

DOI: 10.24850/j-tyca-2019-01-03

Articles

Systems of charges and management of drinking water in the committees of Toluca de Lerdo

Sistemas de cargos y manejo de agua potable en los comités de Toluca de Lerdo

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Abstract

According to what was researched in ethnographic field work, from January 2013 to June 2014, it was found that in 18 Delegations of Toluca de Lerdo in the State of Mexico, the responsibility to operate, manage and distribute the water is at charge of the water committees, consisting mostly of a pyramidal structure where there is a president, a secretary and a treasurer, generally these positions are occupied by people who have covered civic-religious positions and whose rules of life are governed by the customary law, (uses and customs) organized by the general assembly of the people, the main authority in the community that has the right to voice and vote. This research shows a strong community management carried out by the Delegations of Toluca and identifies the open and closed communities (Wolf, 1981), which allowed to know and analyze the different social structures of the water committees highlighting their equity, democracy, governance and governability.

Key words: Social structure, water committees, civic-religious structure, uses and customs, water management, open and closed communities.

Resumen

De acuerdo a lo investigado en trabajo de campo etnográfico, de enero del 2013 hasta junio del 2014, se encontró que en 18 delegaciones de Toluca de Lerdo, Estado de México, la responsabilidad de operar, manejar y distribuir el agua está a cargo de los comités de agua, conformados en su mayoría por una estructura piramidal conformada por un presidente, un secretario y un tesorero. Generalmente estos puestos son ocupados por personas que han cubierto cargos cívicos-religiosos y que sus normas de vida están regidas por el derecho consuetudinario: usos y costumbres organizadas por la asamblea general del pueblo, principal autoridad en la comunidad con derecho a voz y voto. Esta investigación muestra una intensa gestión comunitaria que las delegaciones de Toluca llevan a cabo e identifica las comunidades abiertas y cerradas (Wolf, 1981). Gracias a ello fue posible conocer y analizar las diferentes estructuras sociales de los comités de agua que se distinguen por su equidad, democracia, gobernanza y gobernabilidad.

Palabras clave: estructura social, comités de agua, estructura cívico-religiosa, usos y costumbres, gestión del agua, comunidades abiertas y cerradas.

Received: 28/04/2017

Accepted: 28/06/2018

Introduction

Mexico (Barkin, 2006), identifies that the official bodies in charge of water management, do not contemplate on the part of the State the recognition of the water committees, even though these have given rise

to the current conflicts of water, between the law and customary law. The problem between the government and the water committees is the rejection and criticism of the administration they carry out and the convenience of seizing the committees.

In this sense, the integrated management of water resources (IWRM) establishes the need for a coordinated social participation between the State, users and organizations that promote measures to achieve self-management (DOF, 2011)

The general model of the system of charges (Tax, 1937, Wolf, 1981) was put to the test in the State of Mexico through fieldwork based on the interview-survey, here it was applied for the case of the water committees and He carried out his ethnography. That is, the system of positions in the delegations and towns of Toluca was characterized ethnographically, the structure and function of the water committees and their context within the cargo system, as well as their history.

These committees operate with a self-management where the election of its members is by general consensus of the population. They are grouped in a place (atrium of the church, esplanade, auditoriums or in the primary or secondary schools) and by popular election open in voting the members of the committee are elected.

An important characteristic of the elected is that they have held civic and religious positions in the community for several years, and based on their experience and honesty they are invited to participate in other positions. Or, they are elected because of their intellectual capacity to solve problems.

The application of the system of charges to the study of the water committees of Toluca, served to propose it as an initial theoretical model for the study of social management with an emphasis on water, identifying and describing the social structures of customary origin in the Delegations of the Municipality of Toluca.

Customary law and the law

Customary law has existed in Mexico for centuries. Despite their unfavorable situation, these human groups, in most cases, still have their own organization, their authorities, their legal norms, their sanctions that remain in force, even though they have been valued as mere folklore due to ethnocentrism or ignorance. (Gómez, 1988: 13-14).

So, customary law is a set of norms and rules of behavior and social coexistence that contribute to integration, to the maintenance of internal order and to the solution of conflicts (including a system of sanctions for those who violate these norms) ... it has not been created by the State (Stavenhagen, 1988: 99).

Natural resources and especially water, is part of the customary attributions of these human groups. In the systems built and managed by users of ancient origin and of peasant and indigenous populations, there is, for each territory and water system in particular, a deep understanding of the customary nature of water rights, taking into account the rights to capture and use, the rights to operate, supervise and administer, and the rights to control and own it (that is, the definition, regulation and representation of water uses and users) (Bendan-Beckmann, F von., Bendan-Beckmann, K von., & Spiertz., 1998).

While regarding the formal regulation of drinking water systems, the amendment to Article 115 of the Constitution of 1983 establishes that it is the municipalities that have the responsibility to provide public services of drinking water and sewerage, no mention is made of the incorporation of the organizations of the rural communities in the administration of the resource, and the strengthening of community life in the ejidos and the communities is hardly considered through the regulation of the waters and other actions of promotion.

However, the reform established in 1999 already introduces some guidelines to contemplate this social participation by stating that:

The city councils shall have the authority to approve, in accordance with the municipal laws to be issued by the legislatures of the States, the police and government factions, the regulations, circulars and administrative provisions of general observance within their respective jurisdictions, which shall organize the municipal public administration, regulate the matters, procedures, functions and public services of its competence and ensure citizen and neighborhood participation. (DOF, 1993).

These incipient acknowledgments to the organizational experiences of the communities for water management are also seen in the National Water Law of 1992 (DOF, 2011), which in its article 5, sections II and III indicates that the Federal Executive " It will encourage the participation of water users and individuals in the execution and administration of works and hydraulic services, and will favor the decentralization of water resources management in accordance with the current legal framework.

The social structure

The social structure is also known as the social system (Harris, 2001), and has proved to be the most important component to understand and identify the forms of organization of societies and human groups (Radcliffe-Brown, 1972, Harris, 2001). Therefore, understanding the social structure becomes essential to identify the most important components related to water and its social management.

Social structures are as real as individual organisms (Radcliffe, 1972: 217). In the first place, Radcliffe Brown considers them as part of social relationships from person to person, while for Wasserstrom he defines them by their principles of collectivity (Wasserstrom, 1989).

Thus, a social structure is a set of individuals and their rules that are dedicated to coordinated activities relatively coherent with each other, with respect to the general aims of social organization. Research on organizations studies the behavior of individuals in their social roles and the behavior of organizations in terms of collective units (Durkheim, 1978; Weber, 1957).

In Mexico, this aspect is very important, since the country has hundreds of communities that present a traditional social organization that has a high percentage of community structure, which is in charge of managing, using and managing the natural and human resources that make it up (Wolf, 1981, Greenberg, 2002).

It should be noted that the analysis of organizations focuses on the system of interrelated attributes, where they fit with each other, and where are the relationships and mutual influences. In other words, each social system is framed and influenced by other, larger systems. At the

same time, in practice, organizations function in the local and then regional context. The latter are inserted into the broader framework of societies, cultures and states (Barnard, 1962).

The choice of a social structure and its theory for the study of water management becomes fundamental for the Integrated management of water resources, However, the old human groups existing in the State of Mexico, have social structures that result in organizational forms that are in conflict with current or constitutional law, which is the general framework for the study of social structure, water and the Integrated management of water resources.

The social theory of Charge systems

Estrada and Romero (2004:123), define the cargo system and its relationship with water management as: "A social structure of ancient origin that is responsible for organizing the community to manage their water resources through customary law".

But what is it and how does the charging system work?

The investigations that approach the social organization in the cultural area of Mesoamerica, consider that the institution of greater socio-cultural relevance is the so-called system of charges:

"In the Mesoamerican world, the organization of community positions is subdivided into two specialized sectors. On the one hand, the set of political - administrative public functions, which unite the community with the state institutions within the framework of the municipality (constitutional council), on the other the religious positions assigned to the celebration of major events of the ceremonial cycle "(Galinier, 1990: 115).

The system of civic-religious positions created in the rural community throughout its history is discovered in anthropology in Mexico, as a social structure that permeates all community activities (Romero, 2009). It appears for the first time in an article by Sol Tax in 1937. In it is the first theoretical model of the system of charges in the way it will be found later in the ethnography on communities in Mexico:

The municipalities (and community towns) are differentiated by having a common social system of great scope, both in politics and religion, each one keeps unity and relative independence: the system of charges" (Tax, 1937: 442-444).

Civil and religious officials are placed in a hierarchical sequence through which every individual is supposed to pass. Those who have fulfilled their obligations to the community, enter the category of senior elders and form a council that exercises power and controls the selection of authorities. A basic feature of the political system of the community is the close interrelation of the religious and secular aspects of the organization of the people, causing civil servants to participate in religious activities or considering certain religious positions as prerequisites for civilians (Cf. Wagley, 1941; Tax, 1937).

The system of charges is a civic-religious institution created in the colonial or New Spain era, but at the moment it is the backbone of the community organization of the peoples of ancient origin, its main objective is to organize the community, social, cultural and religious life of its participants.

The system of charges is based on customary law, which means that the acts are consensual and approved by tradition and custom. Public positions or posts constitute a hierarchy according to rank and line of authority, they are exercised from a civic post to a religious post and it is repeated, the positions are in scale and after passing through several of them the degree of elder or principal is reached, participation in the scale of positions is open to all members of the community.

It is one of the most important characteristics of the Mesoamerican communities, with clear political, economic, social and religious implications, but there are points of divergence among them, such as: the functions they perform within the community or the origin of the institution, if they have pre-Hispanic and colonial features, if it comes from the colonial brotherhood or if its origin dates back to the nineteenth century or earlier (Wolf, 1968).

Years later the ethnohistorian Pedro Carrasco in 1979 highlights the political aspect (customary law) of the civic-religious position system:

"It can be characterized as a type of democracy where all the trades are available to all men belonging to the community, and where the result of the operation of the ranking system is that, almost all, share the responsibilities of government and maintenance of the community "(Carrasco, 1979).

The anthropologist Korsbaek (1994) adds that the system of civic-religious positions consists of a number of positions and responsibilities that are defined as such (topil, janitor, petty butler, head of parents, fiscal, etc.) and that they take turns among the members of the community who assume a position for a period of time. The offices are hierarchically organized and the system of charges includes almost all the members of the community, not only as an individual, but as a family.

The system of charges includes two hierarchies: a political and a religious, but that function as a system, that is, the two hierarchies or related charges. After having assumed the most important positions in the community system (stewardships and civil offices) a member of the community is considered as the principal (Korsbaek, 1987). He is consulted about everything concerning communal actions (Iwanska, 1972).

Many are the anthropologists who have confirmed the existence and importance of this civic-religious system in the life of communities of ancient origin in Mexico.

"The members of a community organize their lives around a series of staggered positions that constitute the hierarchy, relevance and organization of the community, the "system of positions", composes the structure in the community, is basic for existence (operation) and continuity of traditional culture "(Aguirre, 1973).

Finally, the system of civic-religious positions is occupied by male adults of a locality, although in recent years cases of female participation have been detected. The transit through its various hierarchical levels is determined by a rigorous social normativity that ensures degrees of prestige among its participants (Portal, 1996).

The social structure through the system of charges implies political-administrative decisions about the communities and their belonging (identity), not only organizes the civic-festive life of the community, but also the social norm, which qualifies its members and which gestates inclusion-exclusion mechanisms. That is, it marks boundaries of belonging.

The positions are structured in a hierarchical and pyramidal manner, but the manner in which each position is named, the central functions that it fulfills and the prestige granted to each of them varies. This depends on the group and community concerned.

In the case of Toluca de Lerdo, there are towns and communities of ancient origin where social structures such as the cargo system must be one of the determinants and indicators for water management.

Therefore, it is the theory of the system of charges, serves as a model proposal to analyze the management of water committees in Toluca to characterize its effectiveness (governance, governance, democracy, and gender equity).

The first researcher to report the system of charges in the State of Mexico was Iwanska (1972) a student of Sol Tax, who worked with the Mazahuas in the 1950s. Several anthropologists have studied this topic, including Sandoval Forero (1997), González Ortiz (2009), Álvarez (2000) and especially Leif Korsbaek (2000), since he organized a line of research on the system of positions in the State of Mexico at the School of Anthropology of the UAEM. , according to Korsbaek, the typical charging system has five important characteristics:

1. The positions have a hierarchical-religious hierarchical structure with graduation scale.
2. The mayordomos, prosecutors and topiles are appointed for specific periods, that is, they are not inherited or for life.
3. The members of the mayordomías do not receive any remuneration for the community service loan.
4. The high financial costs of stewardships are covered by those who occupy the highest hierarchy.
5. Participation involves the entire population, or at least the majority of it (Sandoval, 2001, Korsbaek, 1998).

Where the Mazahua ethnoregion is located, there are two main positions in this system of traditional social organization: civil positions and religious positions. According to Sandoval (1997), the former are related to the administration, control and use of water; forest care, ejido authority, conservation and maintenance of the pantheon, as well as the care of schools, soccer and basketball courts.

The other system of charges is that which directly concerns the religious and has its greatest influence in the patron saint festivities. In these, stewardships are organized to organize, conduct and control the festivity of the patron saint to the chapel and mainly to the images. These mayordomos, together with the prosecutors, the treasurer and the secretaries, constitute community authorities who enforce, by conviction or coercion, all the commitments acquired in the assemblies.

This political-religious system tends globally to define the community and its way of acting. The social model of this type of entities is as follows (Figure 1).

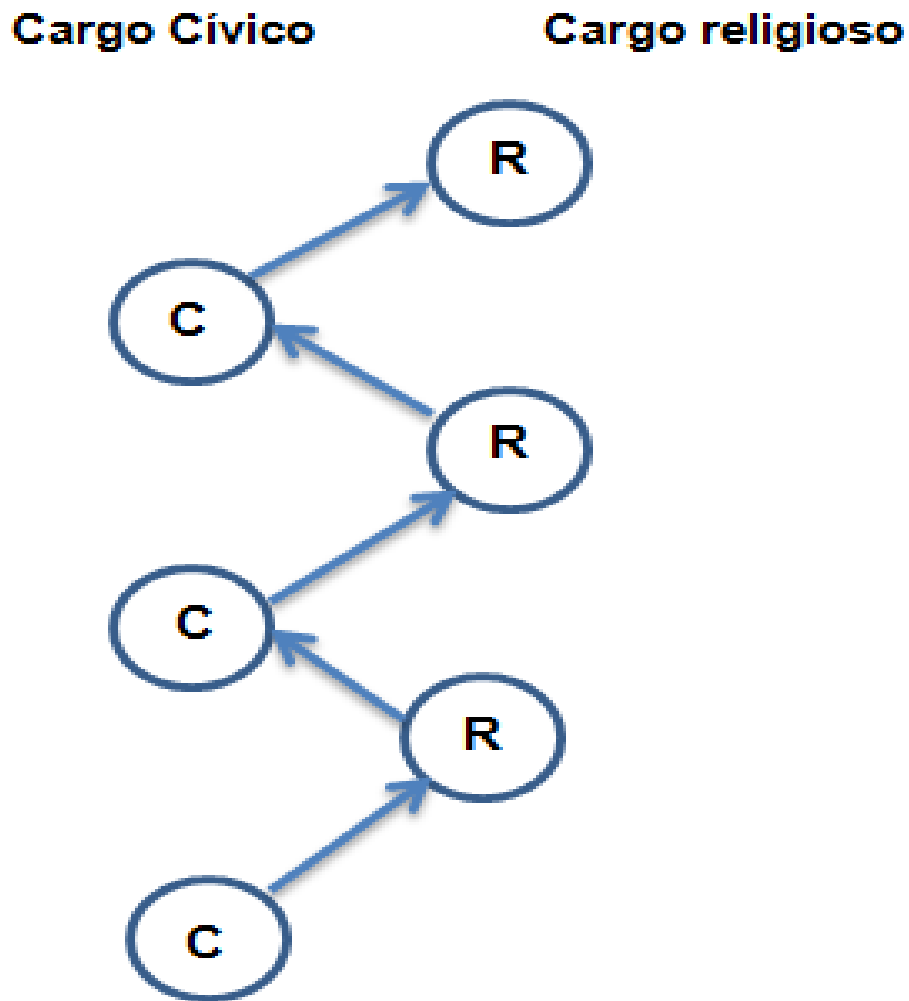


Figure 1. Structure of the civic-religious position system (Cfr. Tax, 1937; Wolf, 1981)

The cargo systems constitute a unified and pyramidal arrangement, composed of a religious hierarchy and a civil hierarchy, which have their own functions within the communities that maintain them, the water committees were incorporated within this structure.

Case study: Toluca de Lerdo

The Municipality of Toluca de Lerdo is one of the 125 municipalities of the State of Mexico, this municipality has 24 Delegations. It is worth mentioning that the municipalities have Municipal Delegations in the communities that serve as assistants in the State of Mexico of the municipal authority.

The municipality is supplied with water through deep wells and a derivation of the Pumping Plant Cutzamala System, being the latter supply under the modality of "Block Water Supply" by the Water Commission of the State of Mexico (CAEM). The hydraulic infrastructure of the municipality is operated and administered by the Water and Sanitation Authority of Toluca, who is in charge of the operation of the 73 deep wells that supply water to the municipality, except for the 18 Delegations, where the operation and administration of water is in charge of local drinking water committees (CAEM, 2009).

Its 24 Delegations are: 1.- Cacalomacán, 2.- Calixtlahuaca, 3.- Capultitlán, 4.- San Antonio Buenavista, 5.- San Buenaventura, 6.- San Cristóbal Huichochitlán, 7.- San Felipe Talmimilolpan, 8.- San Juan Tilapa, 9.- San Lorenzo Tepaltitlán, 10.- San Marcos Yachihuacaltepec, 11.- San Martín Toltepec, 12.- San Mateo Oztacatipan, 13.- San Mateo Oxtotitlán, 14.- San Pablo Autopan, 15.- San Andrés Cuexcotitlán, 16.- San Pedro Totoltepec, 17.- Santa Ana Tlapaltitlán, 18.- Santa Cruz Atzacapotzaltongo, 19.- Santa María Totoltepec, 20.- Santiago Miltepec, 21.- Santiago Tlaxomulco, 22.- Tecaxic, 23.- Santiago Tlacotepec y 24.- Tlachaloya. This investigation worked with 18 Delegations, being the only ones that have water committees.

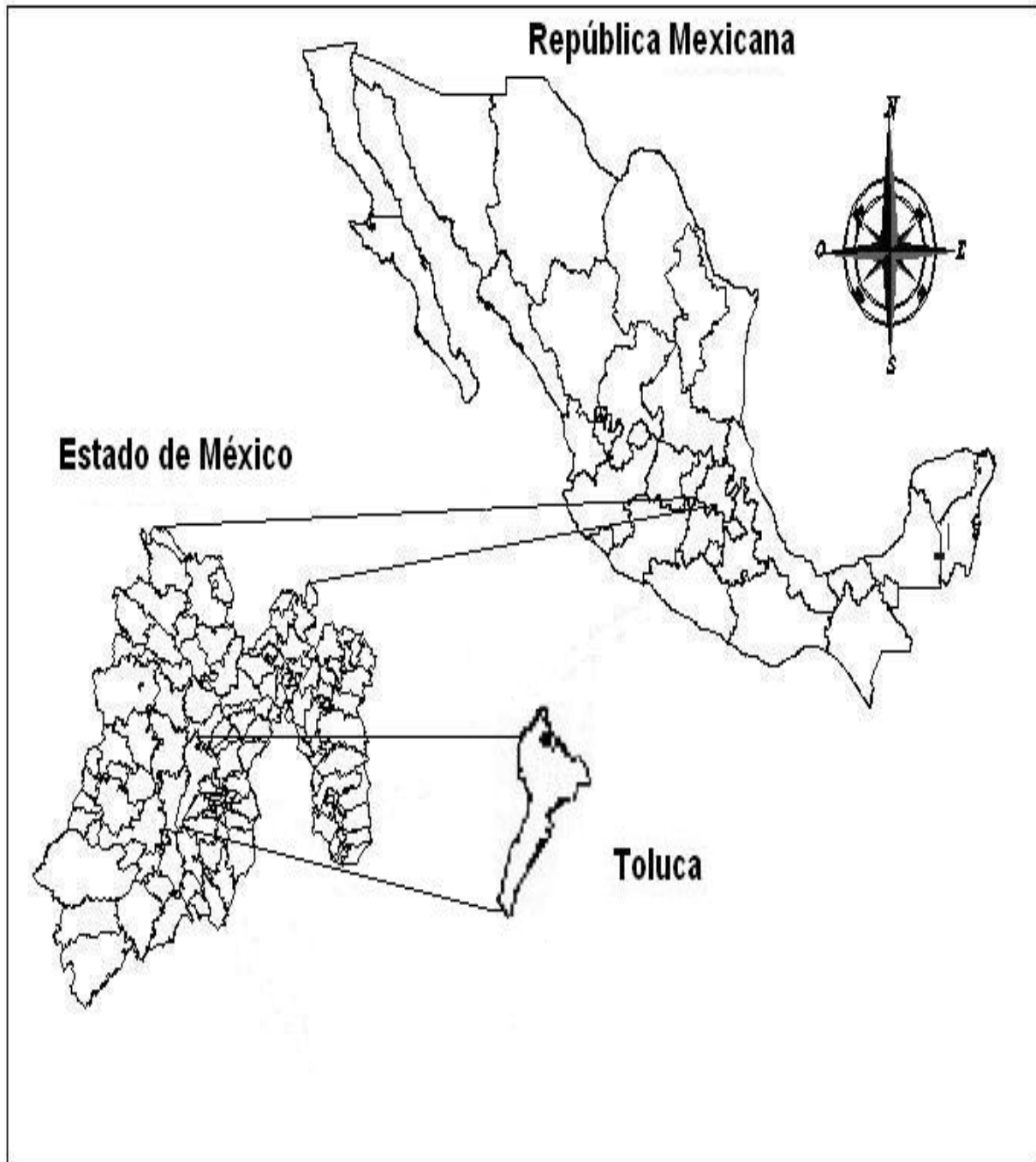


Figure 2. Location of the study area

Toluca de Lerdo in the state of Mexico; it is located in the central zone and limits to the north with Almoloya de Juárez, Temoaya and Oztolotepec; to the south with Metepec, Calimaya, Tenango del Valle, Villa Guerrero and Coatepec Flours; to the east with Lerma, San Mateo Atenco and Metepec and to the west with Zinacantepec and Almoloya de Juárez. Its geographic coordinates are: 19 ° 04'15 " and 19 ° 27'10 " of north latitude and 99 ° 31'40 'to 99 ° 46'50' 'of longitude.

Water committees in Toluca de Lerdo, State of Mexico

The water committees are self-managed organizations that are governed by the general assembly of the town (both in closed and open communities), in order to carry out the management, supervision, election, maintenance and expansion of the water network (Palerm, 1989).

The origin of the water committees in Toluca began in the 1950s. However, they multiplied at the initiative of the municipal president, Yolanda Senties de Ballesteros, in the 1970s, when the drilling of the wells began, (Minutes of the Chapter, page 89, Volume II, 1970).

To carry out this research, the 31 water committees registered in Toluca (Municipal Development Plan of Toluca 2009-2012) were called upon to carry out the field work for their location, during which the presence of 36 committees, that is, 5 more than officially reported; It was also identified that some of the registered ones do not exist (5). An important fact that the field work showed was that in Tlachaloya Second Section, there are 10 water committees, however, they are connected to the Cutzamala System, so they have their relationship with that Federal agency in Mexico City and not with the municipality of Toluca, for this reason only one case was taken for study, working on 18 delegations with 27 water committees and their key informants (presidents, secretaries, treasurers and members) in all of them the interview was conducted where the Wolf's social model, 1981. It should be mentioned that it was not used in the Toluca Municipal Development Plan 2013-2015, since it was not yet published.

The water committees identified, interviewed and surveyed in the municipality of Toluca de Lerdo are the following:

Table 1. Field work 2013-2014.

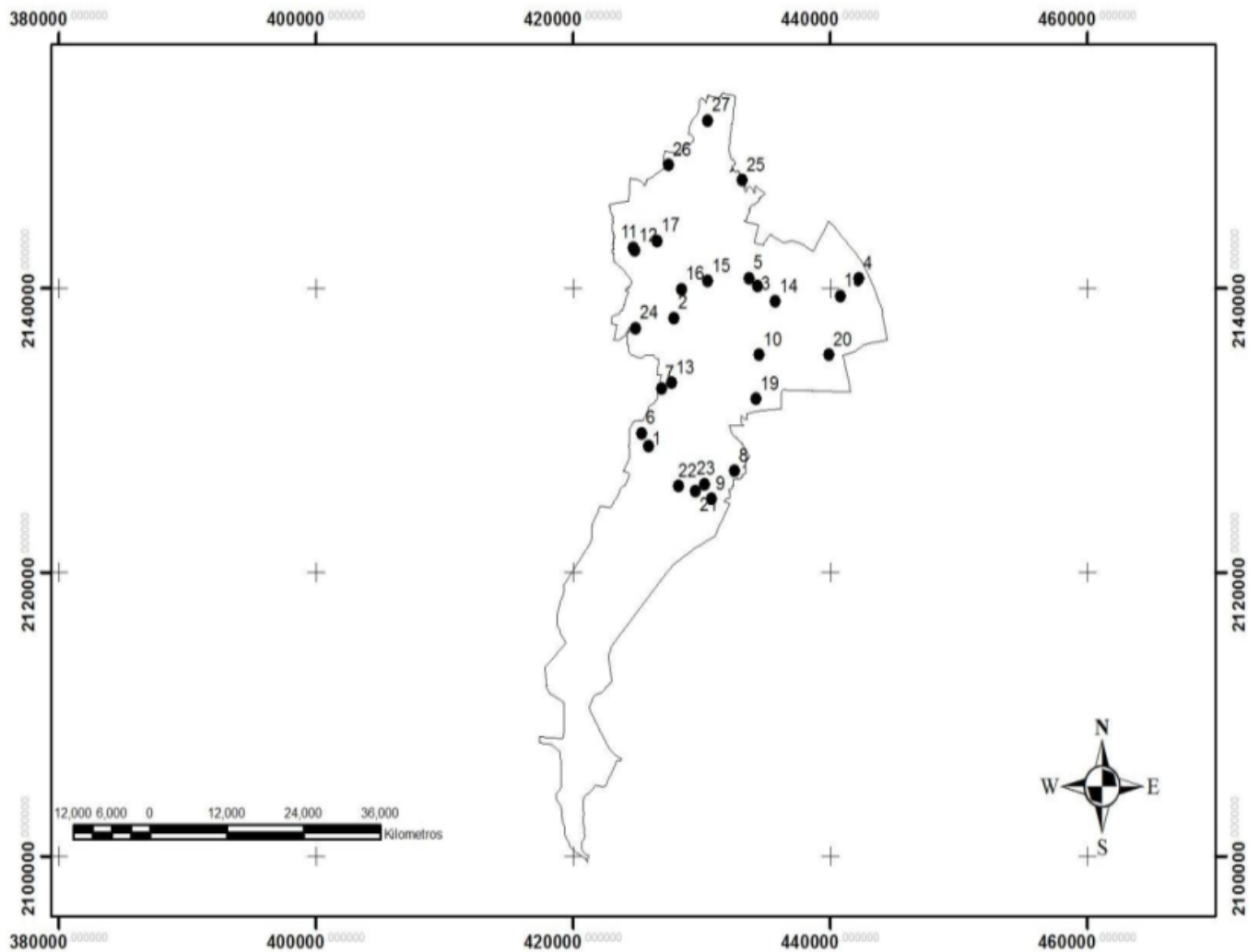
Delegations	Water committees
1.-Calixtlahuaca (1)	1 Calixtlahuaca
2.- San Andrés Cuexcotitlán (3)	1 Sección III
	2 Barrio de la Natividad sección II
	3 Barrio de la Concepción sección IV
3.- San Felipe Tlalmimilolpan (1)	1 San Felipe Tlalmimilolpan
4.- San Juan Tilapa (1)	1 San Juan Tilapa
5.-San Pablo Autopan (3)	1 San Pablo Autopan
	2 Barrio de Jesús I,II,III.
	3 Subdelegación de colonia Aviación
6.- Santiago Tlacotepec (3)	1 Santiago Tlacotepec
	2 Col. el Refugio
	3 Col. Guadalupe
7.- San Marcos Yachihuacaltepec (2)	1 San Marcos Yachihuacaltepec
	2 El ejido de San Marcos Yachihuacaltepec
8.- San Lorenzo Tepaltitlán (1)	1 San Lorenzo Tepaltitlán
9.- Cacalomacán (1)	1 Cacalomacán
10.- San Antonio Buenavista (1)	1 San Antonio Buenavista
11.- San Mateo Oxtotitlán	1 San Mateo Oxtotitlán
12.-. Santa Cruz (1)	1 Santa Cruz

Delegations	Water committees
13.- Guadalupe Totoltepec (1)	1 Guadalupe Totoltepec
14.- Santa Ana (1)	1 Santa Ana
15.- San Buenaventura (1)	1 San Buenaventura
16.- Santa María Totoltepec (1)	1 Santa María Totoltepec
17.- Tecaxic	1 Tecaxic
18.- Tlachaloya (3)	1 Barrio de San José Buenavista el chico en Tlachaloya
	1 Barrio de San Carlos en Tlachaloya
	1 Subdelegación de Tlachaloya segunda sección

Giving a total of 27 identified water committees. As mentioned above, 5 committees were detected as nonexistent, which were registered in the Municipal Development Plan (2009-2012), which are:

- 1 Colonia Sebastián Lerdo de Tejada (San Martín Toltepec)
- 2 Ojo de agua (San Pablo Autopan)
- 3 Hábitat Don José
- 4 Misiones de Santa Esperanza
- 5 El campanario (San Felipe Tlalmimilolpan).

Below is a spatial image where the water committees in Toluca de Lerdo are interviewed.



Simbología

Comites de agua

- | | | |
|--|---|---|
| ● 1. CACALOMACAN | ● 9. SAN JUAN TILAPA | ● 19. SANTA ANA TLAPALTILÁN |
| ● 2. CALIXTLAHUACA | ● 10. SAN LORENZO TEPALTITLÁN | ● 20. SANTA MARIA TOTOLTEPEC |
| ● 3. SAN ANDRES CUEXCOTILÁN (sección III) | ● 11. SAN MARCOS YACHIHUACALTEPEC | ● 21. SANTIAGO TLACOTEPEC |
| ● 4. SAN ANDRES CUEXCOTILÁN (B. N.-sección II) | ● 12. EJIDO SAN MARCOS YACHIHUACALTEPEC | ● 22. SANTIAGO TLACOTEPEC (Col Refugio) |
| ● 5. SAN ANDRES CUEXCOTILÁN (B. C.-sección IV) | ● 13. SAN MATEO OXTOTILÁN | ● 23. SANTIAGO TLACOTEPEC (Col Guadalupe) |
| ● 6. SAN ANTONIO BUENAVISTA | ● 14. SAN MATEO OTZACATIPAN (Santa Cruz) | ● 24. TECAXIC |
| ● 7. SAN BUENAVENTURA | ● 15. SAN PABLO AUTOPAN | ● 25. TLACHALOYA, Barrio de San José el chico |
| ● 8. SAN FELIPE TLALMIMILOLPAN | ● 16. SAN PABLO AUTOPAN (Barrio de Jesus) | ● 26. TLACHALOYA, Barrio de San Carlos |
| | ● 17. SAN PABLO AUTOPAN (Col. Aviación) | ● 27. TLACHALOYA, Subdelegación Segunda Sección |
| | ● 18. SAN PEDRO TOTOLTEPEC (Sub. Guadalupe) | □ Toluca |

Figura 3. General delineation of the location of the water committees in Toluca de Lerdo

Methodology and development

The methodology of the work is described below, this was carried out in several stages.

Based on what was proposed by Eric Wolf (1955, 1957, 1981), which distinguishes two types of communities, the "open" and the "closed", where the former are identified as having new inhabitants, being foreigners, having different religions, and there is no cooperation among them, while the latter are identified as being residents of Catholic religion, having *mayordomías* have participation of the members of the community and cooperation in the system of positions.

1 In addition to this, 15 questions were identified as the first test of the interview-questionnaire to identify the closed and open communities in Toluca, which also have charging systems.

The proposal of the "civic-religious position system" was chosen, because it has proved to have a wide explanatory range to understand the actions of the communities or inhabitants of ancient origin or Mesoamerican, as is the case of the Delegations of Toluca with water committees.

This theoretical choice made it possible to identify the formation of water committees in their historical context and as part of a broader and older social process. To carry out the analysis of these social structures, we worked with the water committees and applied the interview-survey designed to 27 water committees in 18 Delegations of Toluca. The questions came off from the theoretical reading of (Wolf, 1981). These questions were classified into belonging (identity), governance, equity, and democracy, defined as:

Identity: It is the image that the community of itself is formed as a result of the daily interactions, through which the subjects delimit their own against what is foreign.

(Mercado y Hernández, 2010).

Governance: It is based on a series of socio-political structures consolidated throughout history that determine the identity and culture of the peoples and regions (García, 2016).

Equity: Allows vulnerable people to participate equally in governance institutions and practices (Brody, 2009).

Democracy: Generates necessary instances for participation, dialogue, consensus and negotiation of conflicts between the actors involved, giving legitimacy to the decision-making process (Aguilar, 2010).

2. Interview with key informants

The questions of the interview-questionnaire were taken from Wolf's model of open / closed community in the charge systems. These questions and answers lasted between 20 minutes and 2 hours, depending on the response capacity of each informant and also influenced if they were doing other activities, for example, selling merchandise, which increased the time of the interview.

These interviews were applied to key informants (president, secretary, treasurer, members or alternates), it is worth mentioning that some people interviewed had worked on the committee or were the village chroniclers, since some committees did not allow entry, It is the case of: Santa Ana Tlapaltitlán, San Buenaventura, Subdelegación de Guadalupe en San Pedro Totoltepec y San Juan Tilapa.

This was done at the 18 Delegations of Toluca and there were 15 first questions of which are:

18 Delegations of Toluca and there were 15 first questions of which are:

7 first to identify characteristics of belonging (identity).

3 Governance: Identify and describe how they elect their committee representatives

3 equity: Identify the participation of women

2 of democracy: How they make their decisions

In a second stage the interview-questionnaire was piloted and on the recommendation of the Doctoral Committee, 6 more questions were added, which gave a total of 21 final questions. These complementary questions are:

1.- Identify if there are historical archives of the Water Committee

2.- What is your date of foundation of the Committee

3.- Know if the municipality or government offers them some support

- 4.- Identify if they have a well or spring
- 5.- Where they are supplied
- 6.- What is the way of supplying the resource (water).

This helped to have better information on water management in the committees. The interviews were conducted in a dyadic way, that is, face to face and without intermediaries, for which the confidence of the key informant had to be gained through continuous visits, clarity of the questions and the delivery of copies endorsed by the Autonomous University of State of Mexico (UAEM), where the reasons for the investigation were specified and where the information would not be used for any religious or military political purpose.

As mentioned before, the elaboration and application of the interview-survey was done in the following way: From the main theoretical readings of Eric Wolf (1955; 1957; 1981), the questions referring to the forms and functions of the structures that presented sociocultural characteristics of water management.

The interview-survey of 21 questions, made to the water committees remain as follows:

Identity Questions

- 1.- Where were you born and where have you lived?
- 2.- What position did the community give you?
- 3.- Are you married?
- 4.- At what age did your 1st. position?
- 5.- What position did the community give you?
- 6.- What other positions have you performed in the community?
- 7.- Have you participated in mayordomías?

Governance Questions

- 8.- Who can participate in the water committee?
- 9.- Do you have subcommittees?
- 10.- How is the water committee structured?

Democracy questions.

- 11.- How old is the position on the water committee?
- 12.- How is the water committee changed?

13.- How is the town informed when an administration is finished?

Equity questions.

14.- Have women worked on the water committee?

15.- Are there currently women working?

Complementary questions

16.- Are there historical records of the water committee?

17.- What is the founding date of the committee?

18.- Does the municipality or government offer them any support?

19.- Do they have a well or spring and how many?

20.- Where do they get their supplies?

21.- What is the way to supply the resource?

The results of the most relevant questions are shown below.

Results of the interview-survey

Of the members interviewed from the 27 water committees, it was identified that 96% of them were born in the delegation of which they are representatives. The other 4% were not born there, but they are considered part of the community because they are married to well-known residents.

It was identified that 88% are married and the remaining 12% are not. However, they are all considered as persons recognized by the community for their participatory activities in other civic and religious positions in the community.

It was identified that these members of the water committees have previously occupied religious positions, some from the age of 12. Commonly the first charge is to support the cleaning of the church, arranging flowers and launching rockets on holidays.

It is detected that from the age of 22 to 70, they assume other religious and civic positions, but the requirement to exercise them is to be

married, since with this requirement the positions of small butlers are acquired until arriving at the main patronal feast.

It was identified that 63% of the interviewees have participated in stewardships according to the Wolf model, for the subject of belonging 88% of the members interviewed by the water committees, complies with a closed community model. 12% of the people interviewed tend to an open community.

In 100% of the responses, it identifies that all the inhabitants recognized by the general assembly can participate and work within the water committee.

The structures of the water committees are identified and described through the number of members and their positions, identifying that 44% of the committees are made up of 3 members, 26% by 4 members, likewise 26% It is formed by 5 members or more and finally 4% is formed by only 2 members.

It was possible to identify 13 types of different structures in the water committees of Toluca, where 37% have the typical pyramidal structure formed by 3 members, President, Secretary and Treasurer.

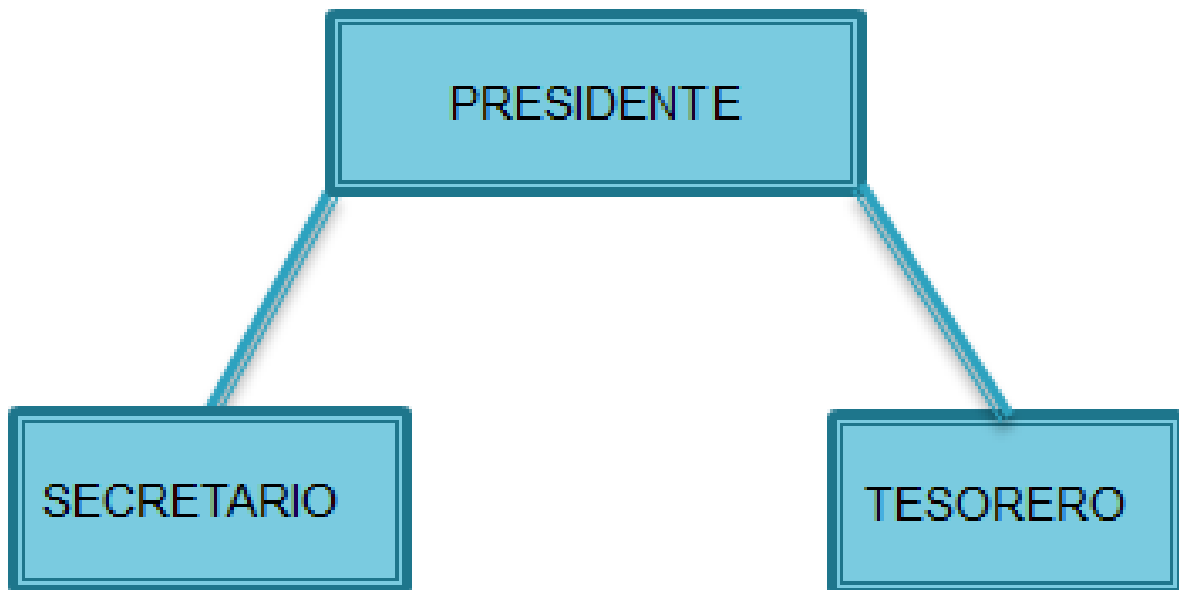


Figura 4. General structure of the water committee found in field work.

Estructura más común en los comités de agua, formado por 3 integrantes, el primero en la cima y los dos restantes en la base, encontrando 9 casos.

It was identified that 7% of the water committees last for 1 year, 12% last 2 years while 70% last 3 years, finally 4% of the members of the committees last for 4 years and 7% have been in office for more than 20 years.

There are 2 modalities when changing to the water committee, the first with 30% campaigning for the application of 2 or more forms and the second modality covers 70% where they change their representatives of the committee through open voting in the general assembly of the town.

It was identified that 37% of the water committees charge monthly, 4% on a bimonthly basis, 44% on a monthly basis and 15% never charge for the service (Santiago Tlacotepec and its colonies the Refugio y Guadalupe; Tlachaloya 2nd Section).

30% of water committees, all users without exception pay for water, contrary cases are 7% where widows are exempt from payment, more extreme cases are 15% where there is no charge and 26% of committees its inhabitants of the 3rd. Age are exempt from payment after 65 years.

It was identified that 4% of the committees deny water to new settlers, 48% deny water to the defaulters or those who never pay, despite the fact that the committees know that access to water is a human right and Last 48% do not deny water under any circumstances.

11% of the water committees have had women with the position of president, 33% have had women in charge of secretaries, another 33% have had women in charge of treasurers, 11% have had women with charge of vowel 1 , 4% have had women with charge of the vowel 2 and finally 8% have never occupied the position of the women.

100% of the water committees do not receive money directly from the federation but, through the municipality, receive support in kind for its operation, that is, they receive through management, pipe, gravel, sand, materials of extension and maintenance of the hydraulic network of the Delegation.

Below are the identity, democracy, equity and complementary tables, where these results were obtained.

Results of the questions asked Identity and Democracy

Water committess	Sex		Professional position			Original from the village		Those who can take part		How many members have the water committee						How old is the water committee					How the committee is changed	
	M	W	P	S	T	Yes	No	M	W	2	3	4	5	6	>6	1	2	3	4	>4	Assembly	Voting in polls
1.- Cacalomacán	x			x		x		x	x					x				x			x	
2.- Calixtlahuaca	x				x	x		x	x	x										x	x	
3.- San Andrés Cuexcontitlán (sección III)	x			x		x		x	x					x			x				x	
4.- Barrio de la Natividad (sección II), en San Andrés Cuexcontitlán	x				x	x		x	x			x					x				x	
5.- Barrio de la Concepción (sección IV)	x							x	x								x				x	
6.- San Antonio Buenavista	x			x			x	x	x		x							x			x	
7.- San Buenaventura		x		x		x		x	x						x			x			x	
8.- San Felipe Tlalmimilolpan		x		x		x		x	x			x						x			x	
9.- San Juan Tilapa	x				x		x	x	x						x			x			x	
10.- San Lorenzo Tepaltitlán		x		x		x		x	x				x					x			x	
11.- San Marcos Yachihualtepec	x		x			x		x	x				x			x					x	
12.- Ejido de San Marcos Yachihualtepec	x		x			x		x	x		x					x					x	
13.- San Mateo Oxtotitlán	x				x			x	x						x			x			x	
14.- Subdelegación de Santa Cruz en San Mateo Otzacatipan	x			x		x					x							x			x	
15.- San Pablo Autopan	x		x			x		x			x								x		x	

16.- Barrio de Jesús (sección I, II y III) en San Pablo Autopan	x		x			x									x			x	
17.- Subdelegación de la colonia Aviación, en San Pablo Autopan	x				x	x			x	x						x			x
18.- Subdelegación de Guadalupe en San Pedro Totoltepec	x		x			x			x	x						x			x
19.- Santa Ana Tlapaltitlán	x			x		x			x	x						x			x
20.- Santa María Totoltepec	x				x	x										x			x
21.- Santiago Tlacotepec	x			x					x	x						x			x
22.- Subdelegación de El Refugio, Santiago Tlacotepec	x				x	x			x	x						x			x
23.- Col. Guadalupe en Santiago Tlacotepec	x		x			x			x	x						x			x
24.- Tecaxic	x		x			x										x			x
25.- Barrio de San José Buenavista el chico en Tlachaloya	x			x					x	x						x			x
26.- Barrio de San Carlos en Tlachaloya	x				x	x			x	x						x			x
27.- Tlachaloya 2da. Secc.	x		x			x			x	x						x			x

Results of the questions asked Identity and Equity

Water committess	Has been mayordomías	How is it reported when an administration is finished	Periodicity of payment	Who does not change for water	Who is denied water
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	Yes	No	Assembly	Flyers	Month	Bimester	Year	There is no payment	Widows	Single mom	+ 60 years	Everyone pays	Defaulters	To nobody
1.- Cacalomacán		x	x		x						x		x	
2.- Calixtlahuaca	x		x		x							x	x	
3.- San Andrés Cuexcontitlán (sección III)	x		x		x							x	x	
4.- Barrio de la Natividad (sección II), en San Andrés Cuexcontitlán		x	x		x							x	x	
5.- Barrio de la Concepción (sección IV)	x		x		x						x			x
6.- San Antonio Buenavista		x	x		x						x			x
7.- San Buenaventura	x		x				x				x			x
8.- San Felipe Tlalmimilolpan		x	x		x							x		x
9.- San Juan Tilapa	x		x				x					x		x
10.- San Lorenzo Tepaltitlán		x	x				x				x			x
11.- San Marcos Yachihualtepec	x		x				x				x			x
12.- Ejido de San Marcos Yachihualtepec	x		x				x				x		x	
13.- San Mateo Oxtotitlán	x		x			x					x		x	
14.- Subdelegación de Santa Cruz en San Mateo Oztacatipan	x		x			x					x		x	
15.- San Pablo Autopan	x		x			x						x	x	
16.- Barrio de Jesús (sección I, II y III) en San Pablo Autopan		x	x			x					x			x
17.- Subdelegación de la colonia Aviación, en San Pablo Autopan	x		x			x					x		x	

18.- Subdelegación de Guadalupe en San Pedro Totoltepec	x		x			x			x	x	x		x	
19.- Santa Ana Tlapaltitlán	x		x			x					x			x
20.-Santa María Totoltepec	x		x			x			x					x
21.-Santiago Tlacotepec		x	x					x						x
22.- Subdelegación de El Refugio, Santiago Tlacotepec	x		x					x						x
23.- Col. Guadalupe en Santiago Tlacotepec	x		x					x						x
24.- Tecaxic	x		x		x				x	x	x			x
25.- Barrio de San José Buenavista el chico en Tlachaloya		x	x		x						x		x	
26.- Barrio de San Carlos en Tlachaloya		x	x		x				x	x	x		x	
27.- Tlachaloya 2da. Secc.	x	x						x					x	

Results of the questions asked Equity and complementary

Water committess	Participation of women in the beginning of the committee			Participation of women currently			There are external support from the government		Water supply that currently have			Where they are supplied		
	-50%	+50%	0%	-50%	+50%	0%	Yes	No	Tandeo	24 hrs. Of	There's no	Water well	Manantial	Pipe

									the day	water			
1.- Cacalomacán	x			x			x	x					
2.- Calixtlahuaca	x					x	x	x			x		
3.-San Andrés Cuexcontitlán (sección III)	x					x		x	x		x		
4.- Barrio de la Natividad (sección II), en San Andrés Cuéxcontitlán			x			x		x	x		x		
5.- Barrio de la Concepción (sección IV)			x			x	x		x		x		
6.- San Antonio Buenavista		x				x			x		x		
7.- San Buenaventura		x		x			x		x		x		
8.- San Felipe Tlalmimilolpan	x				x			x	x		x		
9.- San Juan Tilapa			x	x				x	x			x	
10.- San Lorenzo Tepaltitlán	x				x			x	x		x		
11.- San Marcos Yachihualtepec		x				x		x	x		x		
12.- Ejido de San Marcos Yachihualtepec		x				x	x		x		x		
13.- San Mateo Oxtotitlán			x			x		x	x		x		
14.-Subdelegación de Santa Cruz en San Mateo Otzacatipan	x			x			x		x		x		
15.- San Pablo Autopan			x			x		x	x		x		
16.- Barrio de Jesús (sección I, II y III) en San Pablo Autopan			x			x		x	x		x		
17.- Subdelegación de la colonia Aviación, en San Pablo Autopan	x					x		x	x		x		
18.- Subdelegación de Guadalupe en San Pedro Totoltepec		x				x	x		x				x
19.- Santa Ana Tlapaltitlán			x	x				x	x		x		
20.-Santa María Totoltepec	x					x		x	x		x		
21.-Santiago Tlacotepec		x				x			x			x	

22.- Subdelegación de El Refugio, Santiago Tlacotepec			x			x		x		x			x	
23.- Col. Guadalupe en Santiago Tlacotepec			x			x	x			x			x	
24.- Tecaxic		x			x			x	x				x	
25.- Barrio de San José Buenavista el chico en Tlachaloya			x		x		x		x				x	
26.- Barrio de San Carlos en Tlachaloya		x			x		x		x				x	
27.- Tlachaloya 2da. Secc.		x			x		x			x			x	

Conclusions

It was identified that the water committees of Toluca show a social management, where it plays a role of first order by subjecting the populations to self-management, since they are capable of accepting serious water reductions, tandems, etc. In general, to manage the conflict with its own rules and following those established in the general assembly of the town, this allows to appreciate that the communities with Toluca water committees have a large part of the characteristics of closed communities according to the Wolf model, but only studied in their part with the water relation.

The system of charges was incorporated into the structure of the water committees, where its members, like all those who participate in said system, do not receive payment, but in return, receive compensation in the form of prestige within the community.

The water committees interviewed in the municipality of Toluca are independent and do not need any intervention from the government, as they resolve any situation in assemblies, where all citizens vote and decide democratically, such as water supply, which in the vast majority of communities is by *tandeo*, nevertheless when exposing it in the general assembly it is arrived at a good result of the communitarian management before the scarcity of water, that is to say, good control of the social problems of hydric origin.

The field work detected the presence of 37 committees, that is, 6 more than officially reported in the municipal development plan of Toluca (2009-2012), among all the committees handle more than 51% of the water of said municipality, these villages that have water committees are mainly of Otomi origin.

In Tlachaloya 2nd. Section, there are 10 water committees, which are connected to the Cutzamala System, their relationship is with the Federal agency in Mexico City and not with the municipality of Toluca, in addition to not paying for the service, the origin of the system of charges are different, the people interviewed have carried more civic than religious positions, in some cases only civic, here they do not present problems such as: Debts in exchange for committees, payment for electricity, lack of water, defaulters, new ones settlers, as they are presented in other water committees, because there is no payment for the service, for this reason only worked with a single water committee in this town.

An extreme case is identified, Guadalupe Totoltepec since 4 years the well collapsed and stopped giving the service to the community, at the moment the town hall takes them 6 pipes every 8 days and the water committee is in charge of rolling the water. This shows that the water committees do not need their own water to be self-managing.

Being Governor Mr. Carlos Hank González in the 1970s and as Municipal President, Mrs. Yolanda Senties de Ballesteros, principal promoter of well drilling, the water committees of Toluca arise to provide service to their community, (Acta de cabildo, hoja 89, Tomo II, 1970).

We only worked with 27 committees and their key informants (presidents, secretaries, treasurers and members), where 27 life stories were also obtained, detecting that the positions in the water committee occupied by women before 2015 are treasurers and secretaries , this is due to his integrity and honesty.

It was identified that currently in 10 water committees, there are women working in some position within the committee. Only 2 committees have women president (San Lorenzo Tepaltitlán and San José Buenavista).

Of the case studied (Toluca), the following water committees are identified, as the best according to their administration: San Felipe

Tlalmimilolpan, Tecaxic, San Buenaventura, San Lorenzo Tepaltitlan, Santa Ana and San Marcos Yachihuacaltepec.

References

Aguilar, L. (2010). *Gobernanza. El nuevo proceso de gobernar*. México: Fundación Friedrich Naumann para la Libertad.

Aguirre, G. (1973) *Regiones de refugio. El desarrollo de la comunidad y el proceso dominical en Meztizoamerica*, México: INI, Obra Polémica, SEP-INAH.

Álvarez, L. (2000) San Isidro y San Juan; de Huehues y Mandones. El sistema de cargos en dos comunidades de Mesoamérica. *Cuicuilco*, (19), 83-102.

Barnard, Ch. (1962) *The functions of the Executive*, Cambridge, Massachusetts, USA: Harvard University Press.

Barkin, D. (2006). *La gestión del agua urbana en México: retos, debates y bienestar*, México: ANEAS-Universidad de Guadalajara-Universidad Autónoma Metropolitana.

Bendan-Beckmann, F von., Bendan-Beckmann, K von., & Spiertz, J. (1998). Equity and legal pluralism: taking customary law into account in natural resource policies. In: Boelens, R., Davis, G., & Assen. *Searching for equity: conceptions of justice and equity in peasant irrigation* (57-69). Países Bajos: Van Gorcum.

Brody, A. (2009). Género y gobernanza. *Informe general-Bridge-Home*. Recuperado de www.bridge.ids.ac.uk/...rts/Governance_OR_Spanish.doc.

Carrasco, P. (1979) La jerarquía cívico-religiosa. en las comunidades de Mesoamérica: antecedentes precolombinos y desarrollo colonial. En: Liobera, J.R. *Antropología Política* (483-497). Barcelona, España: Anagrama.

Diario Oficial de la Federación, (DOF) Publicado en el año 2011.

Estrada, A., & Romero, A. (2004) Entre la ley y la costumbre el uso y manejo del agua potable en el municipio de Temoaya, Estado de México. En *Páramo del campo y la ciudad* (pp. 23-132). Toluca, Estado de México: Centro de Estudios sobre Marginación y Pobreza del Estado de México.

- Galinier, J. (1990). *La mitad del mundo, cuerpo y cosmos en los rituales otomíes*. México: Centro de Estudios Mexicanos Centroamericanos, Instituto Nacional Indigenista, Universidad Nacional Autónoma de México.
- García, M. (2016). Propuesta para la gestión intermunicipal de la cuenca hidrosocial presa Huapango (tesis doctorado en Ciencias del Agua). Centro Interamericano de Recursos del Agua, Universidad Autónoma del Estado de México, México.
- Greenberg, J. (2002). El capital, los rituales y las fronteras de la comunidad corporativa cerrada. *Desacatos*, 9, (primavera-verano).
- Gómez, M. (1988). *La defensoría jurídica de presos indígenas. Análisis de una experiencia*. Lima, Perú: Seminario sobre derecho consuetudinario de los pueblos indígenas.
- González, F. (2009) Los pueblos rurales de tradición otomí de la zona metropolitana del Valle de México. *Boletín de Antropología, Universidad de Antioquia*, volumen. 23 (40),79-101.
- Harris, M. (2001) *Introducción a la Antropología general*. Madrid: Alianza Editorial.
- H. Ayuntamiento de Toluca. (2009-2012). *Plan municipal de desarrollo de Toluca (2009-2012)*. Recuperado de www.toluca.gob.mx/plan-de-desarrollo-municipal-de-toluca-2009-2012. <http://caem.edomex.gob.mx>
- Iwanska, A. (1972) *Purgatorio y Utopía (Una aldea de los indígenas mazahuas)*. México: Sepsetentas.
- Korsbaek, L. (1987). El desarrollo del sistema de cargos de San Juan Chamula: El modelo teórico de Gonzalo Aguirre Beltrán y los datos empíricos. *Anales de Antropología*, volumen 24, 215-242.
- Korsbaek, L. (1994) Instituciones políticas y religiosas. En: *Introducción al sistema de cargos*. Toluca, México: Universidad Autónoma del Estado de México.
- Korsbaek, L. (1998). El sistema de cargos en San Antonio de las Huertas como instancia integradora de la vida social. *Ciencia Ergo Sum*, volumen 5, (3), 261-270.
- Korsbaek, L. (2000). El Sistema de Cargos en las comunidades indígenas en el Estado de México. *Expresión Antropológica*, (10), 30-47.
- Mercado, A., & Hernández, A. V. (2010). El proceso de construcción de la identidad colectiva. *Convergencia, Revista de Ciencias Sociales*. (53), 229-251.

- Palerm, A. (1989). *Antropología y Marxismo*. México: Nueva Imagen.
- Portal, M. (1996). Características generales del sistema de cargos de mayordomía urbana. *Iztapalapa 39*, volumen (enero-junio), 25-42.
- Radcliffe-Brown, A.R. (1972) *Estructura y función en la sociedad primitiva*. Barcelona, España: Ediciones Península.
- Romero, A. (2009). *Agua y Sociedad en el antiguo Valle de Toluca*. (tesis de doctorado). Universidad Iberoamericana, México.
- Sandoval, A. (1997). *Población y cultura en la etnorregión mazahua (jañtjo)*. México: Universidad Autónoma del Estado de México.
- Sandoval, A. (2001). Usos y costumbres en el control del agua. En F. Sandoval (ed.). *La ley y la costumbre en los indígenas mazahuas* (pp. 107-119). Toluca: Universidad Autónoma del Estado de México.
- Stavenhagen, R. (1988). *Derecho indígena y derechos humanos en América Latina*. México: Instituto Interamericano de Derechos de Agua, El Colegio de México.
- Tax, S. (1937). The Municipios of the Midwestern Highlands of Guatemala, *American Anthropologist*. En Korsbaek, L. (ed.). *Introducción al sistema de cargos* (pp. 423-444). Toluca, México: Facultad de Antropología, Universidad Autónoma del Estado de México.
- Wagley, C. (1941). Economics of a Guatemalan Village. En *Memoirs of the American Anthropological Association* (número. 58). Menasha, USA: American Anthropological Association.
- Wasserstrom, R. (1989) *Clase y sociedad en el centro de Chiapas*. México. Ed: Fondo de la Cultura Económica.
- Weber, M. (1957). *The theory of social and economic organization*. New York, USA: Free Press.
- Wolf, E. (1955). Types of Latin American Peasantries: A preliminary Discussion. *American Anthropologist*, 57, 457-471.
- Wolf, E. (1957). Closed corporated peasant communities in Mesoamerica and Central Java, *Southwestern Journal of Anthropology*, 13 (1), 1-18.
- Wolf, E. (1968). *Pueblos y culturas de Mesoamérica*. México: Era.
- Wolf, E. (1981). Comunidades corporativas cerradas de campesinos en Mesoamérica y Java central. En Llobera, J.R. (ed.). *Antropología económica*. (pp. 81-98). Barcelona, España: Editorial Anagrama.