

# Technical Instruments of Territorial Management for The State of Oaxaca, Mexico

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**Abstract** — In the present investigation, a documentary review was carried out with the objective of determining and analyzing which are the technical instruments that should prevail when it comes to managing the territory. It was found that Mexico has a robust set of these instruments which have been created and developed by various agencies and organizations that contribute to this task more expeditious and is conducted under certain guidelines. The results indicate that the fundamental instruments to carry out an efficient territorial management that have basic elements and that should be consulted before undertaking, involve territorial management are: the General Ecological Territorial Arranging Program of the Territory and the corresponding Biophysical Environmental Units and Units of Environmental Management; the Territorial Arranging Program, both instruments developed for the whole country; the Municipal Atlas of risks; the Municipal Urban Development Plans; and the Functional Regionalization of Mexico, a recently created instrument, created based on data from road networks, the flow of people, goods and services, and economic information from populated areas.

**Keywords** - Territorial management, territorial arranging, ecological arranging, environmental management units.

## I. INTRODUCTION

Peoples have historically occupied those spaces with adequate resources for their livelihoods, using them according to your needs and depending on the geographical, historical and cultural context have been organizing, giving particular configurations to such spaces. This did not generate complex environmental, social or economic conditions in early humanity and it was small groups that were also nomads. The inertia of survival, to another that denoted power to obtain more space and with this more resources, as well as the power over the population, that was the beginning of territoriality, there began to demarcate the first territories.

Territorial management is a process that involves the organization, functioning and administration of the elements (natural, socio-economic, cultural and political-administrative) of a territory, through the management and handling of the different situations that may arise during the interactions, product of the activities carried out by the different actors that make life in this territory, which will depend on the style of development of the territory to be ordered, taking into consideration the corresponding instruments. This involves the set of actions and procedures performed, not only for the fulfillment of the objectives set out in the territorial projects, but also for the resolution of problems that may arise and ultimately for the improvement of the quality of life of the people.

Thus, the need to properly manage the territories arises, and although at first it was not given a proper name, territorial arranging was carried out spontaneously or empirically, if you want to qualify it in some way, but in currently, it offers technical and legal instruments that regulate and establish guidelines for territorial arranging.

In this context, when referring to the Territorial Management (GT) it is important to understand its dynamics based on the territory and its arrangement, since these last two, form a binomial where the first contains the elements on which the second exercises its action. In this sense, the Territory, is considered as an area belonging to an entity to a group of people or a person with authority and jurisdiction defined; and at different scales, for example, the territory of a nation, of a state or department, or of a municipality; And as an articulation of natural elements, socio-economic, cultural and political-administrative, subject to a certain logic in its distribution and organization (ordered), and interrelated, functionally at various scales hierarchical, formalizing certain structures or forms socio-spatial changing in time (Méndez, 1988). In the same way [1] defines it as the geographical space in which it is lived and that corresponds to handle and to administer for good of the community.

The territories along its history have had their own organization and their own order, and in this dynamics, one affirms that the town and country planning always existed, nevertheless, it is up the thirties that it arises like politics of

the State and instrument of planning, and it was generalized like scientific and political discipline of the State, environmental of technical, economic nature, social and administrative from 1960, linked to the consolidation of the State of Well-being On[2]

The other hand, the town and country planning is considered to be a term polysemic that basically is a politics of the state, multidimensional, and closely related to the development styles. [3] points out that it arises, in the Latin-American countries in the beginnings of the decade of the 80s, with the clear intention of giving an integral treatment, from a global approach, to the problems of the territories. Several scholars in the field define the order as:

A multifaceted concept and, above all, anthropocentric, who is called to be a reflection palpable the degree of efficiency and equity acquired by a society [4]. Points out that it is both a process and an instrument of planning, technical-political-administrative, that it seeks to configure, an organization of the use and occupation of the territory, in the long term, according to the potentialities and limitations of the same, the expectations and aspirations of the population and the objectives of development [3].

The document is organized as follows: section I that contains the introduction in which general aspects of territorial management in Mexico are discussed; section II that exposes the related work of the authors; Section III indicates the methodology of the study, mentions the geographic area in which the research is conducted and the type of study; Section IV in which the results are discussed and displayed; section V contains the conclusions of the study; Section VI shows the contribution of the authors. Subsequently the references and the profile of the authors

## II. RELATED WORK

The authors develop research related to territorial management from perspectives such as environment, urban, risks, as well as rights. Research carried out with the objective of contributing to improve the quality of life of marginalized or vulnerable communities of the state of Oaxaca, México. The specific themes are water management, the rights of communities over natural resources and their territories, municipal management in urban and peri-urban areas.

## III. METODOLOGY

The study area is the state of Oaxaca, one of the 32 states of the Estados Unidos Mexicanos, located to the south of the national territory.

The design of the study is of a documentary type, which was based on the search, collection, analysis and interpretation of data from primary sources. The field work consisted of two stages: the first one, you visit to libraries and institutions to

which the documentary and cartographic material was requested them; and the second one the questionnaires application to students and teachers.

## IV. RESULTS AND DISCUSSION

### IV.1. BASIC TECHNICAL INSTRUMENTS OF TERRITORIAL ARRANGING IN MEXICO

The planning of the Territory can be approached from two angles, one as a process of mere physical planning (land use, location of populated centers, economic activities) and two, as an integral and complex process, whose main purpose is social welfare [5]. In Mexico, there is the management models of the territory which are the product of a combination of physical aspects, geographical and economic. Similarly, in Mexico the policies governing the use soil, are immersed in the Territorial Ordering (OT) which involves urban areas and Ecological Management General of the Territory (OEGT) that involves the rest of the territory.

It is important to point out that the proposal of the program of General Ecological Ordering of the Territory (POEGT) is integrated by the ecological regionalization that comprises synthetic territorial units integrated from the biophysical environment (climate, relief, Vegetation and soil), These are 145 homogeneous territorial zones called Biophysical Environmental Units (UAB), with guidelines and specific ecological strategies, represented at scale 1:2,000,000, which share the same priority of attention, of sectorial aptitude and of Environmental policy and that are used as a basis for the analysis of the diagnostic and prognostic stages of the POEGT [6], represented in the territorial planning model.

On the other hand, there are the Environmental Management Units (UGA), which represent the minimum unit of the ecological ordering area to which they are allocated, as well as the UAB, ecologic guidelines and strategies at more detailed scales, ie at the local level. The UGA possess conditions of homogeneity of physical-biotic, socioeconomic attributes and of aptitude on the base of a common administrative handling, and it is inside the stage of proposal of the POEGT. In synthesis, the UAB is units to a macro scale or general level and the UGA are units to a local scale of major detail, the base for the management of the territory [6]. The state of Oaxaca is provided with a proposal of UGA established in the Program of Regional Ecological Arranging of the Territory [7]. In this context, the OEGT with the UAB and UGA, they represent the basic elements for the management of the territory.

Likewise, the management of the urban areas and centers of population, it must be carried out taking into consideration the instruments that have been prepared to carry out the OT, nevertheless, they are not of obligatory making, they are carried out and apply for political will; and although the

Federation offers support with resources for the POT achievement, by means of the Secretaría de Desarrollo Agrario, Territorial y Urbano (SEDATU), inside the program of prevention of risks, it does not give resources for its application and follow-up.

The POEGT and the POT, are basic instruments of national coverage, which should be taken into account in any process of management of the territory and environment, exist other at regional and local level, Such as the plans for the Management of Protected Natural Areas, Forestry Management Plan, Municipal Development Plan, Municipal Plan of Urban Development, plans and special programs, Atlas of Risks Municipal, Regulations of Use of Soil, the Program for the Development of Priority Areas, between others that they must be considered, as it should be the case, and the required ends.

The territorial arranging can be addressed from different perspectives, levels of depth, geographical scales and areas, and although it has a multidimensional approach, you can emphasize a particular issue as the health, natural resources, community activities, economic activities, conflict socio-economic, urban, etc. This division inside the topic makes to think that to manage a territory is a complex task, with many edges for the quantity of aspects to take into consideration and the interrelations that happen in a territory, Which makes utopian that in a study can address all aspects and interrelationships at a given time, and therefore, according to the study or project to develop specific instrument, in addition to the basic already mentioned.

In the following paragraphs develops an exhibition about the technical tools of greater importance in the issue of risks and disasters and the theme of urban planning aimed to assist in the process of territorial management in the state of Oaxaca.

#### **IV.2. TECHNICAL INSTRUMENTS OF RISKS AND DISASTERS FOR THE TERRITORIAL ARRANGING IN THE STATE OF OAXACA**

Phenomena such as Telluric movements, floods, landslides, blizzards, storms, tsunamis, volcanic explosions, droughts, tornadoes, hurricanes, fires, etc., have occurred throughout history, in different parts of the surface of the earth, phenomena that in non-populated territories, do not go from being something of relative importance, however, when they occur in densely inhabited areas are translated into large losses. The exposure to these phenomena, the human settlements in areas of danger, the scarce ordering of the territory at local level, the physical vulnerability of the exposed infrastructure, coupled with the social fragility of broad sectors of the society, provoke Material and human losses representing a high social and economic cost for the country [8]

Mexico is provided with a robust set of instruments which purpose is to attend from diverse angles to the topic of risks and disasters, and inside these the technical instruments are, being the technical instruments of major importance the National Atlas of risks, the atlas state and municipal. In this sense, the state of Oaxaca is provided with the Atlas of Risks of 2003 and its update for the year 2010 [9]; nevertheless, only 34 (of a whole of 570) of its municipalities have risk Atlas, what 6 % represents and in addition to it they are not updated. These municipalities are:

Región Mixteca: Silacoayapam (2012); Huajuapam (2010). Región Papaloapam: Acatlán de Perez Figueroa (2011); Loma Bonita (2012); San Juan Bautista Tuxtepec (2011); San Jose Chiltepec (2011). Región Cañada: San Juan Quiotepec (2011). Región Sierra Norte: Ixtlán de Juárez (2013); Santa María Tlahuitoltepec (2011) Región Costa: Santiago Pinotepa Nacional (2012); San Pedro Mixtepec (2012); Santa María Colotepec; Candelaria Loxicha (2015); San Pedro Pochutla (2012); Santa María Huatulco (2012). Región Istmo: Heroica Ciudad de Juchitán de Zaragoza (2011); Santa María Xadani (2014); San Blas Atempa (2014); Ciudad Ixtepec (2013); Santa María Petapa (2013); Santo Domingo Tehuantepec (2011); Salina Cruz (2011). Región Sierra Sur: Miahuatlán de Porfirio Díaz (2012). Región Valles Centrales: Ocotlán de Morelos (2014); Santa Cruz Xoxocotlán (2011); Oaxaca de Juárez (2011); San Jacinto Amilpas (2012); San Pablo Etlá (2014); San Lorenzo Cacaotepec (2015); Santa Lucía del Camino (2015); San Sebastián Tutla (2013); San Agustín Tatareni (2014); Tlaxiactac de Cabrera (2014); Santo Domingo Tomaltepec (2013); Santa María del Tule (2013).

The atlas of municipal risks are developed within the framework of the program of risk prevention in the human settlements (PRAH) of the Secretaría Social de Desarrollo (SEDESOL), with the general objective to identify the threats, natural risks and anthropic, and In addition, they serve as support to land planning and urban planning. It is noteworthy that the Mexican institutions that have an important role in the elaboration of these Atlas are the SEDESOL, The Secretaría de Gobierno (SEGOB), Civil protection, Centro Nacional de Prevención de Desastres (CENAPRED), SEDATU and other public and private national and international institutions and Organizations.

however, even if these technical instruments are important in the issue of risk and disaster management, the Official Journal of the SEGOB Federation [8] points out that there are aspects that are immediately treated as the limited link with the Society and low promotion of the culture of civil protection; Limited coordination of the national system of civil protection in emergencies and disasters; legal framework outdated and heterogeneous; insufficient adoption and use of technological innovation in the field of civil

protection; inadequate distribution of financial instruments for risk management. With this it is about to emphasize that the instruments are important but there exist other aspects that also are necessary and must be considered and corrected.

An important aspect to highlight is that the Federation provides extraordinary resources for the risk prevention program aimed at "helping to encourage the orderly growth of human settlements, population centers and areas through actions related to the prevention and mitigation of risks, and territorial planning "[10]

#### **IV.3. URBAN PLANNING INSTRUMENT FOR TERRITORIAL MANAGEMENT IN THE STATE OF OAXACA**

Taking into account the expansion of cities, changes in land use, levels of marginalization and incipient urban planning on the part of local governments, the worry arises of doing an exhaustive review of the technical instruments with which it is counted in the state to manage the urban areas, so much in its current physical component, as well as the urban areas in expansion.

In this regard the SEDATU and Secretaría para el Medio Ambiente y los Recursos Naturales (SEMARNAT) published in the year 2107 the new methodology for the elaboration and updating of the Municipal Plans for Urban Development (PMDU) [11], which is composed of two documents: Conceptual lineaments and Methodological Guide. This guide has the target to specify the conceptual lineaments of management, concision and evaluation of the dispositions on the subject of elements of territorial arranging and urban arranging, conceived like a tool that the municipalities are offered to facilitate and to face the making of its PMDU and to contribute to the urban sustainability. The methodology itself is not the instrument, but if it is the tool by which the instruments are elaborated to take into account for the management of the territory that in this case is the PMDU.

Another instrument of recent creation is the functional regionalization of Mexico, developed between the years 2016 and 2017 by the SEDATU, which includes five levels of analysis units: 1. Rural Urban Systems (SUR); 2. Rural urban subsystems (Subsur); 3. Articulatory Centers of the System (CAS); 4. Urban Basic Services Integrative Centers (CISBaU); 5. Rural Basic Services Integrative Centers (CISBaR).

Instrument prepared from the analysis of roads, persons' flows, goods and economic information of cities and the urban areas. This instrument is the basis for the creation of the information system for the Regional development of Mexico, a tool that will give the authorities of the three levels of government the information necessary for the decision making on the territory for the benefit of The population, In

seeks to reduce inequalities, boost to the lagging regions, encouraging economic growth and increase access to opportunities [12], turning it into a very useful tool for territorial management.

Other instruments are special plans such as plans for historic helmets and partial plans, instruments implemented for specific cases in urban areas, which must be created and implemented and if they are already a reality they must be taken into account when managing urban Areas.

#### **V. CONCLUSIONS**

The POEGT is elaborated on a large scale, that is, with little detail, so that each municipality must carry out its own municipal POET; However, as it is not mandatory, a small percentage of the municipalities do so by political will.

The Atlas of risks are technical instruments and do not include legal regulations, arise from institutions such as civil protection and CENAPRED, in addition, they are not obligatory and are not connected with the municipal development plans, that is, lack of inter-institutional linkage.

The technical instruments for territorial arranging included in this document are important, but so are other instruments such as legal, methodological and financial, among others, not included in this study.

There are technical limitations, such as the lack of institutional mechanisms that can influence the duplication or juxtaposition of institutional competences in territorial arranging activities.

For territorial planning in Mexico, there are five main instruments for the methodology and the factors that have been mentioned in its design and that have become important instruments, which are: 1. The General Ecological Arranging Program of the Territory (POEGT); 2. The Territorial Arranging Programs (POT) of urban areas, 3. The Functional Regionalization of Municipal Mexico, the Risk Atlases and the Municipal Urban Development Plans (PMDU).

The instruments studied are not exclusive, they are complementary to each other for the management of the territory.

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