

TERRITORY INFORMATION SYSTEMS IN THE NEW SPATIAL VENEZUELAN DYNAMICS. CASE STUDIES FOR THE STATE OF MERIDA.

Angel Oscar Pappalardo
Universidad Nacional de Santiago del Estero
Avda. Belgrano (s) 1912. Fax 54-85-213481/220624
Republica Argentina

Summary

In the Venezuelan transition, the development of the Territorial Arrangement at municipal level needs territorial information adapted to that scope of activity. The paper is oriented towards the study of the cadaster as territorial records carried in municipal jurisdiction, by differencing the decentralized and central government agencies, and taking into account the proposal of the Cartography National and Cadaster Law, that promotes the creation and managing of these records by the municipalities. A method that permits to characterize the different cadastral organizations is developed. The degree of compatibility of the existing information, as compared to the new municipal situation, and the percentage of coverage, is measured. Furthermore, the adjustment of the cartographic scale at municipal level is studied. The method is applied as study of cases to three municipalities of the Mérida state with differentiated spatial characteristics. The results, independently of the tools and methods used for collecting the information, evidence a relationship among the territorial information systems, the spatial dynamics, and the territorial policy followed by the government. The territorial records formed in the centralized Venezuela will have to be adapted to the new local dynamics and to the Territorial Arrangement politics outlined by the different areas.

1.1 Introduction

Venezuela is in a Transition Stage¹ [1]. Structures of power are being reformulated through a process of desconcentration and decentralization. Among other aspects, competences from the central government to other agencies, as state and municipal ones, are being transferred. In this context, the Territorial arrangement, as a policy of the State, plays a very important role.

Thus the municipalities recovered their own competences and others that were transferred to them. In this way, the municipal government is in condition of fully assuming the responsibility in the Arrangement of the Territory matter within their jurisdictional scope.

The development the Territorial Arrangement at municipal level will have to solve many problems. The one which needs of greater attention refers to the systems of necessary Territorial Information for that scope of activity, since the existing Information Systems were created under other spatial dynamics, where the arrangement of the territory was depending on the National Government.

The decentralization process that is being carrying forward, permits and demands the local governments to obtain and to register territorial basic information. The Proposal National Cartography

¹ "La dinámica socioespacial que caracterizó a la Venezuela rentista comienza a cambiar a finales de la década de los setenta, concluye el rentismo distributivo y se inicia una transición gradual e irreversible hacia una sociedad capitalista. Los tiempos que corren son tiempos de Transición por tanto confusos y complejos en cuanto a los factores interviniéntes [1, -p.24].

and Cadaster Law², briefly, let the municipalities accomplish the cadaster in all the area of their jurisdiction scope (urban and rural). In this way, they will have an own territorial record. Furthermore, the Proposal Law mentions explicitly that the cadaster will supply information for the Territorial Arrangement.

In this way, the municipalities will have to form the cadasters as territorial records. In addition to the traditional aspects (physical, legal and economic), a fourth aspect of the cadaster will have to be created. This fourth aspect was designated by some authors as Planning or Social aspect. Here we will refer to it as Information for the Territorial Arrangement (ITA).

As opposed to the traditional aspects that supply data by plots, the aspect ITA must supply information of all the municipality.

The paper is oriented towards the study of cadaster as territorial records carried out in municipal jurisdiction, by differencing the decentralized and central government agencies, and taking into account the proposed National Cartography and Cadaster Law, that promotes the creation and managing of these records by the municipalities. A method that permits to characterize the different cadastral organizations³ is developed. The degree of compatibility of the existing information as compared to the new municipal situation, and the percentage of coverage, are measured. Furthermore, the adjustment of the cartographic scale at municipal level is studied.

As a summary, the existing cadastral records are evaluated, and their possibilities to form a system of Territorial Information are analyzed, based on the new Venezuelan spatial dynamics.

1.2 Hypotheses

The work was guided by two hypotheses:

- 1- The existing cadasters were generated and respond to the centralist Venezuela. Thus, they present a low compatibility level with the new municipal situation, probably by the fact that there was no need of observing that the different cadasters organized in Venezuela would be compatible for a direct integration, or to be transformed into information system for the Territorial Arrangement within the municipal scope.
- 2- The existing information relatively presents a higher degree of compatibility to form the aspect ITA, than any other of the aspects of the cadaster. This is due to the fact that the governmental agencies authorized to form the cadasters, collected information for planning.

² The Proposal National Cartographic and Cadaster Law is found currently underway and counts on approval in first discussion.

³ The six cadastral records correspond to the accomplished by The IAN (Instituto Agrario Nacional), MEM (Ministerio de Energía y Minas), MARNR (Ministrio del Ambiente y Recursos Naturales Renovables),MINDUR (Ministerio de Desarrollo Urbano), MAC (Ministerio de Agricultura y Cria) , and the Municipality (Alcaldía). Six agencies of the government that yet have responsibilities to accomplish territorial cadasters.

1.3 Method

The extension of this article does not permit to detail the method thoroughly. In few words, it is considered a joint of elements that permit to characterize the cadaster as territorial record described in the Proposal Law. Ten qualitative elements and one quantitative are identified. Furthermore the cartographic scale for the aspect ITA at municipal level is analyzed, since there are no definitions with respect to this topic.

The qualitative elements were analyzed on a Compatibility Array. The array rows correspond to the qualitative elements grouped by aspects. The array columns correspond to the six cadastral records formed within a municipality, by different agencies of the government, and to the cadastral record adopted in the Law Proposal.

The cells of the array are completed with weighting values of each one of the qualitative elements, grouped by aspect. The weighting value permit to compare the elements among them.

To measure the compatibility, a compatibility index⁴ was used. This index varies from 0 (zero) to 1 (one), and measures the degree of compatibility from perfectly compatible if results 1 (one) up to totally incompatible if results 0 (zero).

This index measures the degree of compatibility by element. To obtain an indicator by aspect the weighted average of the indexes is accomplished.

The percentage of coverage as a quantitative element was adopted. In the rural areas this coefficient is determined as the ratio between the surface with information and the total surface. For the urban areas, the number of plots registered on the total estimate was employed. For the estimation, the last housings census of the OCEI (Central Statistics Office and Information) was used.

On the other hand, with the aim of defining the scale, or scale ranges, adapted for the planning at municipal scope, some of the incumbencies assigned to the municipalities were considered. These competitions permit the municipalities to develop the Territorial Arrangement process within their jurisdictional scope.

A criterion to define the cartographic work scale for the area of the municipality was adopted. This considers a scale that permit, on a parceling cartography, to identify the plots that form it. In this way the numerical value of the scale will be different if rural or urban sectors are considered; and within rural, the scale will depend on the size on the plots.

1.4 Study of Cases in three municipalities of the State of Mérida

After defining the method, the same was applied as study of cases in the State of Mérida. For this purpose, three municipalities were chosen. The criterion used for the selection was the quantity of registered information and the spatial characteristics of the municipalities. The selected ones were: the Libertador , the Rivas Dávila and the Alberto Adriani Municipalities.

⁴ The compatibility index is defined as $IC = [(X - xi) / n.X] - 1$ where: n is the number of considered cadasters, X is the maximum value of weighting of each element, it is defined by the cadaster about which is wanted to measure the compatibility, and xi are the weighting values, ordered by row, in the array.

1.5 Results and Discussion

The results of the compatibility index that measures the quality of the information, is presented in Table 1. Differences among one municipality and another are observed. However, they show better results for the aspect ITA.

Table 1.
Weighted average by aspect of the compatibility index of the cadastral information for the municipalities Libertador, Alberto Adriani y Rivas Dávila.
1994, Mérida, Venezuela

Cadaster Aspect	Municipality Libertador	Municipality Rivas Dávila	Municipality Alberto Adriani
Physical	0.44	0.4	0.28
Legal	0.43	0.35	0.25
Economic	0.4	0.35	0.24
ITA	0.67	0.63	0.51

Furthermore, it is observed that, relatively, the Libertador Municipality presents the best result of the indexes⁵ in all the aspects. This means that it is in better conditions to form its territorial information system.

The Libertador Municipality, a metropolitan area that receives relatively greater federal revenue (Situado Municipal), has more possibilities of forming their Territorial Information System than the Municipality Rivas Dávila, a rural municipality, which counts with less resources by federal revenue, and many less possibilities of forming their record.

The percentages of coverage that measure the quantity of the information, are shown in table 2

Table 2
Percentage of Coverage for the Municipalities Libertador, Rivas Dávila and Alberto Adriani.
Mérida, Venezuela 1994

Cadastre Aspect	Municipality Libertador		Municipality Alberto Adriani		Municipality Rivas Dávila	
	urban (%)	rural (%)	urban (%)	rural (%)	urban (%)	rural (%)
Physical	44	1	45	13.5	0	0
Legal	44	11	45	36.2	0	62
economic	44	0	45	0	0	0
ITA	100	100	100	100	0	100

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Recall that the index varies from perfectly compatible if results one until totally incompatible if results zero.

A relatively low percentage of coverage for the traditional aspects of the cadaster is observed, unlike the ITA aspect, which presents coverage of the 100% in most cases. Furthermore, it is observed that, in the same way as in Table 1, the Libertador municipality is in better conditions, because it has greater quantity of information.

Finally, upon analyzing the cartographic scale of the information, it was found that there are cases in which the information is not presented on a parceling cartography. Neither is it possible to transfer the information directly to a parceling cartography, and to define areas or sectors by joining of plots.

As in some cases the information responds to planning developed by the national and regional level, difficulties are presented, derived from the cartographic scale of the information, so that this could be used directly by the municipal level.

On the one hand, the obtained results verified the outlined hypothesis. The territorial records accomplished in the centralized Venezuela are presented with low compatibility levels in the new municipal situation. In spite of this, they present relatively better conditions to form a first approximation of the aspect ITA.

This situation is the result of a little clear policy, guided to the Territorial records in general and to the cadaster in particular. This freedom for registering territorial information, permitted six public agencies to have attributions to form cadasters, without the existence of accurate specifies with regard to how and which would be the scope of activity of each one of them. Also, the central government agencies, which have competence in cadastral subjects, do not have the formation of cadaster as their main objective. However, they used that competence to collect the necessary information to attain their objectives.

But, beyond probing the hypotheses, this type of freedom for forming the territorial records explains the differences found among the municipalities. In this case, the Libertador Municipality, corresponding to a metropolitan area, is situated in better conditions than the Municipality Rivas Dávila, which has rural characteristics.

A quite interesting aspect of this situation is that these results, independently of the tools and methods used to collect the information, evidence a relationship among the territorial information systems, the spatial dynamics, and the territorial policy carried out by the government. The territorial records generated in the centralized Venezuela will have to be adapted to the new local dynamics and to the Territorial Arrangement policy outlined by the different areas. Consequently, we are speaking of dynamical territorial records and as sufficiently flexible as to be adapted to changing situations in time and space.

In this way, the Venezuelan municipalities can accomplish the cadaster as the base for a system of territorial information in their framework. In such sense, the advisable starting point is to form a first approximation of the ITA aspect with the existing information, since this aspect is presented in better conditions. Thus, they will be able to assume and to begin to develop the arrangement of their territory. But, it will have to anticipate, within its development, the training of the cadasters as an institutional problem, to which special attention should be paid, since it is considered an indispensable territorial record for the process itself of the Arrangement.

1.6 References

- [1] Rojas Andrés J. - Ideas para estudiar la Transición Venezolana 1980-1990- Cuadernos para la discusión - Fundación Luis Fernando Chavez - Mérida, Venezuela - 1993 - 37 p.