, a parcel is performed with its size, cadastral classification and yield per hectare as a taxation base.

In the evidences of the Land Register a parcel belongs to a known owner of the real property.

So, a parcel is a unit in the legal transfer of the real estate or of the real property.

After the second world war also in the Republic of Slovenia (at that time a part of the former Yugoslavia), the state property of nearly all real property was introduced. For farmers and owners of one family houses and flats certain allowances were done.

In spite of the above mentioned changes, the legislation of running the Land Cadastre and Land Register remained in general unchanged.

The valuations of the real property have been done by the legally authorized real property valuers on the base of the legal methodology and legally determined prices per unit.

A state financial control was done at the transfer of the property, where on one side was the State itself.

In the contracts of the transfer of the property the data of the Land Cadastre and Land Register database have been used.

Since the attainment of the independence in 1991, in the Republic of Slovenia the private property of the real property have been introduced again.

According to the restitution and influence of a free market, the valuation of the real property split into two directions:

1) valuations, or better to say, collecting the real property values for the sake of the free market,



2) valuations of real property according to the legal methodology.

Both kinds of real property valuations have some common points.

In common sense the value of a parcel is a product of two values:

1. price per square meter of the land,
2. surface (area) of the parcel.

1) *Price per square meter*: Price per square meter of the land could be:

1. administratively determinate, or
2. freely formed.

Administratively determinate were prices per square meter of land at the nationalization and partly at the expropriations. In the case of the restitution, when the piece of land must be paid out, the prices of the land are administratively determinate as well.

Freely formed price per square meter of land is the market value.

2) *Surface (area) of the parcel*: Surface of the parcel is the data from the Land Cadastre database. Data from the Land Cadastre database are:

- 1) surface (area) of the parcel,
- 2) land use data

Accuracy of the surface of the parcel from the Land Cadastre database depends of the year of calculating of the surface.

The most accurate are the surfaces, calculated according to the new technical regulations from 1974.

Land use and land classification data: Due to legal regulations the agricultural expert should every fifteen years determine the land use and the land classification data for every land parcel. That is not as it should be. These cadastral data are not up to dated. On special request of the land owner these data are determined by the agricultural expert.

For the time being in Slovenia there are some 250 real property agencies and agents. The free market of the real property in Slovenia is still new, unsettled and dispersed. Since 1994 some agencies have been organized in an alliance - real property stock exchange. They have organized a database for some 120 real properties.

Due to the fact, that the Land Register is not completely adjusted to the Land Cadastre, the data of certain number of the real properties could not be completed.

A special problem are the big flat settlements, not entered into the Land cadastre and Land register evidences.

Real property stock exchange cooperates with the Slovenian Real estate Association. This Association is the member of the FIABCI - The International Real Estate Federation.

#### **Valuations of real property according to the legal methodology**

The last legal methodology has been in force since 1987.

Two separate methodologies were issued:

- Methodology for the determination of the value of the agricultural land and forests,

- Regulations for calculation of the values of houses, flats and other real properties.

Value of the agricultural land is determined on the base of pointing. Value of the forest is determined according to the value of the land itself and to the value of the trees.

Value of the buildings and flats is fixed as the value of the real building costs.

Value of one square meter of a new flat, built by the state construction firm, is prepared by the political communities at the beginning of each year. The value of the community infrastructure costs is prepared in the same way.

Union of the building industry and building materials, monthly publishes raising of building costs.

Building parcels are divided into builded and unbuilded building parcels. Their value depends of their location.

In all judicial cases - divorce, inheritance, reimbursements (compensations) - the appraisal, of an valuer are demanded. These valuations base, as well, upon the data of the Land Cadastre and Land Register database.

At the property transaction, the owner usually want to know the «official» value of their property.

Real property valuers in Slovenia are organized in a professional society which takes care of improvement of our work.

The Slovenian Real Property Association is a member of the FIABCI (International Real Estate Federation).

We hope as well, that the Slovenian valuers will join to the European TEGOVFOFA not before long.

## **Land-cadastre and land-register**

A piece of land, called a parcel, is shown on the cadastral plan with its shape and situation on the site. In the attribute part of the Land Cadastre a parcel is performed with its size, cadastral classification and yield per hectare as a taxation base.

In the evidence of the Land Register a parcel belongs to a known owner of the property.

Republic of Slovenia, a state in the heart of Europe, covers 2.025.660 ha and is divided into some 5.400.000 parcels. On some 3.100.000 parcels the agricultural production is possible.

Republic of Slovenia was till 1918 a part of the Austrian-Hungarian Empire. In 7805 with the decree of the Austrian-Hungarian emperor the very beginning of the technical measurements for the sake of the land cadastre in the Empire was settled down.

The whole territory of the Empire was covered with local rectangular coordinate systems.

Territory of the present state of Slovenia is covered with three local rectangular coordinate systems. The points of intersections of these systems are trigonometrical points of first grade Krim near Ljubljana, Schoeckel near Graz and the church tower of Saint Stephen in Vienna. Systems have no cartographic projections, Y-axis is oriented towards west and X-axis towards south. Own trigonometrical geodetic networks were developed in the frame of each local system.

Till 1832 for the region of the present state of Slovenia the geodetic network, detailed measurements of land parcels and drawing of cadastral plans at scales 1:1440, 1:2880 and 1:5760 were done as well.

The representatives of the community have signed mutually agreed limits of properties before the detailed measurements were done. Measurements were done on the plane table. The most accuracy was paid to the representation of the limits of property on the plans.

From 1832 till 1868 these cadastral plans were not maintained, and the government decided for the complete renewal of the plans.

According to the Instruction from the year 1856 the new cadastral plans were done and the parcels renumerated.

In the year 1883 the Land Register was established with the decree of the emperor, on the base of the register of titles. The Land register records the names and material rights of the owner or owners of the property. Through land register entries the legal protection of the inscribed rights are ensured. At its foundation the Land Register got the copies of all land cadastral plans of its territory. Land Register and Land Cadastre together assure that no real estate or real property transaction could be done without paying the necessary taxes.

And since 1883 the maintenance of cadastral plans in accordance with the registered property has been going on. The Land Register is still kept manually and does not correspond completely with the evidences of the Land Cadastre. The records of all field measurements since 1883 have been carefully saved by the branch offices of the Geodetic administration. The particular significance of the stored records was evident at the occasion of restitution.

In 1924 the Gauss-Kruegers conform cartographic projection of meridian zones for our state have been involved.

Maintenance of all cadastral date was till 1975 done by hand. Cadastral evidences remained behind of the real situation for up to a year.

Cadastral plans were from the beginning till say 1975 printed and maintained on sheets of printing paper. Since 1975 a lot of cadastral plans in Slovenia have been printed on plastic folios.

Since 1975 the aerophotogrammetry has been used for making cadastral plans.

Since 1974, according to the Geodetic law, regulations of the limits of the properties could be done only with the written mutual agreement of both sides (i.e. fixed boundaries). Besides, if anyway possible, measurements must be connected to the state geodetic Gauss-Kruegers network.

Plans at scales 1:1000 and 1:2000, covering some 10% of the surface of Slovenia, were completely done according to these regulations.

On these plans the corner points of the parcels - so called land cadastre points are located with their Gauss-Kruegers coordinates.

Along fixed boundaries no more judicial conflict for the boundary is possible.

We are sure that such a way of running the land cadastre is one of the most modern ways of this kind.



In October 1991 the Surveying and Mapping Authority of the Republic of Slovenia has initiated the project Computerization of Geodetic Records of the Republic of Slovenia. Methodological and technological solutions for establishing and maintaining of digital databases were prepared - among many others - for the Land Cadastre first of all.

Our goal - to make new numerically based cadastral plans for the whole territory of Slovenia, representing the fixed boundaries - will require much time and above all it will be very expensive.

So, we have decided to build up a digital Land Cadastre. A digital Land Cadastre means computer keeping of the graphic part of the Land Cadastre data (i.e. location data) and join them with the already built up attribute database into one single digital Land Cadastre database.

Digital land cadastre includes:

- computer keeping of the attribute data of the Land Cadastre,
- computer keeping of the location data of the Land Cadastre,
- computer keeping of the history of the parcels,
- computer keeping of the attribute and location data of the Land Cadastre points,
- computer keeping of the history of the attribute and the location data of the Land Cadastre points,
- computer keeping of the administration of the Land Cadastre office,
- computer keeping of the evidence of the elaborations (records of previous measurements),
- to build up the base of changes,
- connection with the classic files of the Land Cadastre.

Program packages deal with the separate parts of the digital Land Cadastre (DLC)

- Base of data of the DLC: kept and maintained are the attribute and location data for the parcels, Land Cadastre points and points of the geodetic network,
- Base of changes: collected and maintained are the data about title plans and legal changes of the parcels,
- Register of working procedure: attended and registered is the whole administration of the office. Finished works are kept in the separate PP Evidence of the Elaborations. The register of working procedure is the functional link between the base of data, the base of changes and of the files.
- Files: also in the future the classical way of running the files is foreseen.

With these program packages the step by step transition from classical to the digital Land Cadastre will be enabled.

On all Geodetic Administrations in Slovenia the below mentioned digital data are already kept and maintained:

- database and the history base for the attribute data of the parcels,
- database of all geodetic network points,
- database and the history base for the Land Cadastre points (i.e. corner points of the fixed boundaries),

- digital evidence of the elaborations (i.e. records of the previous measurements). This program package (PP) enables making the evidence of the previous measurements since 1883. This PP can work alone or in the linkage with the PP register of the work procedure.

All the data of these databases are issued to the customer with no delay.

PP register of the working procedure is already over the testing phase. As already said, the attribute data of all the parcels are already kept and maintained on computer by every Branch geodetical administration. Common attribute database for all parcels of the whole Slovenia is kept and maintained by the Geodetic information Center. Updating of the central database is being performed with diskettes, direct connection of Central database to the branch administrations is in the phase of gradual implementation.

This central database for the whole Slovenia is our big effort and great success. For 3% of the whole amount of the parcels also the location data are available with no delay.

Nowadays we are working on transformation of printed cadastral plans into digital form. So, the customer will get also the copy of the plan with no delay.

The link identity code between the both records, the Land Cadastre and the Land Register, is the number of the parcel in the frame of every separate land cadastre community. Both records are by law defined as state records and are maintained regularly.

For the time being, the Land Register does not follow the modern development of the running of the Land Cadastre and is still kept by hand.

Land Cadastre relates to the Ministry of the Environment and Physical Planning, the Land Register is under responsibility of the Ministry of Justice. ■



## Taxes based on real estate value

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### Short Geographical Background

Latvia covers the area of 64,589 km<sup>2</sup> and is situated on the South -East coast of Baltic Sea. The population of Latvia is 2,686,000 and a half of it lives in or around Riga the capital city. The Latvian landscape was formed during the Ice Age and varies from flat and undulating lowlands to hilly elevations. The dominating height is 50 to 150 m. above sea level (see pag. 66).

### Historical Background

If looking back we can see that the history has not pampered the Baltic nations and the inhabitants of Latvia. Latvia was fated to lie in the geographical crossroads of the last European wars. The nation saw four agrarian reforms during the last 200 years. Latvians were serfs deprived of any rights in the 19th century, but they managed to become prosperous farmers by 1939 possessing 70% of all the land.

The land reform currently going on in Latvia is the fourth agricultural reform in this territory. The first agricultural reform (so called «Peasants reform») started with abolition of serfdom in Russia in 1861. It associates with the dividing a part of land belongings to landlords, mostly German squires, among Latvian peasants after the necessary survey and assessments.

The second agricultural reform completely ruined the medieval mode of husbandry in the Latvian countryside and towns giving back the land to its actual owners and founding a safe economic basis for a newly independent state of Latvia. In the Course of this reform the land legislation system was established and developed crowning the laws of the land reform and corroboration with the



laws on Cadastre and Land Register, as well as the Civil Law, progressive in Europe that time. Towards the end of 1930s one third of the territory of Latvia was covered by a modern Cadastre based on the results of an exact survey and assessment of the real estate.

The third agricultural reform began in late 1940s with a violent transfer to collective farming, and the land was taken off its owners. Thus, the achievements of the first two reforms were completely annihilated.

One of the first tasks the government after regaining the independence was to re-establish private property as one of the main economic and political conditions, and as far as possible to restore the justice in respect to the former owners and their heirs. However, along with the obvious success of the fourth land reform its implementation is also facing serious obstacles. I think that these problems mostly are the same in any country in transition.

The main goal of the present reform is to establish an up-to-date system for managing of land and immovable basing on the safety of private property guaranteed by the government.

The administrative system is assumed to be acceptable if it:

- guarantees property rights;
- provides for taxing of the land and immovable;
- provides guarantees for credits;
- develops and monitors the market of the land and the real estate:
- takes care of the state land estate;
- exclude controversies;
- facilitates the land reform;
- promotes urban planning and development of infrastructure;
- provides for environmental protection;
- processes the statistics.

#### Characteristics of the Present Land Reform

Supply of the land and real estate for private and social sector is an important part of the transition process for Central and Eastern European countries. The structural changes in property relations will essentially influence the private initiative and the economical and social welfare of the countries interested in it.

Successful transformation of property relations is determined by completeness of land reform. Achievements depend on the historical experience, legislation and the technical possibilities for land reform.

Latvia is in transition from command economics, where land administration was built on simplified bases and people operated mainly with big land areas, to market oriented economy, where dominating land property size is relatively small. The period of transition is characterized by very variable and multipurpose land use and property structure. At the same time there are land for use, property, loan lands, state owning, buildings which exist as independent properties, etc., and the boundaries are subjected to continuous changes. And all the above mentioned has become more complicated due to unorganized legislation system, especially it regards to land physical situation - land cadastre and valuation of the real estate and taxation (see pág. 67).

The first half of 1990s across the Central and Eastern Europe was the period of serious structural re-

forms in agriculture and related services, agriculture production and trade. All the Central and Eastern European countries had several similar features:

- the decrease in agricultural production for 40-50% comparing with end of the 1980s;
- essential decrease of agricultural percentage in the GDP;
- rapid increase of prices for the resources used in agriculture (fuel, technique fertilisers, pesticides, etc.);
- huge structural and property relation changes did not give quick favorable result.

Comparing with other Central and Eastern European Countries which are getting out of the agricultural structure established in the past:

- Latvia was undergoing the most serious changes not only in the land property but also in land use field;
- in Latvia farmers and other private enterprises which mainly depend on family and few seasonal employees create the main part of the land users and production amount as it is similar in other countries in transition;
- privatization and restructuring has occurred very rapidly.

We can see that in Latvia:

- big collective administrative enterprises in agriculture has no important role, except few cases when they will be able to create competition for farmers;
- a different basis for productions technology, motivation and lifestyle in rural region has been established;
- employment for all the employees involved in agriculture before the reforms will not be possible only in agriculture.

The land privatization process is indicated by following figures:

- during the period of more than 2 years starting with June, 1993, when the first records were made in land books, until January, 1996 in the land books there are registered 37.699 land properties with the total area of 506.828 ha;
- 63% of agriculture land is managed by private sector, and this data is one of the biggest in the Central and Eastern Europe.
- the land buying agreements up to 1 January, 1996 have signed 23.720 persons for the total area of 167.914 ha.

Neglecting the economic difficulties the properly registered land property has a high prestige. Banks are giving credits and accepting different other transactions for such deposits. Foreign business partners are reckoning it a value, as it is shown by the numbers of applications for registration of property submitted to the State Land Service. Unfortunately shortage of the budget means does not allow to carry out the necessary free service to the owners, but owners are usually in need (see pág. 69).

As regards the situation in Latvia we can say that the beginning phase of the reform has been carried out and fulfilled except few small district towns, where the reform is delayed. The second part of the land reform is decided to be inventory of the undistributed land, the acquiring program preparation for it and realization.

At this moment the laws which are in force determines that the land in Latvia can be owned by state, local authorities, Latvian citizens, juridical persons registered in Latvia, in which citizens of Latvia own more than 50% of the capital, as well as the enterprises of the countries which have signed the agreement on investment promotion and defence.

For acceleration of the land reform speed in Latvia there are several obstacles, such as:

- lack of financial means;
- complexity of the process;
- legal difficulties;
- technological needs;
- organizational inefficiency.

#### Cadastre System Establishing in the Republic of Latvia

Until year 1940 the well done system of real estate and registration established order and stability in the social and economical life in the country. Strong legislative base secured the right property relations. During the Soviet period all that was completely ruined and cadastral valuation was ignored.

In 1994 the Land Cadastre Center prepared the strategy «Establishing of Land Cadastre System in the Republic of Latvia». In order to found the mentioned system the strategy foresees 4 preconditions:

- arranged legislation base;
- strengthened organizational structure;
- the project for technical realization of the system;
- guaranteed financial support.

It is assumed that the system can be implemented in the period of 5-7 years. Practical implementation of cadastre register and cadastral map in all regions has already started, according specific methods the cadastral valuation is carried out. Following the project of technical realization the computerization of all the above mentioned work in the country has started.

#### Cadastral Valuation and Taxes Based on Real Estate Value

The legislation distinguishes two kinds of valuation: the valuation of land and that of buildings. The valuation of the land is different in rural areas and in cities. The value of the rural land is determined by the principle of potential income using two criteria: potential productivity of the soil and location of the land parcel. For the cities, the simulated market value is determined according to the location of the land parcel, land use purpose and the level of physical development. For the determination of the value for the buildings, the calculation of construction expenses, including materials and wages, is used.

All the three above mentioned valuation methods in some way are based on soviet time economy. Real property market in Latvia is only forming now. Thus, determination of the level of the market value is too complex. Especially great differences can be observed between cadastral values and market values for buildings.

To improve the situation it is necessary to order legislation by the determination of the united principles for the valuation in the whole real property as well as



the components of the property. Also it is necessary to form the information basis to support valuation.

During this year close links between cadastral and market values should be reached. It is abnormal that in some cases the value differs for 200 - 500%. The problems arise from unassigned and confusion in the real estate market.

As you have already understood there is no real estate valuation in Latvia in complete meaning of the word. There is no law which regulates the valuation of the real estate. At the same time there is law «On Land Tax». It determines the aim of the Land Tax, tax payer, which are physical and juridical persons and who have land for use or property. Physical and juridical persons for agricultural activities are paying only land tax. The area which is supplied to physical and juridical person by state or local authorities as a land for use or property is determined as taxation object. But there are exceptions like: land under traffic roads, communications, educational, sport institutions, etc.

The tax in rural areas is determined according the value of the arable land in points and its location according the specific average rate. As the base for the average land tax rate (local currency unit per 1 ha) is used rural area average values. How they are settled?

For valuation of the rural areas the land is divided in three groups:

- residential parcels;
- summer house land;
- farmland.

Each of them have specific valuation methods. Up to now the most requested valuation has been for the farmland group. The parcel value of this group is determined according the regulations which are in force and there are two main principles:

- the potential productivity of soil;
- the location of the parcel.

According these principles until 2 January, 1996 were evaluated 26.500 farmland parcels as well as similar agricultural parcels. By statistical calculation the average values per 1 ha in parish as well as in districts and whole country has been settled. The mentioned average value per 1 ha consists of the weighted average sum of the arable, forestry and other land use specification values (see pág. 71).

By analyzing the dynamics of the average values, we can see that in case of small number of observations the value differ very much, but starting with 50 observations, the value have a tendency to get stabilized. If the number of observations exceeds 100 the value differs in margins of 2-5%.

Taking into account the unequal demand for valuation in different parishes, the average land value can be different while the number of observations increases. However, the main tendencies can be foreseen. The most valuable land is in the parishes close to the capital city - Riga. But the least valuable land parcels are in a distance from cities and big towns as well as from the main traffic roads.

In urban areas the tax rate (local currency unit per m<sup>2</sup>) determined by specific list of city and town priority. The same is with the parcels for summer houses

and personal construction needs, etc. In this case there is a special list as an annex to the general law.

The law provides few discounts for tax payers. Local authorities have rights to diminish or release from payment tax payers for a certain period of time (crippled people, religion organizations, newcomers in agriculture, etc.)

The calculation and payment order of the tax is included in the same law, as well as the punishment for not following the regulations.

It is settled that the tax payment and calculation order is set by the local authorities according the situation on 1 January and announce until 1 March the sum of the tax and the term of payment. The whole sum of the tax goes for the budget of local authority.

The cadastral valuation data is used for:

- tax calculation of the real estate;
- calculation of the state land rent;
- buying out price of the land;
- land buying, selling, inheriting, granting, etc. procedures;

At present the average cadastral price for rural area land in Latvia is 310 USD per ha (minimum 35\$, maximum 1500\$). In the capital - Riga the minimum price is 2.22 USD per m<sup>2</sup>, at the same time for commercial use in the city center the price is 1422 USD per m<sup>2</sup>, and for individual building the price is maximum 105 USD per m<sup>2</sup>. But it is not the market price. Let us say that the cadastral value dictates the market price as the market of the real estate has not settled yet. At the same time the specialists of the Cadastre Center have begun the examination and gathering of market prices, in order to make editing in cadastral valuation methods.

#### Conclusion

Our citizens are interested in completion of the land property legislation and the right evaluation of land taxes as soon as possible, but cadastral services should always keep in mind that the quality and safety of this property must be maintained. Decrease or even loss of prestige of the properly registered and evaluated property should never be allowed, and the establishment of the system of cadastre can only provide this prestige. ■

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## The cadastre in Bulgaria: its state and future

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REPUBLIC OF BULGARIA

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Bulgaria's territory is 111 thousand sq. km with 58% of them being agricultural land, and 70 % of the latter being arable land. The country is divided administratively into 979 municipalities. The population of the country (8.5 M) inhabits more than 5 thousand settlements occupying 3,6 % of the country's territory.

Working out the first cadastral plans started in 1881 for city planning purposes. This took place only three years after the end of the Russian-Turkish War (1877-1878) which partly liberated the nation from the Turks.

The Cadastre in Bulgaria is designed to capture, process, store and make available immovable property data for settlements, farm land and forestry, i.e. for the whole territory of the country.

As a nation-wide activity for providing the basic immovable property information, the Cadastre lies at the foundations of: Taxation, Legal security of immovable property ownership, Regional planning, Environment, etc.

The cadastre is envisaged to be developed as a unified system putting all cadastral activities in settlements, farm land, forestry, etc. throughout the territory of the country upon a common methodology and under a common supervision and control. The cadastre shall be funded by the central budget.

All services carried out by the cadastral offices, shall be paid by customers, including the cadastral information. In some cases, a preferential or free of charge use of cadastral information shall be provided. All fees shall be remitted to the central budget or to a specialized Cadastre Fund. Thereby the cadastre shall secure its partial self-support tended towards gradually



achieving full support. The returns of the cadastre shall be open in their form however supplemented by hidden recums due to the contribution of cadastre to:

(I) Taxation which shall be provided with precise data on size and assessment of land as well as on land owners;

(II) The judicial system including real estate registration which will be supplied with data on location, neighbors, size and other data of estates;

(III) Regional planning, agriculture, ecology, etc.

Based on cadastral data which shall be the basic and most necessary data on immovable properties, institutions and local authorities may establish specialized information systems by adding specific data. In time, with the accumulation of sufficient pool of information and through providing the necessary technical conditions, a large scale geographic information can be set up.

In terms of organisation, the basic units of the cadastral system are envisaged to carry on evolving as government cadastral offices. Privatizing them is not expected.

#### **Cadastral legislation**

Political and mainly military events foiled the implementation of two cadastre laws in 1880 and 1908. Another important reason for this miscarriage is the insufficiency both of funds and of well-trained specialists in the young Bulgarian state.

In 1941, the Law of Cadastre and Land Consolidation came into force and started being implemented. It covered predominantly farming land. Based on it, cadastral plans under 1:2000 scale were prepared for some of this land within several years. The Law was rescinded in 1951.

In 1979, the Law of the Unified Cadastre of the Republic of Bulgaria was enforced. In the process of its implementation, together with a number of positive characteristics, the maximalism of data volume requirements appeared to be a fault. As another flaw, a certain commitment to the old social system can clearly be seen now. For reasons well-known, the existing legislation cannot meet the new demands, and therefore the draft for a new Law of Cadastre and Immovable Property Registration is currently in the process of elaboration.

#### **Current organizational structure of cadastre**

Corresponding to the current legislation the organizational structure now comprises managerial and production units.

##### **Managerial Units**

The Main Department of Cadastre and Geodesy at the Ministry of Regional Development and Construction.

Regional offices of cadastre, survey and immovable property registration. These are 28 local administrative divisions of the which are situated in the bigger cities and thus are evenly distributed throughout the territory of the country.

##### **Production Units**

Territorial cadastral companies - 27 in number, located in the same cities where the regional offices

of cadastre, survey and immovable property registration are. The companies were created in the early 1980s to implement the Law of the Unified Cadastre of 1979. They are equipped with devices for survey activities, digitisers, computers and software. The latter two however have not the necessary capacity to process the amount of information needed.

The National Centre of Cadastre in Sofia. Apart from the equipment shared throughout the territorial cadastral companies, the National Centre of Cadastre also has photogrammetric equipment.

The Sofgeo Municipal Company. The Company carries out the cadastral and the survey activities, as well as the major bulk of technical services on the territory of the Sofia big municipality.

#### **Current condition of the urban cadastre**

The settlements have been the most active areas of cadastre in its history so far. Since the end of the last century, cadastral maps have been produced for them, which, in accordance with former attitudes have had a topographic format. They contain basic physical characteristics and other data on immovable properties referring to boundaries, fences, type and construction of buildings, type of permanent use, infrastructure elements, relief of the terrain, etc. In the cadastral maps, immovable properties are numbered and registers (inventory lists) are kept in accordance with this numbering. In these registers every property figures with its owner's name, ownership documents and other data.

It has been common practice so far to use the cadastral maps of settlements mainly as a basis for detailed city planning and construction, as well for conveyance of property rights under a personal registration system.

All settlements in Bulgaria (roughly 5000) have cadastral maps and immovable property registers. They are kept at the territorial cadastre companies (27 in number) or at the Municipal Technical Services. The latter make cadastral maps and data available to customers in the process of implementing the settlement plans. A serious disadvantage of the settlements' cadastral maps is their becoming outdated for lack of systematic updating procedures.

The great information potential of the cadastral maps cannot be utilized to its full capacity because of the restrictions mainly due to their original graphic format. The transition to digitized data and thereby creating a new cadastral information system is a forthcoming task. In order to utilize the existing cadastral maps prior to digitizing, it is necessary to update them through surveying and supplementing the missing elements as well as through finding all changes in ownership. When it should prove impossible for the great amount of changes which would inevitable encumber the originals with too many alterations and supplements, new cadastral maps should be prepared. On the national scale, it is a task of great technical and financial volume which can only be solved in separate stages. The activities of maintaining and updating the cadastral maps and data shall be carried out simultaneously.

#### **Current state of the rural cadastre**

The outlook of Bulgarian farm land is now in the process of profound change as a result of implementing the Law of Agricultural Land Ownership and Land Use (Land Law). The large co-operative land massifs of uncertain ownership are being fragmented into numerous private lots. This brings about through alterations in existing cadastral materials and data on farm land which are now providing basic information in land allocation.

Certain part of Bulgarian farm land has already been given back to legal owner or their heirs in the order of the Land Law, its Implementation Regulations or other by- or sub-laws. As a result of the concluding restitution procedures the basic land estate data (border point co-ordinates, ownership data, plot size, soil category, etc..) are being produced and need to be adopted by the cadastre. These data are on technical carriers suited for automatic processing. They are the initial data for a farm land cadastre. It is expected that right after the process of land restoration is completed, different kind of conveyances (partition between heirs, sales, etc..) will take place and will lead to dramatic changes in land geometry, ownership, etc.. These changes have to be surveyed and recorded by the cadastre upon the initial basic data, i.e. the cadastral farm land data ought to be constantly kept up-to-date.

#### **A system for registration of immovable properties**

In Bulgaria, a personal system for entering notarial deeds is being implemented based on the Property Law. Adopting the proper legislation and introducing a real system of land registration is pending.

#### **A project for a new organizational structure of the cadastre in Bulgaria**

##### **The Need of a New Structure**

The changes which occurred in the country call for the revision and restructuring of the cadastre organization.

According to the Constitution of the Republic of Bulgaria «the right of ownership and inheriting is guaranteed and protected by the law». The state should create a relevant system of guarantees to implement this constitutional provision. Since the cadastre documents immovable properties by their location, borders, size and ownership, it constitutes the cornerstone of such a system, upon which the other basic element - the immovable property register (the land register) shall be established. The government is therefore liable to provide for the cadastre in terms of funding and management, and thus make it a permanently functioning centralized government structure with a system of locally operating units which may also enlist the services of private survey companies.

Twenty seven cadastral offices shall be established in 27 bigger cities as budget-funded divisions, and the National Center of Cadastre in Sofia based on the existing structural units the major part of which are public companies (the Ministry of Regional Development and Construction).



## **Cadastral Offices**

### *Functions of the Cadastral Offices*

The cadastral offices shall be designed to capture, process and store cadastral data and documentation in order to establish the data base and the information system of cadastre. The cadastral offices and their bureaux shall issue excerpts of cadastral maps and provide services based on the cadastral data and shall provide the survey needed in immovable property transactions. They shall also co-operate with the registration offices (the notaries) over such transactions. Based on the documents created in the process of this co-operation as well as on survey carried out, the cadastral offices shall maintain updated cadastral information on immovable estate. In cases when initial cadastral data ought to be collected, survey and other supplementary work shall be assigned to specialized survey companies and licensed individuals and shall be controlled and approved by the cadastral offices.

### *Number of Cadastral Offices*

The cadastral offices chosen were relatively small in number in order to:

- Govern and control them effectively from the center;
- Gradually equip them with the best possible (from financial and technical point of view) and sufficiently powerful computer systems to process and store cadastral information, with devices to communicate with notary offices and consumers, with modern survey, digitizing and automatic drawing equipment, with transport vehicles, etc.;
- Achieve the best possible personnel structure per office so that it may function at minimal administration cost (including its technical control);
- Accelerate the build-up of their system in view of the already permanent distribution of surveyors following the long-standing tendencies in the migration process which led to critical shortage of surveyors in the smaller cities;
- Evenly cover the territory of the county to a sufficient extent.

### *Bureaux of the Cadastral Offices*

To bring services closer to consumers of cadastral information and reduce cost, cadastral offices shall establish their bureaux in cities with regional courts and the respective notarial activities. In terms of service functions the bureaux shall be equivalent to the cadastral offices. The cadastral offices and the bureaux shall be located in 67 towns in total (27 offices and 40 bureaux).

### *Basis for the Establishment of the Cadastral Offices*

The now existing regional offices of cadastre, survey and registration of immovable properties and the public cadastre companies shall serve as a basis for the establishment of the cadastral offices and the National Center of Cadastre. This will lead to the employment of already harmonized and experienced teams and the use of already available equipment.

### *Financing the Cadastral Offices*

The newly established divisions as described above shall be financed by the central budget. They are not meant to be privatized.

Apart from inheriting the property of the old production companies, the cadastral offices shall need to be gradually re-equipped with up-graded computer systems and with other kind of equipment. To this end, additional budget finding shall be needed.

It should also be taken into consideration that the cadastral offices and the National Center of Cadastre shall provide all the services (inquiries, issuance of drafts, survey, etc.) for reasonable fees, comprising the cost together with a share of the initial information price, that is, they shall at least partly restore the budget funds previously spent (through a special Cadastre Fund).

### *Functions of the Budget Units*

#### *Management of the Cadastre*

The cadastre shall be managed by the Ministry of Regional Development and Construction through its Main Department of Cadastre and Geodesy. The Department shall secure the proper conditions for running the cadastre nation-wide, and for setting up and maintaining its information system. In the field of cadastre, The Main Department of Cadastre and Geodesy shall:

- Prepare drafts for laws and sub-laws;
- Work out long-term and annual programmes and substantiate the requested government budget funding;
- Allocate funds over individual tasks in accordance with annual programmes as approved;
- Suggest the structure and supervise the activities of the cadastral units;
- Organize expert activities;
- Promote the reception of foreign aid and its proper allotment and spending;
- Coordinate the input of foreign companies carrying out cadastral works in the country;
- Provide consultations to other organizations and to local authorities;
- Set up the fashion in which cadastral materials and data are accumulated, processed, stored, multiplied and circulated.

#### *The Cadastral Offices shall:*

- Control and accept the contracted out cadastral works; control and participate in the acceptance of all kinds of survey works assigned by public or municipal bodies;
- Keep in stock and secure the use of cadastral maps originals in digital, graphic and written form except those stored only at the National Center of Cadastre;
- Based on the documentation in (II) hereof, establish the database and the information system of the cadastre in their area by integrating the cadastral data for settlements, farming land and forestry into a common data-base;
- Maintain bilateral information exchanges with registration offices (notary offices) over immovable property ownership changes;
- Provide cadastral data to be used, issue cadastral maps, carry out inquiries and other technical services connected with proving or change of immovable property rights, while executing the necessary survey;

- Keep up-to-date the data-base and the information system in their area;
- Control the preservation of survey marks;
- Run information exchanges with local authorities over developments of importance for the cadastre, and assist local authorities with consultations;
- Process data of annual land accounts and balances in their area for the needs of local administration.

#### *The National Center of Cadastre shall:*

- Accept from the cadastral offices and keep in ready-to-use form the cadastral data as of the previous year end;
- Provide information of the state borders, the administrative unit borders and the borders of the territories belonging to settlements;
- Create and process cadastral data under generalized indicators and characteristics, create and maintain the data-base and the information system of the national cadastre and provide data from it, as well as prepare balances for government needs;
- Provide technical services and advice to the cadastral offices;
- Summarize the data of the annual land accounts and the balances of the national territory for government needs;
- Prepare draft laws and sub-laws, and issue regulations in cadastre, as well as carry out development activities;
- Maintain a national fund to accept, store and submit to users geodetic, aerial photography, mapping, cadastre and other materials and data of national importance. ■





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