

## Water Crisis in Mexico Reflections on Its Shortage and Management

Dra. María del Rocío García Sánchez<sup>1</sup>, Dr Joaquín Reyes Añorve<sup>2</sup>, Mtra Guadalupe Godínez Alarcón<sup>3</sup>

<sup>1</sup> CT Research Professor at the Faculty of Law of the Autonomous University of Guerrero Mexico, Prodep Desirable Profile Certified and Member of the State Register of Researchers of the state of Guerrero.

<sup>2</sup> CT Research Professor at the Faculty of Law of the Autonomous University of Guerrero Mexico, Prodep Desirable Profile Certificate

<sup>3</sup> CT Research Professor at the School of Psychology of the Autonomous University of Guerrero Mexico.

### Summary.

Mexico is experiencing a water crisis particularly in the central and northern regions of the country due to increasing droughts. Millions of liters of water are used by the processed food industry or soft drink or beer companies, the agricultural and livestock industry among others, these are the economic activities that consume the most water. Therefore, it is important that the water crisis experienced in Mexico should not be addressed based on the lack of rain, the implementation of effective public policies for the supply of water that respond to the expectations of the population should also be considered. Another aspect that must be taken into account is that the Mexican legislation that regulates the exploitation or use of national waters, as well as their distribution, control and preservation of their quantity and quality, has to be reviewed, renewed and adapted to the current needs of the country to guarantee the human right to water. In this context and using an inductive-deductive methodology, a documentary review of national and international legislation was carried out, as well as literature related to the water crisis affecting Mexico. In short, it is important to state that the management of water resources must be based on principles of solidarity, collective access and equity, which are by definition incompatible with any commercial approach motivated by private benefit and public benefit. Definitely, the implementation of public policies that effectively combat water scarcity in Mexico must be linked to the management, protection and infrastructure for the distribution and storage of water. This includes regulating water extraction and promoting sustainable practices in all sectors of the economy.

**Keywords:** water crisis, public policies and management.

### Introduction.

A pending issue on the agenda of the governments of many countries is the conservation, distribution and consumption of water. It is important that water stops being a commodity in order to be able to establish the development of society with certainty and security, recognizing that water is a human right and that as such it must be defended.

In Mexico, in the sixth paragraph of article 4 of the Constitution, access to water is established as a human right, stating that: Every person has the right to access, disposal and sanitation of water for personal and domestic consumption in a sufficient, healthy, acceptable and safe manner. affordable. The State will guarantee this right and the law will define the bases, supports and modalities for the equitable and sustainable access and use of water resources, establishing the participation of the federation, the federal

entities and the municipalities, as well as the participation of citizens to the achievement of these goals. (*Chamber of Deputies of the H. Congress of the Union*) [1]

However, a water crisis is being experienced in Mexico because there has not been enough rain in the Cutzamala System basin in the three months of 2023. Not a drop of rainwater has fallen in the Cutzamala System basin in the three months of 2023. 45 days from 2023, reported the Aguas del Valle de México Basin Organization (*OCAVM*). (*Mendez, 2022*) [2]

An important aspect that must be kept in mind in relation to water is that it is an essential resource to have a quality life, that is, the possibility of having access to a dignified life; It is also a basic element for the realization and fulfillment of other human rights such as reducing the risk of water-related diseases such as malnutrition, avoiding death due to dehydration, satisfying consumption and personal hygiene needs, the right to decent housing, adequate food and a healthy environment among other rights.

In this context, water must be considered fundamentally as a social good to be used for personal purposes to avoid hunger and disease; It should also be considered as a cultural asset not only for the development of humanity, but as a good of practices that generate values, attitudes and customs that are transmitted in a society to create responsible awareness about its rational use.

### **Justification.**

The principle of preeminence of human rights over the commitments assumed by States in trade agreements that have effects on people has been subordinated, de facto, by the reality of the development model that privileges, of course, the conception of goods. and basic public services, in merchandise.

And behind this situation, for the population it means facing an entire platform well founded in laws, norms, and practices that groups of economic and political power impose on society, ironically, through violations of human rights.

The World Trade Organization (WTO), the North American Free Trade Agreement (NAFTA) also aim to eliminate obstacles that prevent free trade in goods and services, increasingly limiting the power and obligation of governments to adopt measures in favor of development, environmental protection and in defense of sectors in vulnerable conditions, harming the possibilities of access and enjoyment of essential rights for subsistence.

It is essential that within society there is a legal order that limits or restricts man's means of action in the interests of others. In this framework, relevant regulations are required from International Human Rights Law, Political Constitutions and National Legislations, which legally protect any action and public policy that contributes to the defense of the right to water as a fundamental human right.

A water supply crisis in 2023 is latent in Mexico and the possibility that this year a serious drought will be recorded in several regions of the country, such as in the central west (Jalisco, Aguascalientes, Guanajuato, Colima and Michoacán) with 81.9 % of its surface in this condition; the north (Chihuahua, Coahuila, Durango, Zacatecas and San Luis Potosí) with 64.5%, and the central-southern (Querétaro, Hidalgo, Mexico City, State of Mexico, Morelos, Tlaxcala and Puebla), with 54.5% increases increasingly. (*Mexico Drought Monitor (MSM)*) [3]

### **National and international legal framework of the human right to water.**

#### **National.**

As mentioned at the beginning, in the sixth paragraph of article 4 of the Political Constitution of the United Mexican States, the human right to water is established.

For its part, article 27 of the Constitution establishes that the ownership of the waters originally corresponds to the Nation and mentions the types of bodies of water and the conditions for the waters to be considered federal; Outside of these cases, they may be under state or private jurisdiction.

Also, the National Water Law regulating article 27 of the Constitution in matters of National Waters, the Federal Law of Rights provisions applicable in matters of national waters, the Federal Law of Ecological Balance and Environmental Protection, as well as the State Laws on drinking water and sewage and other federal and state laws that are part of the national legal framework of the human right to water.

It should also be mentioned that there are several Official Mexican Standards (NOM) within the national legal framework on water that establish the technical regulation of mandatory observance related to the characteristics or prescriptions applicable to a product, process, installation, system, activity, service or method of production or operation, as well as those related to terminology, symbols, packaging, marking or labeling and those that refer to their compliance or application by the competent agencies, such as the case of NOMs on water quality as is NOM-001-SEMARNAT-1996 and NOM-002-SEMARNAT-1996, related to the maximum permissible limits of contaminants in wastewater discharges, the first of them in water and national assets, and the second to sewage systems. urban or municipal.

Without a doubt, it is essential that within society there is a legal order that regulates and limits not only the actions of individuals in the rational use of water, but also the effective implementation of public policies. In this sense, relevant regulations are required that legally protect any action and public policy that contributes to the defense of the right to water as a fundamental human right.

### **International**

Article 25 paragraph 1 of the Universal Declaration of Human Rights establishes that everyone has the right to an adequate standard of living that ensures the health and well-being of himself and his family, and especially food, clothing, housing, medical care and necessary social services... (*The Universal Declaration of Human Rights / United Nations*) [4]

Similarly, in article 5 paragraphs III and IV of the International Convention against All Forms of Racial Discrimination (*International Convention on the Elimination of All Forms of Racial Discrimination*) [5] and in article 14, paragraph 2, subsection c of the Convention on the Elimination of all Forms of Discrimination against Women (*Convention on the Elimination of All Forms of Discrimination Against Women*) [6] establishes the right to housing and the right to public health, medical care, social security, to enjoy adequate living conditions, particularly in the areas of housing, health services, electricity and water supply water, transportation and communications.

In principle 4 of the Declaration of the Rights of the Child (*Children's rights convention*) [7] establishes that: the child must enjoy social security benefits. You will have the right to grow and develop in good health; To this end, special care must be provided to both him and his mother, including prenatal and postnatal care. The child will have the right to enjoy adequate food, housing, recreation and medical services.

Unquestionably, the interdependence that is exposed in these provisions is evident, because water supply services should be affordable for all, and no one should be deprived of access to them because they do not have the ability to pay. Furthermore, the human right to safe water for personal and domestic consumption

in a sufficient, safe, acceptable and affordable manner serves to sustain healthy livelihoods and maintain the dignity of people.

In General Comment Number 15 of the United Nations Committee on Economic, Social and Cultural Rights (ESCR Committee) (*General Comment No. 15: The Right to Water (Articles 11 and 12 of the International Covenant on Economic, Social and Cultural Rights)*) [8] points out in its introductory part that: water is a limited natural resource and a public good fundamental for life and health.

For this reason, both in the International Covenant on Economic, Social and Cultural Rights (*International Covenant on Economic, Social and Cultural Rights*) [9] and Universal Declaration on the Eradication of Hunger and Malnutrition (*Universal Declaration on the Eradication of Hunger and Malnutrition*) [10] there are provisions relating to the importance of the conservation of water resources, as a source of food and economic well-being. Consequently, it is important to plan and promote a rational exploitation of these resources, preferably for direct human consumption, in order to contribute to meeting the food needs of all peoples and for the exercise of many of the rights recognized in the ICESCR.

Under the approach of economic, social, cultural and environmental rights, water is essential to provide a means of subsistence (the right to earn a living through work) and to enjoy certain cultural practices (the right to participate in cultural life). However, priority in the allocation of water must be given to the right to use it for personal and domestic purposes, as well as to prevent hunger and disease.

For its part, in paragraph 1 of Resolution 1803 (XVII) of the General Assembly, “Permanent sovereignty over natural resources” (*General Assembly Resolution 1803 (XVII) of December 14, 1962, Entitled Permanent Sovereignty Over Natural Resources*) [11] establishes that: the right of peoples and nations to permanent sovereignty over their wealth and natural resources must be exercised in the interest of national development and the well-being of the people of the respective State.

In relation to this right of peoples to freely exercise their sovereignty over their natural resources, it is important to highlight that there is an international treaty on waters signed between Mexico and the United States of America since 1936 (Secretary of Foreign Affairs) [12] and in which establishes the allocation of the waters of the Tijuana, Colorado and Bravo rivers from Fort Quitman, Texas, to the Gulf of Mexico. The treaty regulates how the two countries must share the water of the Bravo and Colorado rivers, which are part of the territorial limit between them.

Even though, for more than two years, thousands of people have been on alert on the Mexican side of the border, the Mexican government must deliver to its northern neighbor its share stored in the Boquilla dam, in the state of Chihuahua, precisely in the region of the country indicated as being of concern due to the serious drought.

In October 2020, farmers armed with sticks and stones ambushed hundreds of soldiers guarding one of the most important bodies of water on the border, the La Boquilla dam. The farmers took control of the dam, closing its gates and stopping the flow of water. The Mexican government was sending water to Texas and leaving farmers with almost nothing for their crops. (UNAM water network) [13]

The right to water has been recognized in a large number of international documents, such as treaties, declarations and other norms, which establish not only the right to access to water, but also the necessary conditions and characteristics in which it must be provided. , also establishes the specific obligations of the States Parties in relation to access to drinking water, such as guaranteeing all people access to a sufficient quantity of drinking water. However, the demand for water in different regions of the country, as mentioned

in previous paragraphs, is higher than the amount available., as happens in the central west (Jalisco, Aguascalientes, Guanajuato, Colima and Michoacán) in the north (Chihuahua, Coahuila, Durango, Zacatecas and San Luis Potosí) and in the central-south (Querétaro, Hidalgo, Mexico City, State of Mexico, Morelos, Tlaxcala and Puebla).

### **Water and quality of life**

Quality of life is evaluated by analyzing five different areas. Physical well-being (with concepts such as health, physical security), material well-being (referring to income, belongings, housing, transportation, etc.), social well-being (personal relationships, friendships, family, community), development (productivity, contribution, education) and emotional well-being (self-esteem, mindset and emotional intelligence) (*Quality of life concept*) [14]

It does not matter if a country is considered a power in water resources, if there are sectors of the population that live in areas where there is some type of difficulty in accessing water and sanitation services, it is difficult to consider that in these areas people have quality of life.

The water supply in Mexico does not paint an encouraging scenario because more than 80% of the country is being affected by lack of water, according to the latest data reported on March 18, 2023, by the National Water Commission (Conagua). More than half of the national territory suffers from some type of drought. This year is expected to be a very critical year, authorities have begun to look for strategies to deal with the problem. (*Zerega, 2023*) [15]

Human activity demands large amounts of water to survive and a large part of it is used in the industrial branch, agriculture, accelerated urbanization, the use of fertilizers and pesticides, soil degradation, and the natural search for comfort by all human beings have resulted in excessive and indiscriminate use of natural resources.; It is also avital element for the ecosystems on which our food and nutritional security depends. However, freshwater resources are declining at an alarming rate. Increasing water scarcity is now one of the main challenges for sustainable development.

There definitely cannot be quality of life with water scarcity due to the impact on the health of people who are exposed.to diseases, to lack of personal hygiene, in food preparation. The human right to water is essential to live with dignity and is an essential condition for the realization and enjoyment of other human rights. That is why water must be treated as a good of common, social, and cultural interest.

In 2022, the state of Nuevo León experienced the worst water crisis in the last thirty years. The reserve levels of the Cerro Prieto and La Boca dams decreased considerably until they were below 5% of their capacity. The metropolitan area of Monterrey only had 13,500 liters of water per second, when regular daily consumption is 16,500 liters per second. This is because the state has had less rain than expected in at least the last five years, according to official figures. (*Castaneda, 2022*) [16]

While it is true that it is not only the lack of rain in Mexico that has aggravated this water crisis, there are other factors that aggravate it even more, such as the increase in population, productive activities, mainly agriculture and industry, the decades of overexploitation of water resources, the production of more food and generation of more energy, as well as the implementation of public policies in the supply of water that have not been effective, that is, they do not respond to the expectations of the population, or infrastructure that is not sufficient or not They have been modernized.

It has been wrong on the part of the different governments that Mexico has had, that in the water development plans they have considered a highly economic approach in the distribution of water and that the supply and collection of water depends largely on the rains.

### **Literature review**

The human right to water is the right to have sufficient, safe, acceptable, accessible and affordable water for personal and domestic use. An appropriate supply of safe water is essential to prevent death from dehydration, to reduce the risk of disease and to meet household needs as well as personal hygiene needs.

In many entities of the country situations of drought like the one recently experienced in the state of Nuevo León due to the lack of rain, which brought with it cuts or restrictions in the supply of the service. In other cities, demonstrations and blockades of streets or roads have been present because of the water shortage that was recorded in 2022.

Another problem related to the water supply, which requires mentioning, is the case of water contamination by any agent, chemical, physical, or biological, and whose presence has harmful effects on the natural environment, the health and well-being of the people. This problem is even more aggravated when it comes to dams that store and supply water to cities, as is the case of the Endhó dam in the state of Hidalgo where the sewage of Mexico City, several industrial corridors, hospitals, A refinery and thermoelectric plant have created an environmental hell north of Tula. Under these conditions, the water is not suitable for human consumption or for agricultural production or in industry for the manufacturing of many products.

The contamination from the Endhó dam in Hidalgo reached its drinking water wells and for decades has poisoned, drop by drop, 15 thousand human beings. Authorities, who knew about it from a series of studies conducted in 2007, simply ignored it as cancer deaths in the region tripled. In May 2018, the National Water Commission was forced to test water from seven wells around the dam. They were all contaminated with heavy metals, so the then Governor Omar Fayad was notified without doing anything to stop the contamination. It had to be those affected who will fight for a solution. Finally, the anger of those affected came when they learned that the authorities, including Conagua itself, had known about this problem for at least fifteen years and decided to ignore the problem. (*Carabaña, C, 2023*) [17]

In September 2022, a hydrocarbon spill was reported due to a leak in a 16-inch Pemex pipeline, which caused the closure of the road in Cunduacán-Comalcalco, in Tabasco.

Tabasco is another region of the country, particularly in the municipalities of Comalcalco, Cunduacán, Nacajuca, Jalpa de Méndez, and Huimanguillo where contaminated wetlands, dead fish, and withered crops prevail, as a consequence of the hydrocarbon spill in a Petróleos Mexicanos pipeline that forced municipal authorities to close water treatment plants that supply more than 70 percent of the population, due to the pollution generated by the hydrocarbon spill.

The gas spill, which has been going on for 21 months in the vicinity of Soto la Marina and San Fernando, has contaminated a five-kilometer radius, affecting 600 families who have had nosebleeds and vomited blood. The public complaint was made by the local representative, Casandra de los Santos Flores, pointing out that the company Jaguar Exploración y Produccion de Hidrocarburos S.A.P.I. was responsible. of C.V. (*Hernandez, 2022*) [18]

Another serious case that has been neglected by the Mexican government is that of the communities located in the vicinity of Soto la Marina and San Fernando, in Tamaulipas, which has contaminated a radius of five

kilometers, affecting 600 families of fishermen from Tamaulipas. of nosebleeds and vomiting blood, as a consequence of the leaks from a hydrocarbon leak that occurred in 2021.

According to information from the National Water Quality Measurement Network (Renameca), 59.1% of the rivers, streams, lakes, lagoons, dams and coastal areas that are monitored are contaminated. (Rodríguez, 2022) [19]

Situations like those exposed have also happened in other regions of the country, either by mining companies that leave indigenous communities dry, or by public servants or politicians who, through influence peddling, irrigate hundreds of hectares of their property with some planting, while the inhabitants of the region suffer from a lack of water, or because sometimes, farmers are forced to sell their water concessions to large water, soft drink or beer bottling companies, monopolizing large volumes of water, causing overexploitation of aquifers or by the delegation of municipal governments of the supply of water service by private initiative, as happens in Aguascalientes, Mexico City, Coahuila, Nuevo León, Puebla, Querétaro, Quintana Roo, Sonora and Veracruz.

The lack of attention on the part of the three levels of government in situations such as those exposed, adding, in addition, demographic growth and climate change, have become triggers for social conflicts. In most of the federal entities of Mexico many suburban municipalities have grown demographically in recent years, so the social demand for water has become more dynamic.

For all this, the approach to water as a human right has become increasingly important. Civil society groups around the world use this perspective due to its relationship with other human rights and to publicize the failure of States to provide this vital element for human subsistence, ecosystems, as well as for better management of water resources.

As mentioned, Mexico has signed and ratified international treaties that require it to take all necessary measures to guarantee the full effectiveness of the rights protected in each of the agreements. Due to the above, the Mexican State is faced with an international obligation to comply with the obligations that it has acquired in relation to the right to water.

### **Materials and methods.**

This work was carried out under an inductive-deductive method in which a documentary review of national and international legislation was carried out as well as literature related to the research topic on the water crisis that Mexico is going through, and the importance that water stops being a commodity to be able to establish with certainty and security the development of society, recognize that water is a human right and that as such it must be defended, which allowed obtaining gradual and progressive reasoning to be able to describe, analyze, explain and conclude through the deduction that water should not be valued from an economic or commercial perspective, but rather that it is a human right indispensable for the realization and enjoyment of other human rights.

### **Results and discussion.**

As can be seen, water constitutes a human right and as such is established in the Political Constitution of the United Mexican States; however, this has not been sufficient for the Mexican State to comply with the obligation to guarantee this right of access and equitable and sustainable use of water resources.

The United Nations Organization in its report Summary Progress Update: SDG 6 — water and sanitation for all indicates that 107 countries are not “on track to sustainably manage their water resources by 2030” And

by 2025 there will be 1.8 billion people living in countries or regions with absolute scarcity. (*Summary Progress Update 2021: SDG 6 — Water and Sanitation for All, 2021*) [20]

Different things could have caused the origins of the water crisis problem however, the end result is always the same: the disappearance of a common good that has inevitably led to political tensions, disagreements and conflicts. On the economic side, this results in a price alignment that may well mean that there are people who receive it at no cost, or there are those who pay it at an excessive price.

In 2023, water scarcity in Mexico has become a central issue not only in public discussion but also a concern in public policies. In this context, it is important to address, address and resolve this water crisis in Mexico due to the negative effects on the daily lives of Mexicans and even generating social conflicts.

There are many problems with supply, waste and inequity between social sectors that are seen as common. Mexico has entered a critical phase of insufficient water availability due, among other things, to demographic growth, the disappearance of aquifers, excess consumption, the deterioration of water supply networks, the unequal distribution of water between urban uses. and agricultural, and the low rates of treatment, recycling and use of wastewater.

The scarcity of water is the result of an order of privileges that distributes it unequally, that is, the batch water that reaches poor neighborhoods or marginalized areas is not the same supply as the rich neighborhoods. The truth is that in the social order in which we currently live, the water situation is visible, certain sectors of society with economic capacity are favored and other sectors in conditions of limited economic resources are deprived of access to the water necessary to basic survival.

The impact that the water crisis in Mexico has caused in several regions of the country has been with the health of the people, with lack of personal hygiene or food preparation, etc. The human right to water is essential to live with dignity and is an essential condition for the realization and enjoyment of other human rights. Unquestionably, water must be treated as a good of common, social and cultural interest.

## **Conclusions.**

The water crisis in Mexico is not only a consequence of the absence of rain, it is also important to consider:

1. Adequate management and protection of the country's dams. The contamination of dams such as Endhó in Hidalgo is truly worrying because according to information from the National Water Quality Measurement Network (Renameca), 59.1% of the rivers, streams, lakes, lagoons, dams and coastal areas that are monitored are contaminated.
2. The water from rivers, streams, lakes, lagoons, springs, etc. is poorly managed because farmers are forced to sell their water concessions to large water, soft drink or beer bottling companies, monopolizing large volumes of water, causing the overexploitation of aquifers or because it passes through irrigation areas where a large amount is wasted, which could be reaching the dams.
3. A very important measure to mitigate and combat water scarcity is the equipment or modernization of infrastructure not only to store water, but also the efficient distribution of water under conditions of equality in all cities and communities, since while in some areas of Cities enjoy uninterrupted water service, there are suburban or rural areas that lack water service.
4. The sewage produced in the country, only half of it receives treatment to be reused. An effective water treatment system is an essential part of the economic development of a country not only to prevent diseases and protect human health, but also to take advantage of and reuse water in economic production activities.

5. On the other hand, causes linked to the issue of governance have an influence: the lack of resources, together with external debt, means that governments do not invest sufficiently in improvements in services and in water supply and sanitation infrastructure. Likewise, there are also problems of corruption and pressures to privatize water and sanitation services.
6. In Mexico, since the 1970s, education and awareness about the responsible use of water among the population as provided for in the thematic fields, axes, expected learning, competencies and projects of the educational model of the Ministry of Education Public must already be a reality, the results of these learnings in environmental matters must be showing.
7. The Mexican legislation that regulates the exploitation, use or exploitation of national waters, as well as their distribution, control and preservation of their quantity and quality, has to be reviewed, renewed and adapted to the current needs of the country to guarantee the human right to water. and propose solutions based on self-sufficiency and comprehensive sustainable development.

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