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Article

Human right to water for excluded in Juarez and Guachochi, Chihuahua

El derecho humano al agua para excluidos en los municipios de Juárez y Guachochi, Chihuahua

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Abstract

A vast number of Mexican citizens lack drinking water infrastructure and are excluded from discussion regarding the human right to water and alternatives for that right to be effective. Current water public policies foresee that those who are excluded from drinking water infrastructure will remain in this situation over the following years. Compliance with the human right to water should consider the different worldviews existing in Mexico. Also, the law needs to clarify the ambivalent role of citizens as active subjects claiming the human right to water and as active subjects providing for themselves the right to water. This article discusses a comparative analysis of an urban and a rural case, with emphasis on citizens in the state of Chihuahua who are excluded from drinking water infrastructure.

Keywords: Human right to water, public policies, Sierra Tarahumara, excluded.

Resumen

Este artículo tiene la finalidad de exponer que, una gran cantidad de ciudadanos mexicanos no cuentan con el servicio de agua potable, razón por la cual, no son considerados en la discusión del derecho humano al agua, y mucho menos su opinión, en las alternativas que pueden contemplar para contar con este derecho. Las políticas públicas actuales hacen previsible que quienes hoy no tienen agua, sigan sin tenerla en el corto y mediano plazo. Se

argumenta también, que la aplicación del derecho al agua debe ser distinta, en función de las diferentes cosmovisiones que existen en el país; por otra parte, se necesita resolver en forma legal, el papel ambivalente de los ciudadanos, como sujetos activos que demandan el cumplimiento del derecho, y el de los sujetos activos que se proveen a sí mismos el derecho. Para ello se emplea un análisis comparativo de un caso urbano y uno rural, en el estado de Chihuahua, con énfasis en personas que no gozan actualmente del derecho humano al agua, asimismo se presenta evidencia documental para soportar los argumentos.

Palabras clave: derecho humano al agua, políticas públicas, sierra tarahumara, indicadores, excluidos.

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Introduction

Around the world, there are thousands of millions of people living in poor social, political or legal conditions, including being excluded from the human right to water. Exclusion translates into the lack of safe access —under equal conditions and without discrimination— to a sufficient amount of potable water for personal and domestic use. (This work does not address sanitation, also considered in the human right to water.) It also poses a risk for the life and health of people, affecting their ability to develop and exercise their freedom.

Traditionally among those who are excluded are women and children, who perform the daily task of collecting the water required to cover personal and domestic needs, which represents an additional burden that limits the performance of other activities as well as their opportunity to overcome economic, social and political marginalization (Molinares, & Echeverría, 2011; Sandoval, Campos, & Chávez, 2006; Martínez & Minaverry, 2008).

The present work argues that around 9 million people in Mexico are not included in the discussions on the implementation of the human right to water (National Water Commission, 2014b), who, as of today, do not have potable water coverage and therefore are those who least enjoy the human right to water. Roughly 40 million Mexicans have water coverage under precarious conditions, but they at least have access to it, and so it is assumed that they exercise their human right to water in some way.

The conditions of marginalization of most of the people without water coverage make it more difficult for their opinion to be considered in the definition of water standards in Mexico (Conagua, 2014b). Therefore, it is more difficult for solutions to be feasible since they do not consider the particular conditions of the environment in which they are found.

The proposed question is: What does the human right to water represent for the excluded and what does it imply for the State? This question has precedents based on approaches, such as those formulated by Peter Gleick. What advantage derives from explicitly recognizing the right? What are the implications of the right to water? (Gleick, 2007). To answer these questions, the following objective is proposed: follow up on compliance with the obligations that the right to water imposes on the Mexican State and the corresponding results, mainly based on how people enjoy this right in the municipalities of Juárez and Guachochi, Chihuahua.

Most of those who currently have no water live in dispersed and inaccessible places, which are the main obstacles to expanding coverage because these two factors make the traditional water infrastructure offered by the Mexican government more expensive (Conagua, 2012a; Conagua, 2014a; Conagua, 2014b). What is not clearly stated is that a large number of those who do not have coverage today, mainly in rural communities, will continue without it if the current government programs and their operating rules remain as they are. As evidence of the above, we can see that coverage is low in rural areas and that this trend is far from reaching 100% coverage (Figure 1).

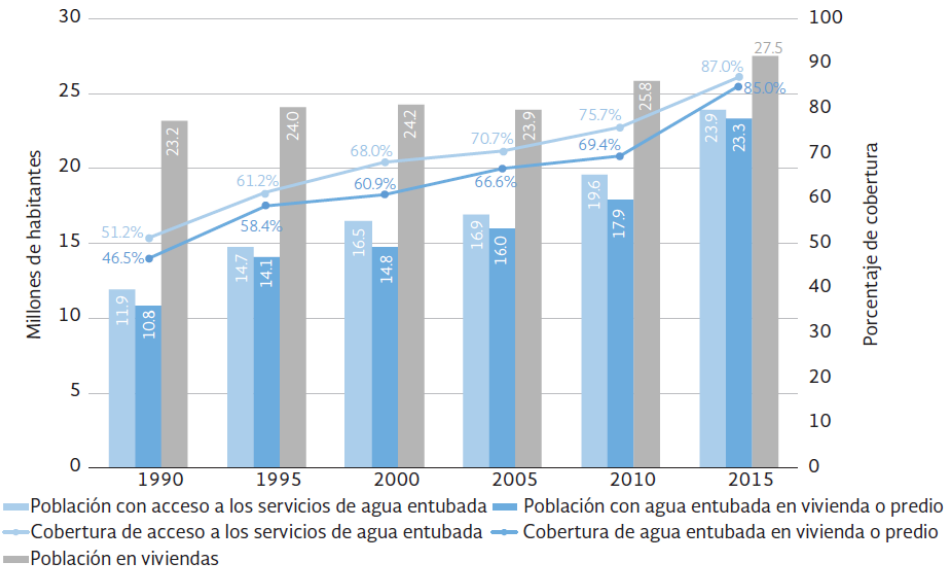


Figure 1. Rural population with piped water coverage (Conagua, 2016c).

On the other hand, it is also argued that the perception that each person has of the human right to water is different, which implies that the legal definition does not necessarily correspond to the perception of people in diverse environments. Therefore, it is possible that the application of the same law reflects different forms of compliance, and so for government programs and their operating rules to be successful, they must consider not only different territorial environments in the country but also the different worldviews of the people to whom the programs are directed.

As evidence to support some of the study's arguments, this review prevents an analysis of the official data on water coverage in Mexico and the discussions held as part of the legislative process to approve the General Water Law, which should regulate the respective human right established in the Constitution and the operating rules of the Rainwater Collection Program (PROCAPTAR, Spanish acronym) (Conagua, 2016a). Subsequently, data are provided from an investigation carried out in the municipalities of Juárez and Guachochi, Chihuahua, Mexico, with emphasis on those who do not have water coverage in order to assess this human right in those areas (Figure 1).

Water as a precondition for other human rights

Water is essential for living with dignity and is a precondition for other human rights, mainly those that are aimed at the protection of the means necessary to guarantee a dignified existence, implicitly recognized by: the right to life, to health, to the healthy environment, to food, to housing, to property and to development (ONU, 2002; García, 2008; Gleick, 2007; Tello, 2008; Francisco, 2015; Albuquerque, 2014).

The need to recognize water as a human right is mainly due to future unsustainability at the current level of consumption, the increase in demand and competition for water resources, as well as the inequities that have existed in nations over the last century. These situations require the State to play a regulatory role with respect to transnational corporations and traditional powers, through regulations that benefit the general use of water in order to prevent excluding the most disadvantaged and protect them from great powers that have access to its exploitation. This has the purpose of recuperating old and new social and collective rights (Santos, 2010; García, 2008; Francisco, 2015; Tello, 2008; Gutiérrez, 2008).

The human right to water is a reaction to the mercantilist vision of water and to the authoritarian perspective of the State as the provider. Its purpose is to reverse the negative effects of traditional schemes, primarily by treating people as the main actors. That is, instead of passive subjects who receive a service, they are active subjects holding a right. Therefore, obligations are

imposed on the states involved in development strategies, paying special attention to the active, meaningful and free participation of society, especially of those who have traditionally been excluded (Barlow, 2011; Justo, 2013).

Finally, marginalization indexes include the lack of drinking water coverage as a component. This element is so important because most of those who live in more marginalized conditions also have the lowest levels of drinking water coverage (Figure 2).

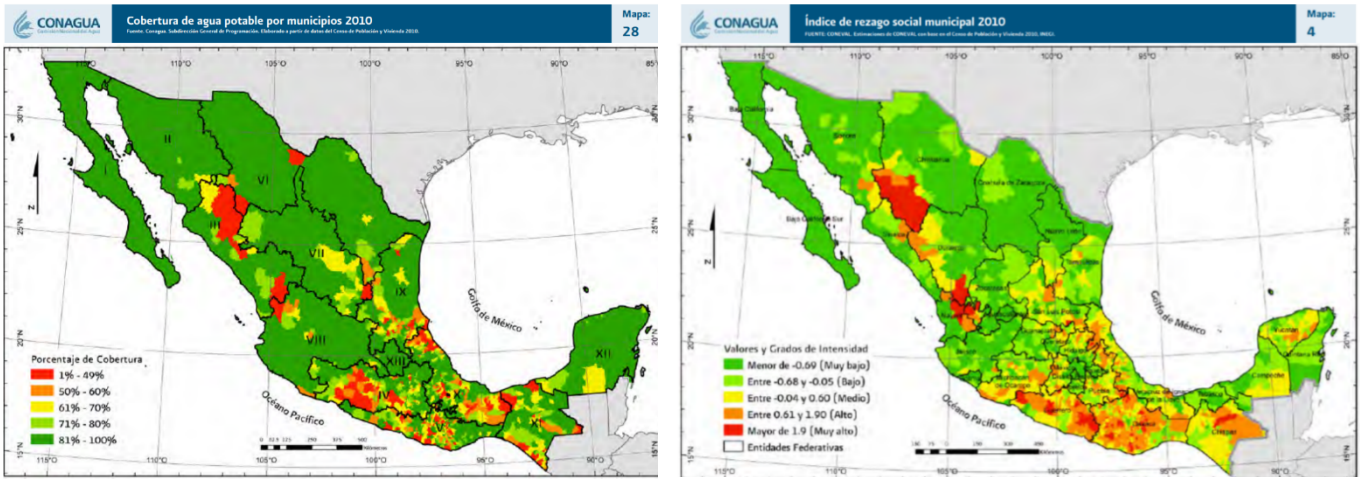


Figure 2. Drinking water coverage by municipality and municipal social marginalization index, 2012 (Conagua, 2012b).

Coexistence and tension between development and human rights

There is an open debate between various positions in regard to the human right to water, which has led to a modification in the paradigm for addressing water availability. At the beginning, it was thought that development alone would lead to achieving universal coverage, however, reality has shown that current schemes have not led to this goal (Ibáñez, 2015a).

Currently, human rights occupy an important place in the literature on development, while at the same time a degree of genuine skepticism exists about the depth and coherence of this approach to human rights, which some consider as simplistic and rhetorical.

Amartya Sen (2000) raised three criticisms of human rights: a) criticism of legitimacy, which refers to the fact that rights do not exist until they are

acquired through legislation; b) criticism of coherence, that is, so that rights are not "empty," it is essential that someone has the obligation to guarantee their content, without which the rights have very little meaning; and, c) cultural criticism, which is based on the universal nature of human rights, as opposed to the cultures and traditions of the places. What happens if some cultures do not consider rights to be especially valuable in comparison with other attractive virtues or qualities? (Sen, 2000).

The previous criticisms can be framed according to the evolution of the content of the right to water, as well as in its follow-up, in terms of the ways in which the obligation is fulfilled and how people enjoy it. In Mexico, with respect to the criticism of legitimacy, the right to water was implicitly recognized in 2002, as a State participant to the International Covenant on Economic, Social and Cultural Rights (ICESCR), with the issuance of General Comment 15 (ONU, 2002). Later, in 2006, the legislative process that sought to achieve the recognition of the right to water in the Mexican constitution began, and was recognized in 2012, with the expectation that recognition would help to accelerate its regulation by adapting secondary laws (Gutiérrez, 2008), which has not occurred. The decree of reform (Cámara de Diputados del Honorable Congreso de la Unión, 2012) that recognized the right to water established that the Congress of the Union would have a term of 360 days to issue a General Water Law that would regulate it. This has not yet occurred. This factor is related to the criticism of coherence. That is, since the State's obligation to guarantee the content of the right to water is insufficient, it is essential to have a regulation that establishes how to comply with this obligation.

Finally, cultural criticism has not been widely addressed because of a lack of public policies aimed at guaranteeing water as a right. However, this study reflects the contrast of the universal nature of the right to water with some cultures and traditions. On the other hand, the debate that occurred during the proposal for the creation of the General Water Law makes it possible to intuit the different perspectives associated with it (Ibáñez, 2015b; Agua.org.mx, 2015).

This paradigmatic change has involved an evolutionary process where the two perspectives have coexisted. At the international level, Objective 7c of the Millennium Development Goals (2000) constitutes a point at which the coexistence between development and the right to water was distant Then, the emission of General Comment 15 (ONU, 2002) by the Committee on Economic, Social and Cultural Rights of the United Nations (CESCR-UN) outlined the relationship between both perspectives.

In Mexico, the paradigm shift continued with an interpretation by the Federal Supreme Court in which the concept of basic minimum was discussed and clarified, determining that, "it translates into the minimum quantity and quality that a person must have in order to lead a decent life and that may or

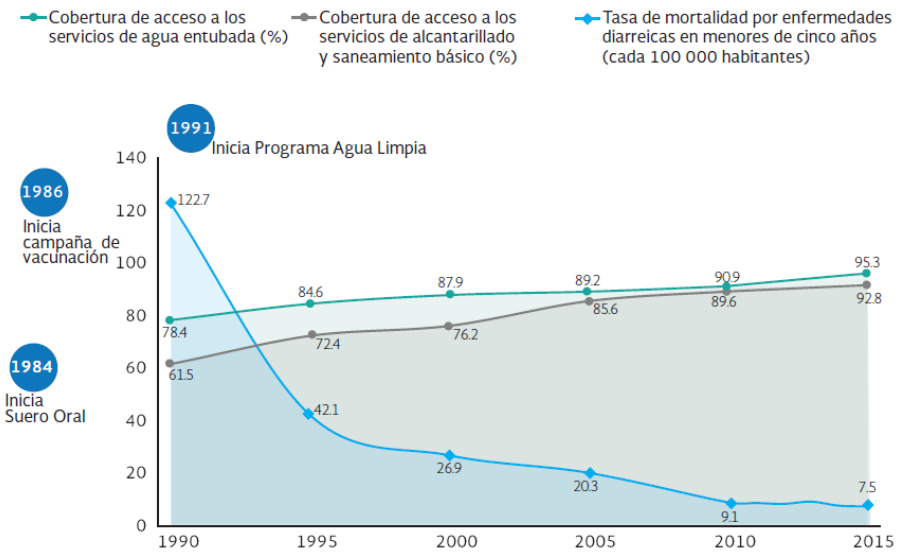
may not be subject to contribution, depending on their personal situation"(Domínguez, Martínez, Palacios, & Peña, 2013).

Consecutively, the tension between the developmentalist perspective and the humanist right arose. In 2012, the Human Right to Water was recognized in the Political Constitution of Mexico. Then, in 2015, due to the regulation of law, a general law proposal was discussed, which used concepts and language that, in practice, annulled the right to water for those who are now excluded (Ibáñez, 2015c; Cámara de Diputados del Honorable Congreso de la Unión, 2015). This proposal considered the basic minimum to be 50 liters per inhabitant, per day. Not only was the amount insufficient for some contexts, it also required a payment, without considering the possibility of guaranteeing a minimum supply of free potable water for those whose economic capacity does not allow them to pay at all, without implying the right to free water. It did define "politically correct" service priorities (Cámara de Diputados del Honorable Congreso de la Unión, 2015), without explicitly establishing as a priority the more than 9 million people who currently do not have potable water coverage (Conagua, 2014c). Nor did it define progressivity, since it did not establish goals, objectives, deadlines or the allocation of economic resources to guarantee it.

At present, the tension between development and human rights does not allow for the formulation of consistent policies. The Mexican State establishes its drinking water policies based on the rationality of the economic approach, promoting actions that continue to generate exclusion. Also, compliance with the obligation has been determined based on the percentage of service coverage in the communities, making it impossible to define service needs, and therefore, the necessary measures for excluded people to fully exercise the right (Lazo, 2016b).

In general terms, even with a paradigm shift and its programmatic nature, the right to water is subject to "subsequent legislative development and gradual realization" (García, 2008). We consider the efforts in Mexico to guarantee that right to be insufficient, resulting in a human right that has not motivated a change in the social reality and that, therefore, does not guarantee direct benefit to the excluded inhabitants (Figure 3).

Figure 3. Coverage of piped water services and sewage and basic sanitation services and mortality rate due to diarrheal diseases in children under five years, 1990 to 2015 (Conagua, 2016c).



Another example of the tension between the developmental perspective and compliance with the human right to water can be observed in the Rainwater Collection Program (Procaptar by its Spanish acronym) (Conagua, 2016d). Faced with the need to address differently the deficit that occurs in isolated, scattered communities and in remote areas of the country, the Rainwater Collection Program was developed by the National Water Commission. However, its operating rules were defined based on (among other things) the National Crusade Against Hunger and the National Council for the Evaluation of Social Development Policy (Coneval by its Spanish acronym), according to coverage criteria, which initially limited the execution of the program only to communities with annual rainfall greater than 1 500 mm (Conagua, 2016b).

Although the original intention of the program was to seek alternatives to traditional coverage programs in areas with high marginalization where the cost-benefit criteria established by the government could not be met, the program's authorization led it to generate rules of operation that favored the developmentalist approach.

Definition

General Comment 15 recognizes the Human Right to Water as "the right of everyone to have sufficient, safe, acceptable, accessible and affordable water for personal and domestic use" (ONU, 2002) and imposes on the states participating in the International Covenant of Economic, Social and Cultural Rights the obligations to (a) respect, (b) protect and (c) comply, which can be guaranteed, mainly by (a) refraining from interfering directly or indirectly in

the exercise of the right to water, (b) regulating third parties that may compromise the realization of the right and (c) facilitating, promoting and guaranteeing the realization of positive measures that allow and help individuals to exercise the right (ONU, 2002).

In addition, GC 15 divides the right according to availability, quality, accessibility and affordability. Availability means that the water supply for each person is sufficient —in cleanliness and quantity— and continuous, preventing long waiting times to receive the services that are provided (García, 2008; Domínguez *et al.*, 2013; Tello, 2008; Hoyos & Cera, 2013). Quality implies that the supply is free of any type of substance that could threaten health, particularly arsenic and fluoride (Howard & Bartram, 2003; Domínguez *et al.*, 2013; Tello, 2008). The last two dimensions, accessibility and affordability, involve the variables of access and discrimination, referring to the fact that water, facilities and services must be physically accessible, taking into account the distance to the water source, the time required to supply it, safe travels and damages that can be suffered by the family members in charge of supplying the water. And accessibility also includes economically accessible, that is, water costs are affordable for all, without compromising or endangering other rights ((ONU, 2002), while also not requiring the water be supplied free of charge, but rather guaranteeing equal access, considering in a specific way the social sectors in a situation of greater vulnerability (Tello, 2008).

Provision of public drinking water services in the municipalities of Juárez and Guachochi, Chihuahua

The government of the state of Chihuahua is responsible for the provision of public services, including drinking water, drainage, sewerage, sanitation, wastewater treatment and final disposal of sludge in the municipalities of Juárez and Guachochi. The water operators in these municipalities are the Juntas Municipales de Agua y Saneamiento de Juarez (JMAS-Juárez) and Guachochi (JMAS-Guachochi), respectively; however, these names only refer to the territory they administer, since both agencies provide services under the sectoral coordination of the Central Water and Sanitation Board (JCAS). Spanish acronym), a decentralized public body of the state's executive branch, and in the case of the JMAS-Guachochi, only has the capacity to service the municipal capital. The rest of the communities in the municipality are served by water committees or in a subsidiary form, by the state government.

The fact that the water operators are not managed by each of the municipalities that make up the entity is due to a partial implementation of the institutional reform process, initiated in 1983 with the constitutional

reform of Article 115, which decentralized public services in two stages, the first, from the federal to the state level, and the second, from the state to the municipal level.

The operating organizations in the state have favored a company model for the provision of services, with the aim of improving efficiency in the operation and provision of services, dispensing with the need to receive tax contributions or subsidies and to be able to contract debt that allows them to continue with the operation, conservation, maintenance and expansion of the services provided. However, in the cities with the greatest political value, they have favored a political client list model with the objective of applying strategies that accumulate political power, which are possible and appreciable thanks to the attributions and obligations that the state of Chihuahua's water law grants to the Central Board (JCAS, Spanish acronym) and its operating organizations, making it possible for the latter to be used "as a bastion and political reward by the state government" (Bustillos, 2009).

Research and analysis design proposal

No studies have been performed in Mexico using human rights indicators to account for compliance with obligations related to the human right to water and the results thereof, particularly in terms of the perceptions of the people regarding the exercise of their right. On the other hand, given the complex nature of human rights and the difficulty of full follow-up, no methodology has been recognized as unique or valid to carry it out.

Traditionally, to measure the degree to which human rights are being met, development indicators have been used. There is a conceptual debate regarding the use of human development indicators when measuring the degree to which human rights are carried out. In terms of water, human development indicators lead to a statistical analysis that is limited to the distribution and level of coverage of the drinking water service, which, aside from being insufficient for considering the different obligations that the right to water imposes on states, makes it impossible to determine how people enjoy the right (Fukuda-Parr, 2011; Roaf, Khalfan, & Langford, 2005; ONU, 2011; PNUD, 2000).

The methodology used in the present investigation is based on the one constructed by Oscar Flores Baquero (Flores, 2011) in his thesis proposal "The Human Right to Water. Tools for its measurement and implementation in the Nicaraguan rural context." This was improved and used by "ONGAWA, Engineering for Human Development" in the "Second Report on the Human Right to Drinking Water and Sanitation in Rural Nicaragua" (Flores, García, Torre, De Luis, & López, 2015), which combines elements proposed by the

Center on Housing Rights and Evictions (COHRE), indicators used by the Water Poverty Index and by the WHO-UNICEF Joint Monitoring Program (JMP) for Water Supply and Sanitation (OMS-UNICEF, 2014).

The aforementioned methodology has made the processing and analysis of information more complex, due to the fact that, in other regions of the world, the amount of information collected, the amount available and the capacities developed allow it. The present investigation is based on the methodology proposed in early phases.

Collection of information

The case studies in which information was collected were in the municipality of Guachochi, particularly the communities of Arbolitos, Agua Azul, Rosanachi, Ramucheachi, Rocheachi, Caborachi and Guagueachi. According to the National Council for the Evaluation of Social Policy Development (Coneval, Spanish acronym), as of 2013, 91% of the population in that municipality lacked basic housing services, including drinking water (Coneval, 2013) (for 2016, the same report shows that the percentage remains high, at 71%, corresponding to 29 981 inhabitants.) In the municipality of Juárez, the communities are located between kilometer 29 to 33 of Federal Highway Number 2, along the Juárez-Ascensión stretch. This is also a "spontaneous" urban settlement, labeled that way because it was settled on a voluntary and periodic basis every year. This settlement is called "Atracciones Calderón", which, aims to offer family entertainment, especially through amusement park rides, games of skill and dexterity, and the sale of food (for more detail on case studies, indicators, processing and analysis of information review Lazo, 2016a).

The information was collected through questionnaires administered to families and interviews with public servants. The questions presented to government personnel were based on proposals from the "Manual on the Human Right to Water and Sanitation. An auxiliary tool for managers of public policies and professionals in the implementation of the human right to water and sanitation"(Centre on Housing Rights and Evictions, 2007). One of its objectives is to provide a checklist of questions with which to evaluate the achievements of governments regarding the right to water.

The questionnaires that were administered to the households permitted the exploration of the current situation of the right from the people's point of view. The questions were taken from a selection made by Oscar Flores Baquero from a review of questions that are widely used in the water sector, which allow assessing the situation of the right by obtaining the perceptions of the owners in this area (Flores *et al*., 2015).

Processing and analysis of information

Three types of monitoring indicators were used: structural, process and results-based. These were originally proposed by Paul Hunt (2003), an independent expert from the United Nations, who defined them as follows: a) structural, they refer to the normative environment of the right to water, that is, constitutions, laws and political institutions; b) process, which also refers to the political environment but requires a quantifiable response on more specific issues; and c) result-based, which refers to issues related to human development, through which the degree to which people and groups actually have access to basic needs is monitored, that is, they measure the degree to which human rights are realized (Roaf et al., 2005; Fakunda-Parr, 2010).

Subsequently, these indicators were considered by human rights experts from the Committee on Economic, Social and Cultural Rights (CESCR), United Nations agencies (WHO, UNICEF, UN-HABITAT), the governments of South Africa and Germany, and International Non-Governmental Organizations (NGOs), all brought together by the Center on Housing Rights and Evictions (COHRE) in a workshop in Berlin in October 2004, where they built the COHRE monitoring tool.

These three monitoring indicators group together specific indicators used to account for the situation presented by each of the dimensions considered in the right to water, from the way in which the state complies with its obligations (structural and process indicators), up to the way in which the holders of the right perceive its realization (results indicators).

Forty-five specific indicators were applied, which were analyzed and processed based on the review and selection of bibliographic information, the regulatory framework, strategies, policies, plans and government programs, as well as information obtained from interviews with government employees, guided by 137 questions, and surveys containing 58 questions that were administered to the inhabitants. Below are some generalities grouped according to the normative dimensions of the right to water (Roaf *et al*., 2005; Fukuda-Parr, 2011).

Follow-up Results

Physical Accessibility

Water and facilities must be within the physical reach of all sectors of the population (ONU, 2002). The source of water should be less than 1 km (round trip) and the minimum time to access the water should not exceed 30 minutes, including waiting time and distance to the source (Howard & Bartram, 2003).

For this indicator, reference is made to the WHO/UNICEF Joint Monitoring Program [JMP] for Water Supply and Sanitation, which was established as a follow-up tool and is currently used by the United Nations to follow up on the commitments arising from the signing of Goal 7c of the Millennium Declaration in 2000, which urged member states to halve, by 2015, the proportion of people without sustainable access to potable water and basic sanitation services through the generation of periodic estimates of the progress towards achieving the Millennium Development Goals. In Mexico, this goal was met in 2010. The categories considered for data analysis are presented in terms of the improvement of water sources in the form of "stairs" (Table 1).

Table 1. Drinking water ladder (Joint Monitoring Program, JMP) (OMS-UNICEF, 2014).

Drinking water ladder	
Unimproved drinking water	**Sources of surface drinking water:** Rivers, dams, lakes, ponds, streams, canals, irrigation channels.
	Unimproved sources of drinking water: Unprotected dug wells, unprotected springs, carts with a small tank or drum, tankers, bottled water (bottled water is only considered "improved" for drinking when an improved source is used in the home for cooking and for personal hygiene).
Improved drinking water	**Other improved sources of drinking water:** public water sources, tube wells or wells, protected dug wells, protected springs, rainwater collection.
	Running water in the place of consumption: Connection of running water in the dwelling, plot or patio of the user.

In the case of the municipality of Juárez, the estimated percentage of coverage is not precise and there is no information related to the indicators that make up the potable water ladder. When considering data from the last population and housing census of 2010 and the population with service in the same year (multiplying the number of homes with service by the overcrowded rate), it results in an unrealistic percentage of Service Coverage of Drinking Water (Cosap, Spanish acronym) of 115% (Coneval, 2010a; Coneval, 2010b).

Regarding the coverage within the urban area of the municipality of Juárez, a conservative value of 96% is considered (Mexican Institute of Water Technology, 2012). In addition, it is known that the JMAS-Juarez supplies water to a part of the population that does not have access to the public network, through tanker trucks that go to their homes.

Therefore, an estimated 96% of the population living in the urban area is supplied with improved drinking water through running water in the place of consumption, while the remaining 4% is supplied with unimproved drinking water through other sources of drinking water, such as water tankers (trucks).

In the municipality of Guachochi, there is no reliable information regarding the number or percentage of people who have access to the public drinking water network (Table 2). The information provided by different entities presents considerable differences, so it is impossible to use the drinking water ladder to determine the situation in which the municipality is found.

Table 2. Percentage of coverage according to different entities. Municipality of Guachochi, Chihuahua, Mexico (INEGI, 2010a; INEGI, 2010b; IMTA, 2012).

NWC	NISG	JMAS	MIWT
85.0%	91.5%	89.0%	97.4%

In general, the only indicator of drinking water coverage that is covered by the population censuses of the municipality of Guachochi is that of houses that have piped water from the public network. There is no information on other forms of supply, including: rivers, dams, lakes, ponds, streams, canals, irrigation channels, unprotected dug wells, unprotected springs, carts with a small tank or can, tankers, bottled water, public water fountains, pipelined wells or sounding wells, protected excavated wells, protected springs or rain water catchment.

Availability

The availability of water must be continuous and sufficient for personal and domestic uses, this includes water for drinking and preparing food, hygiene (personal and domestic cleaning), amenities (car washing, irrigation of green areas, etc.) and productive uses for subsistence that do not generate income (preparation of beverages such as *tesgüino*, watering animals, construction, small-scale horticulture, etc.) (Howard & Bartram, 2003).

The norms related to the Human Right to Water do not establish the amount of water to which a person must have access in order for it to be a sufficient quantity. However, to contribute to the discussions that have taken place in the country at this time, in relation to the right to water, the proposed General Water Law (LGA) can be used, stating indicators established by the World Health Organization (WHO) (OMS, 2011):

> "Basic minimum. The volume of water for personal and domestic consumption that is granted with the periodicity that allows the individual to cover their basic needs corresponding to fifty liters per person per day" (Article 10, Section XXXII).

Regarding the continuity and seasonality of the supply, factors that are also considered by this indicator, while there are no universal standards, water availability is considered in terms of the most amount hours per day.

The results obtained from the surveys in the municipality of Guachochi reflect different perceptions. Some households with access to 6.25 liters per person per day (lpd) perceived this amount as sufficient, while households with access from 28.5 to 57 lpd perceived these amounts as insufficient. Nevertheless, the former had natural water sources available, such as unprotected springs, and people only count the amounts of water they use for personal consumption, so that respondents considered 6.25 lpd to be enough for drinking and preparing food.

In the case of the municipality of Juárez, in the area from km 29 to 33, due to the fact that there is no drinking water coverage by public network, the inhabitants have water from three sources (Figure 3): a) The JMAS- Juarez, through tankers, which supply water to the residents in the area with a frequency of once a week; b) a particular drinking water market exists, where tankers provide water from water sources, known as "*garzas*", which exist in JMAS-Juarez; and c) five reverse osmosis stations which can supply families with up to 40 liters per day, free of charge.

The surveys showed that the average total consumption is 101 liters per person per day (see Figure 4), an amount that all the respondents considered sufficient to meet their basic needs, without implying that, in this case, the state complies with its obligation. Unlike the inhabitants of Guachochi who have natural sources, the inhabitants of Juarez obtain some of their water through the water market.

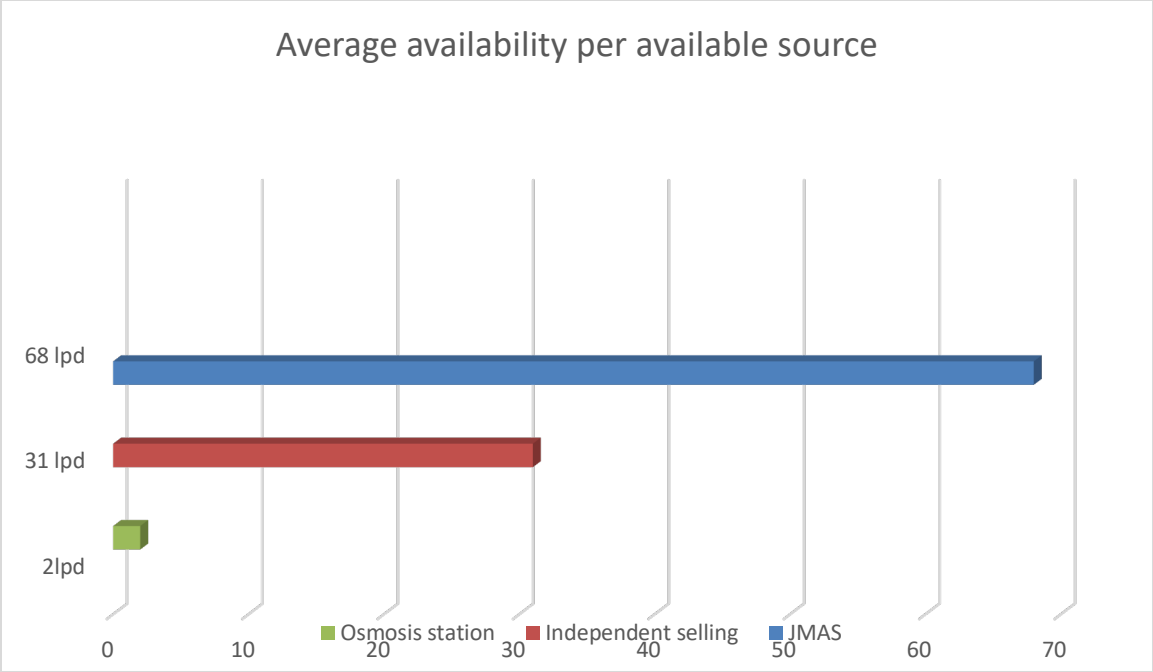


Figure 4. Average availability per available water source, in liters per person per day. Municipality of Juárez, km 29 to 33 (Lazo, 2016a).

For this indicator we return to the results obtained from "Atracciones Calderón" in the municipality of Juárez. During the visit, they had water available in two ways: a) private tankers and b) private reverse osmosis stations. Both sources guarantee an average of 52 liters per person per day, an amount that all respondents considered insufficient to meet their needs.

Regarding continuity and seasonality, those surveyed reported that they were visited on a daily basis by private tankers, due to their proximity to a source of supply (about 1.6 km) as they are on the through-road on which the tankers travel daily between km 29 to 33. As for the private osmosis stations, they are accessible 24 hours a day.

There is a considerable difference in the total average of lpd consumed by the inhabitants in the km 29 to 33 zone and that consumed by the inhabitants of "Atracciones Calderón". Some data to consider, in terms of water consumption for general use (individuals), the inhabitants of "Atracciones Calderón" reported having a lower consumption than the inhabitants in the km 29 to 33 zone, since the state does not guarantee access to any amount of water, the water they transport is allocated to other recipients, and the tankers' prices are very high. Therefore, in this case, the availability and demand of water do not depend only on access (distance to the source, waiting time, continuity of supply and seasonality) but also on the price. This is contrary to the results of case studies in which water is available through the municipal public network, such as the one titled "Price and management of urban water in Mexico", by

Rosales and Sisto (Rosales & Sisto, 2013), where it is concluded that "the demand is much more sensitive to the number of users than to its price."

With regard to water obtained from the reverse osmosis stations, the inhabitants of "Atracciones Calderón" mentioned having a higher consumption than the inhabitants of the km 29 to 33 zone, despite the fact that the inhabitants of "Atracciones Calderón" must pay for drinking water processed by reverse osmosis. This can be explained because their need for drinking water is greater, and they live in the same place as their source of income, so they spend all their time in the field. In addition, they are installed in an arid area on dates with average temperatures of 30º Celsius, whereas the people who live in the km 29 to 33 zone may work outside their homes and live in a private home.

Quality

Drinking water quality analysis was not carried out, but people were asked about the acceptability of water, that is, about their perception based on evaluating the quality of water through their senses (Jacobo-Marín, 2013). This was categorized as: of good quality (fairly pure), poor quality (almost always contaminated) or average quality (sometimes it is good and sometimes contaminated).

In the case of the inhabitants of the communities of Guachochi, they consider the quality of the water they consume to be good or average, associating the quality of the water with the absence of diseases related to the consumption of contaminated water. A generalized perception is related to chlorine, in that the inhabitants of the communities of Guachochi consider the quality of the water they consume from unprotected springs, in all cases, to be better than the quality of the water provided and administered by the JMAS-Guachochi in the municipal capital, because the water they consume in their communities has no smell or taste of chlorine.

The previous situation is related to the fact that the JMAS-Guachochi does not have established criteria or norms regarding water treatment and quality control. There is only one person in the JMAS-Guachochi who is responsible for chlorine monitoring in the distribution network, whose activities consist of checking the supply of chlorine gas in the wells and placing chlorine tablets in the basins that supply the communities ((IMTA, 2013).

In the municipality of Juárez, no one responded that the quality of the water was bad, but rather, they considered the quality of the water leaving the

sources to be good or average. However, the people surveyed avoid consuming water provided by the tankers because the containers used in their homes to store the water are waste containers from the maquiladora industry, used to transport various raw materials. In addition to containing residues from the raw materials they originally transported, these containers do not have the mechanisms needed to keep them properly protected from contaminants such as those from land and animals.

Affordability

The costs associated with the supply of water must be affordable, without compromising or endangering other human rights and without requiring that water be supplied free of charge (ONU, 2002). Traditionally, the proposals to measure this indicator, from the perspective of those who enjoy the human right to water, have consisted of measuring the percentage the families spend for drinking water in relation to the average income of the families (COHRE-AAAS-COSUDE-UN-HABITAT, 2007; Roaf *et al*., 2005; Flores *et al*., 2015). The standard value is considered to be between 1% and 5% of the average family income (Flores *et al*., 2015).

The case studies analyzed in this article do not have public drinking water service from the public network, and there is not enough information to apply the traditional indicator. Considering these difficulties in collecting the information, the following elements will be the center of focus.

In the case of the municipality of Guachochi, the families surveyed that have running water at home manage their systems through committees composed of the residents themselves. A total of 62.5% of the families surveyed pay a monthly fee that ranges from $30 to $60 Mexican pesos per family, amount allocated for repairing and improving the system. If you compare the price paid with the cost paid by people who have water service from the public network in the municipal capital, the monthly rate corresponds to $64.76 pesos for those whose usage is measured, and between $82.65 and $172.20 pesos for users who do not have a measuring device. It turns out that the amount of money paid by the residents of the communities is lower than the rate paid by the people who receive the drinking water service from the public network that is managed by JMAS-Guachochi.

In the case of the municipality of Juárez, in the km 29 to 33 zone, the families surveyed pay a monthly fee of $97.28 to $868.57 pesos to transport private tankers (between $48.64 to $144.76 pesos per person per month), at a rate of $0.07 pesos per liter of water, since the free water provided by the operator

is insufficient. In "Atracciones Calderón", the families pay between $469.02 and $1,118.72 pesos monthly (between $202.66 and $469.02 pesos per person per month), at a rate of 15 cents per liter of water purchased from private tankers and 60 cents per liter of water purchased from the private reverse osmosis stations, without receiving any free supply from the operating body.

Comparing the prices paid with the cost of water charged by the JMAS-Juarez, at 2015 prices, families that have a measuring device installed in their home need to purchase up to 23,000 liters of water per month at a cost of $152.91 pesos, equivalent to $0.006 pesos per liter, while families who do not have a measuring device installed in their home (belonging to the category of 0 to 23 000 liters of water consumed) spend $201.61 pesos monthly, equivalent to $0.008 pesos per liter (Fees for drinking water, sewerage and sanitation services for the 2015 fiscal year of JMAS-Juarez, Junta Municipal de Agua y Saneamiento de Juárez, 2015).

For the municipality of Juarez, in the km 29 to 33 zone, the amount of money per cubic meter paid by families without service is 1,000%, higher than the rate established by the JMAS-Juarez for the same level of consumption, while in "Atracciones Calderón", the amount of money per m^3 paid by families without service is 2,142% higher than the rate established by the JMAS-Juárez for the same level of consumption (the difference between the km 29 to 33 zone and "Atracciones Calderón" is mainly due to the fact that the latter buy all the water they require from private individuals, both in reverse osmosis stations as well as from private tankers, while for residents in the km 29 to 33 zone, the operator provides a part of the supply free of charge, through tankers and public reverse osmosis stations, and must pay private tankers for the additional volumes required).

In the case of the economic expenditure made by the families of the communities in Guachochi, it was lower than the rate paid by the people who receive the drinking water service through the public network that is managed by the JMAS-Guachochi.

Contrasts

There are differences in the law depending on the environment in which it is applied. The results of the follow-up investigation regarding the way in which people enjoy the right reflected that, in terms of the normative dimensions of availability, physical accessibility and affordability, the inhabitants of the municipality of Guachochi perceived having better enjoyment of the right than

those living in the municipality of Juárez. This is despite the fact that the results of the follow-up, in terms of compliance with the obligations by the State, reflected that these same dimensions are better fulfilled in the municipality of Juárez than in the municipality of Guachochi.

For example, regarding availability and physical accessibility, JMAS-Juárez has a considerable amount of technical, human, organizational and economic resources compared to JMAS-Guachochi, despite the differences in population and the size of the territory. This allows the JMAS-Juárez to carry out actions aimed at improving availability and physical access, such as in the case of the installation of reverse osmosis stations and using tankers to provide water. Meanwhile, JMAS-Guachochi only aims to provide the public service of drinking water to the residents in the urban area, without taking any action on the behalf of people who live in the communities in the municipality, such as those visited.

Regarding affordability in the municipality of Guachochi, despite the absence of the State, the maintenance costs that the inhabitants pay the water committee translate into a better perception regarding this dimension, while in the municipality of Juárez, the actions that the State performs to ensure sufficient access, in terms of quantity, are insufficient for some, who are forced to resort to the existing water market in the area, negatively affecting the residents' perception of affordability.

Regarding the inhabitants of Guachochi having a better perception than those of Juárez, the fact that the inhabitants of the former municipality have natural water sources available that are accessible, affordable and healthy is considered an important factor. In this sense they are in charge of providing them the right to water, while the inhabitants of the municipality of Juárez do not have access to a natural source, which requires greater and better intervention by the State.

However, the results obtained in terms of perception of the right to water are closely related to the worldview (Pintado, 2004) held by the inhabitants of the rural localities in the municipality of Guachochi. The relationship of people with their natural environment is based on respect for natural objects, on the awareness that their environment has provided them with what they need to live, that the land is borrowed, so it must be worked and respected, and that we must maintain existing conditions as part of respect for their environment. Therefore, they do not necessarily attribute to the State any responsibility for the conditions in which they live.

Such a worldview is not treated with sufficient detail and we considered it to have important implications for defining policies. In the case of "Los Kilómetros," the inhabitants believe they do not deserve the right to water because they live on land that they do not legally own, besides not contributing directly to public expenditure. On the other hand, the inhabitants

of "Atracciones Calderón", since they are only "passing through" the city and their purpose is to generate financial profits with entertainment, not only do they believe they are not worthy of the right but also they justify the high prices imposed on them for water.

On another note, the fact that the municipality of Juárez requires greater intervention by the State to guarantee the right, compared to Guachochi, suggests that the role of the State will not be the same throughout its territory. Therefore, it must take into account the way in which people can or cannot enjoy the right according to the possibilities offered by the environment. That is, the environment conditions affect the way people can enjoy the right and, therefore, the manner in which the State must comply with its obligations to respect, protect and fulfill it. This consideration may seem obvious, but in this article it is relevant because it delineates a base on which to build the answer to the question: How to ensure an adequate supply of drinking water to people who do not have it?

The right to water has been proposed as a way of preventing water from becoming another good regulated by the market, since in the context of increasing inequality, not all people could have access to water with all the implications that this entails (among other effects), for which the commodification of the water resource is contrary to the nature of the right to water.

However, although water is legally owned by the nation, its commercialization is a reality that, at very high prices, becomes the only way in which people can ensure sufficient supply, given the lack of capacity of the State to guarantee adequate access.

In this paradigm shift, given the State's lack of capacity to guarantee sufficient and healthy access, it would be detrimental for people to lose the water market in the city. Nevertheless, it is essential that the State regulate its operation in some way for the benefit of the population, so that its operation is not arbitrary, as in the case of the commercialization of water supplied by tankers.

Conclusions

Returning to the research question: What does the human right to water represent for the excluded and what does it imply for the State? From the State perspective, it can be concluded that the human right to water in Mexico

exists but is not fulfilled. The law is adopted internationally and stipulated by the Constitution, however, in the cases studied, the State does not fulfill its obligation. In the Municipality of Guachochi, no action is taken to completely fulfill the right (recently, the Central Board of Water and Sanitation, in coordination with the JMAS-Guachochi and non-governmental organizations, has introduced a rainwater harvesting program which seeks to address the lack of access in indigenous communities, but since its implementation is still in process, it is beyond the scope of this article).

In the cases of the municipality of Juárez, actions are carried out to guarantee it (although they are not designed in terms of the right to water), especially through providing a free supply, although insufficient in some cases, and through the installation of water stations (also, JMAS Juárez has recently modified water service in the "Los Kilómetros" communities by means of tankers, including on-site storage tanks to improve the quality and frequency of the supply, nevertheless their evaluation is not considered as part of this program). Meanwhile, in the case of "Atracciones Calderón", no action is being taken to guarantee the right.

To consider the right to be fulfilled, people need to enjoy it as a consequence of the State implementing its obligations to *respect, protect* and *fulfill* the right, as defined by General Comment 15 (ONU, 2002). However, people have been seen to enjoy some of the dimensions despite the breach. In the communities in the municipality of Guachochi, people to some extent enjoy the dimensions that make up the right to water, because nature is responsible for providing a supply that is available and/or sufficient and/or safe and/or accessible and/or affordable. Similarly, in the case of the municipality of Juárez, the existence of a drinking water market also allows the inhabitants to enjoy some of the dimensions defined by the GC15, to some extent and at a very high price. Thus, requiring a legal consideration in terms of the ability of the State to guarantee a free minimum supply in very specific cases such as "Atracciones Calderón" or "Los Kilómetros".

The human right to water in Mexico is an empty promise. It is not enough for the State to be legally required guarantee the right. It is necessary to define deadlines, goals and allocate resources for true fulfillment. In general terms, the absence of defining and regulating the bases, supports and modalities for the equitable and sustainable use of water resources, to explicitly determine the way in which the state must comply with the obligations imposed by the law and the way in which the inhabitants enjoy the right, voids its compliance, since it cannot be guaranteed that the inhabitants cease to be passive subjects, recipients of a public service by the State to be holders of an operative right with the capacity to sue for the fulfillment of its obligations, according to Hardberger (Justo, 2013).

In both case studies, the operating agencies have technical, human, organizational and economic deficiencies, which, regardless of their origin, do

not allow them to function in an optimal way. Therefore, assuming the normative dimensions that make up the right to water could backfire, generating an increase in said deficiencies, causing damage and creating results contrary to those that the law pursues. This last point requires research to estimate the associated costs and times derived from fully assuming compliance with the human right to water.

In order to turn the right to water into a direct benefit for the population, through effective public policies, it is necessary to strengthen the capacities of the operating organizations, so that they can convert the normative instrument into a tool that allows them to improve the way they guarantee the right, and of course the way in which people enjoy it, avoiding the situation in which the search to comply with the right becomes a tax burden that affects the operator to the point that it cannot implement it.

On the other hand, from the perspective of the excluded, there are people who do not feel worthy of the right. The inhabitants of "Los Kilómetros" and the people of "Atracciones Calderón" consider that they have no right to receive adequate public services, specifically drinking water. By contrasting the perceptions of the people, the subjectivity of the right to water was confirmed, since for the excluded, the meaning of each of the dimensions that make up the right to water (accessibility, availability, quality and affordability) is different in each of the case studies. This situation has not been dealt with in sufficient detail, but has important implications for the definition of the policies associated with the right to water. This raises the following question: What do the normative dimensions of the right to water mean from the user's perspective?

From the perspective of the excluded, this study elucidates the contrasts in the way people are provided with a minimum supply of drinking water, a situation that must be taken into account by the State when seeking to fulfill its obligations. While in the municipality of Juárez, in the absence of natural sources the obligation of the State is to comply, to carry out actions aimed at guaranteeing access through the public drinking water network. In the municipality of Guachochi, the obligation of the State is to respect and protect, abstaining from practices or activities that deny or restrict the right to water, since in a certain way natural sources facilitate and guarantee access in terms of the right to water (in addition to having traditional forms of organization and distribution of water) and must carry out actions aimed at fulfilling the purpose of guaranteeing the right in times of water shortages.

Another key obstacle facing the right to water is the lack of indicators based on human rights. Based on the selection and application of normative indicators to answer the question at hand, the potential to adapt to the context in which they are applied is important, as is their usefulness as guidance on the path that must be taken towards the implementation of the right.

On the other hand, the normative framework of the right to water does not explicitly define the obligations on the part of citizens to enforce this right. These must be established according to the realities, customs, needs and specific demands of each region, in such a way that they can be contained over time.

These obligations are generated in the subsidiary relationship that exists between the State and citizens, especially in relation to public services that are paid for by contributions from the entire community. Not including in the discussions the obligations that people have in the fulfillment of the right can lead to interpretations that lead to an unsustainable relationship, in which the State is the only one responsible for solving problems, which in practice would affect the service to the detriment of the majority, leaving those who are currently most vulnerable without the service, to suffer the most.

The example of community water management in communities outside the municipality of Guachochi allows Hardberger's proposal to be reconsidered, specifically, adequate water supply as a right, and not only as a public service that the State must provide, but also that people go from being passive subjects (recipients) to active subjects (holders of an operational right) capable of demanding compliance with obligations (2005) (Justo, 2013). But what is the role of the people when a government is absent? What is the role of the people who are forced to self-manage in order to provide themselves with an adequate supply of water? The categories of analysis proposed by the author are insufficient to explain the realities studied.

We consider a category in which citizens act as active subjects, who provide water for themselves, updating their right as a way of survival by supplying a basic need. In the study it is clear that, in addition to the categories proposed by Hardberger, there is another category of citizen as an active subject who provides the human right to water, which should lead to rethinking how community water management should be included in the context of the human right to water, especially in marginalized communities and in urban areas where citizens do not have adequate access to water and organize themselves to provide it for themselves, from natural sources, from formal and informal markets, or through the participation of non-governmental organizations such as those that are developing the rain harvesting program in Guachochi. This solves the basic need in a subsidiary manner, as a condition for survival and not as a human right.

The above formulates the following question: How can community management represent a mechanism for the State to avoid its responsibility to guarantee the human right to water, or to what extent and under what conditions can community management be considered as part of the State? These definitions must be taken into account in the legislation and in the development of governmental public policies.

The right is desirable but difficult to actualize. In Mexico, it was submitted as a result of an international agreement, specifically, the GC 15 (ONU, 2002), addressed ten years later with the constitutional modification, a situation representing an unfinished public policy that is virtually limited to recognizing the right and its inclusion in political discourse.

We have then the right to water as part of a utopian vision of well-being that, by itself, cannot guarantee universal and safe access to drinking water and sanitation, nor can it be considered a perfect model that serves in any domain. Despite that, this utopia has triggered an evolution. It has played a constructive role, as Amartya Sen says (1995 at 2000 ed.) (Sen, 2000), which in turn has generated criteria and tools that, in search for the common good and the construction of values and priorities, are for the benefit of millions of people. This has made it necessary for Mexico to start generating the indicators that make the measurement of the human right to water possible as a practical mechanism for advancing the exercise of this right.

The lack of the authorities' adaptation of water management to a human rights perspective, the inertia of traditional programs or even the alternatives that have been tried such as PROCAPTAR, cause those who cannot exercise their human right to water to continue without real possibilities of exercising it, in the medium- and even long-term.

In conclusion, the logic of competitiveness and the law of the fittest, in which we live, has led people who have been below to end up at the peripheries of society, outside, and excluded. Therefore, we must focus on those who are excluded, reintegrate them into societies and include them in decision-making. As already stated, not focusing on the excluded prevents defining key aspects in the implementation of the right.

Paradoxically, the municipality of Guachochi, in the Sierra Tarahumara of Chihuahua, has one of the lowest drinking water coverages in the state, although it is the area where it rains most. Exclusion is not primarily a problem with the lack of water, but of management, infrastructure, priorities and policy.

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