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México, Water Scarcity

Water Scarcity in México: ‘Treading Water’ Isn’t Enough

Water is as essential as it is underappreciated. Life ceases to exist without it, but widespread accessibility often breeds apathy towards its worth. Some people don’t have the luxury of ignorance. In México, water scarcity has been hastened by greed, mismanagement, and a changing climate. Though certain powers are content just keeping the country's head above water, that will prove a precarious gamble for the nation’s already uncertain fate. Common-sense measures which address both the apparent and underlying causes of the crisis are crucial to ensuring a brighter future.

Background

According to the BBC (2023), México (officially known as the ‘United Mexican States’) is a nation with an estimated population of 129.1 million and an area of 1,972,550 square kilometers that borders the United States of America, Belize, and Guatemala. It is one of the “cradles of civilization,” i.e., one of the first areas on the planet to establish an urban society, and it has a diverse population and rich history. By location, nearly 80 percent of the population dwell in urban areas (UN-Habitat, n.d.). Its traditionally agrarian society and bountiful harvests have made it ripe for food production. As noted by the International Trade Administration (2022), México uses 53.6 million of its 60.8 million acres of arable land for planting, is the 11th largest agricultural producer in the world, and around 11.4 percent of its total population work in agriculture. The typical amount of land used per farming operation is not widely publicized, but corn farms take up an average of 3.6 hectares — roughly 8.9 acres — of property (Martin, 2020).

As discussed by Evason (2018), familial ties are extremely important in México. The average nuclear family consists of around three to five people. Though single-family households are more frequent in the general population, it isn’t uncommon to see cross-generational homes in both urban and rural areas. Honoring Catholic beliefs, it was historically common to have many children. Subsequently, large and close-knit families are archetypal to Mexican society. Considered a primarily patriarchal country, important domestic decisions are generally handled by male family members. Strict adherence to the wishes of one’s authority figure(s) is heavily encouraged or even demanded. Younger generations have started to embrace ideologies outside of the customarily conservative views of their elders, and corollary deviations from long standing religious and cultural standards have been noted in recent years.

Differing from a conventional Mexican diet that consists of a wide variety of legumes, grains, tubers, and vegetables, processed and sweetened foods have been substituted for staple carbohydrates and nutritionally-dense cuisine in the last several decades. Affordability and accessibility play the largest part in this shift. As a direct result of unhealthy eating habits, 70 percent of the adult population is now defined as overweight, and 32 percent as obese (Fiese et al., 2022).

In terms of the legal system, the Washington University in St. Louis, School of Law (2014) notes both the striking similarities to and key distinctions from its northern neighbor. First off, unlike the common law system of the United States, the Mexican civil law system is built around enforcing codified law, and no jury is part of the sentencing process. Secondly, while both have separate federal, state, and

specialized courts, México has more diversity. For example, if one wants to address an issue regarding agricultural disputes, they can go to the *Tribunal de Justicia Agraria*. In contrast, the U.S. would more likely have such matters be delegated to a more general institution like the Federal District Courts. Finally, judges have more authority over the trial than their American counterparts, and have control over areas such as investigation, expert appointments, and witness testimony that are typically assigned to U.S. attorneys. Notably, this means that each case relies on an impartial, honorable individual to hold such a role.

México's political system aims to reflect the voices of its people. As per the BBC (2023), The country is known as a “Federal Republic,” and government officials are generally elected to their position. The current president, former México City mayor Andrés Manuel López Obrador, won in a landslide victory in 2018. High crime rates, government corruption, and mediocre economic prospects have long plagued the country. Obrador’s platform promised positive change for the nation socially, financially, and politically. Though he has taken some action, the president has fallen short of achieving many of his goals.

Climate Change and Current Initiatives

As explained by the U.S. Agency for International Development (2022), one of the biggest threats to the nation is global warming. While much of the region is associated with a temperamental climate, environmental hazards have recently become more prevalent and severe. This is partly because of México’s geographical position. Being situated between the Gulf of México & the Pacific Ocean makes natural disasters such as cyclones, floods, and chronic droughts far more likely as temperatures continue to rise, and largely outdated infrastructure across the country is ill-equipped to handle much strain. México, to its credit, has taken some action to deal with the plight on a worldwide scale through contributions to the Paris Agreement and swearing to reduce emissions with “Net-Zero” policies. Unfortunately, the consequences of a transforming planet remain unavoidable. In terms of addressing the broader issue, truly effective solutions require universal action rather than domestic strategies. That fact, however, does not protect those who are culpable for exacerbating countrywide decline.

Water Scarcity

While water scarcity may seem miniscule in comparison to crime, political deceit, or climate change, its severity has acted as a symptom of these larger issues. Based on reporting from Abi-habib & Avelar for The New York Times (2022), the situation has reached a watershed. Many communities, especially in Northern México, have consistently lacked enough potable water to drink or maintain crops during the summer. Aquifers and reservoirs cannot regenerate enough to be used regularly, and illegal pumping by cartels and farmers alike is rampant (Kinard, 2023). Dams are drying up, large trucks (known as “*pipas*”) are tasked with distributing water, and citizens are seen waiting hours with containers as large as 200 liters — about 53 gallons — for enough water to survive. Angry citizens have sometimes taken to stoning trucks or taking truck drivers hostage in a bid to secure more of the precious resource. The already arduous job of water transport workers is unappealing at best, and outright hazardous at worst. Though the federal government has championed quick, flamboyant solutions such as “cloud-seeding” to everlasting drought and excessive heat, many activists and experts rally around practical solutions like enhanced irrigation and improving access to convenient, safe water sources instead (Frederick, 2023). The reality is that the millions of pesos spent in wastewater treatment, desalination plants, and water-distributing vehicles will never fix the system which is tasked with addressing the problem. Personal gain can effectively be put before the health and safety of entire communities without consequence, and mismanagement has led to those most marginalized bearing the brunt of severe shortages instead of corporations or wealthy constituents (Patel & Tierney, 2022). Even though the right to clean water is protected by a variety of laws and measures, including the 1917 constitution, abuse is

normalized for the personal, political, and economic interests of a select few parties (Wolfe, 2018). When those who are given control lack the drive to consider the people they serve, no amount of technological innovation or currency can hide the poor results of their efforts.

Challenges and Solutions

While much of the issue can easily be blamed on largely uncontrollable factors like the changing climate, there are entities which benefit from and exacerbate the problem. Solutions may seem daunting, but they are far from unattainable.

As mentioned previously, political corruption has played a key role in the unjust distribution of water and the inefficiency of relief efforts. As outlined by Norma Sánchez of the Global Initiative Against Transnational Organized Crime (2022), México is greatly hindered by failing leadership and its dependance on an effective, unbiased judiciary. Certain changes must take place to form a wholly functional system. Firstly, new regulations should be instituted that ensure that only regularly vetted officials deal with matters of great importance such as natural resource management, federal misconduct, and cartel violence. This is especially important when it comes to powerful public servants like judges. Second, *all* criminal cases should be decisively nonexclusive and nonpartisan. This would mean the establishment of a significantly more robust and accessible documentation system for criminal affairs, independent parties monitoring for illicit activity in all formal business, and the highest degree of transparency being required as opposed to encouraged in the legal process. Finally, proportional punishments to the severity of civic criminality should be not only legislated, but enforced. Once all of this has occurred, the nation can start the process of addressing its multitude of pervasive ills.

Figure 1

Satellite Imagery of a Water Source Between 2021 to 2022



Imaging from Planet Labs PBC

After addressing systemic obstacles, it is certain that the federal government needs to take a more active role in controlling the water supply. Monitoring publicly available satellite images for suspicious terrestrial activity is an accessible way to maintain a semblance of supervision across the country (*e.g.* Figure 1). Key areas like greenery or apparent water loss can lead to investigations, and, in certain cases, even result in criminal convictions for responsible parties. *The Secretaría de Medio Ambiente y Recursos Naturales* (SEMARNAT) should institute strict, biyearly aptitude inspections for all state and local departments who handle water usage. If an organization is found to be committing abuse of any sort, the agency should then report the perpetrators to the government to be penalized accordingly. More than just punishment, there should be a fundamental overhaul of the current and ineffective federal strategy. More

time and money needs to be put towards necessary irrigation projects, water infrastructure enhancements, aquifer preservation initiatives, and into the hands of the citizens, nonprofits, and agencies who handle such matters (Frederick, 2023). While these tactics may not drum up press attention or sound as impressive, they will provide immediate, effective, and sustainable relief.

Another culprit is corporations that utilize and market this limited resource. Certain companies have taken to collecting and selling groundwater at high prices, with popular brands like Coca Cola and Heineken taking part in this practice (Perlmutter, 2022). Mexican president Andrés Manuel López Obrador begged drink companies to release their water to the public on July 18th of 2022, but they instead opted to only give a limited amount of water away or not at all (Perlmutter, 2022). Businesses during a drought that withhold essential water that is otherwise potable for the sole purpose of improving their bottom line should face strict penalties for doing so. For the foreseeable future, companies who collect both public and private groundwater should be required, not begged, to give a set amount of accrued water monthly to their local communities. The quantity should be determined by state officials by examining recent rainfall, drought-severity, and resource paucity. A *minimum* penalty for illegal activity of 100,000 MXN — equivalent to between 5,000 to 6,000 USD — should be instituted federally. The payment required should be based on repeat offenses, how little was distributed, and the gravity of misuse at a given time. While some financial consequences for all involved are a certainty, that matters little in the face of the deadly ramifications of the status quo.

For farmers, the answer is far more complex. Farmers cannot stop watering their fields or providing for their livestock, but illegal pumping and water overuse are too common for the agricultural sector to be exempt from government involvement. For example, in the state of Guanajuato, farmers had once used so much water that they and underprivileged citizens alike had been forced to collect from the last remaining option: polluted groundwater containing potentially deadly chemicals like arsenic and fluoride (Felbab-Brown, 2017). Without clear boundaries or understanding, some are bound to take actions that can unknowingly threaten the health of themselves and others. The agricultural sector needs to be held to new regulations that require that farmers report the *estimated* (not necessarily exact) amount of water they use on a monthly basis to federal authorities in SEMARNAT. Further than that, they should also be required to state which source they took said liquid from. As an extension of this, said utilized water sources around the country should be closely monitored for contamination, depth, and overall security. After complying, farmers should then receive information on where to collect water, the overall forecast, and how to adjust their practices to accommodate for periodical conditions. Failure to communicate the required data to authorities and/or blatantly falsifying records should result in a fine of around 1,000 MXN (58.51 USD), but repeat offenses should then result in harsher fees. If one is found guilty of criminally tapping water lines or premeditated exploitation (i.e. knowingly abusing water sources), a base fee of 5,000 MXN (292.54 USD) or even jail-time should be considered.

Other than punishment, farmers should receive benefits for farming drought-resistant crops. While the government already subsidizes certain products, they should offer more benefits for farmers who grow crops like sorghum, cassava, and cowpea that naturally require less water than corn or other common “cash-crops” (Moloney, 2017). This could include buying excess produce, direct payments to participating farmers, or more personal incentives. With genetic technology working towards more robust varieties of desired fruits, vegetables, and grains, the Mexican government should also invest in such ventures in order to conserve more water in the coming years.

The government doesn’t have to look far from its current adversaries when it comes to tackling water scarcity. In 2006, the nation launched a coordinated attack on the drug trafficking industry in a bid to control worsening cartel violence. Since then, there have been more than 300,000 murders, and around 100,000 people remain missing (Kinard, 2023). These organizations have proven themselves financially successful, resilient, and all too powerful. According to Chaparro for VICE (2022), cartels have

unsurprisingly also had a hand in widespread water inaccessibility. In addition to dealing narcotics, some groups like the Sinaloa Cartel in the northern state of Chihuahua have taken to commodifying the resource, with cartels taking water from lakes, rivers, and creeks (*e.g. Figure 2*) to function not only as irrigation for their profitable plantations, but as a bargaining tool. Some drought-stricken farming, rural, and indigenous communities have had to negotiate with and become dependent on them just to survive. Some have also alleged that cartels have taken from protected waters, but officials have not yet established enough evidence, nor enough personnel, to act. At the root of it, the easiest way to even begin to address the problem is to implement systemic changes to the federal sector of México. A swift and effective criminal justice system should allow for this illicit trade, along with the majority of organized crime groups, to be greatly weakened and potentially even dismantled through appropriate punishments and fair criminal proceedings. Such action should also coincide with the projects aimed at supporting water access across the country and protecting vulnerable water sources. Formerly dependent citizens will likely be reluctant to anger hostile cartels, so time is of the essence when it comes to controlling potentially violent factions and protecting innocent parties. Solving this quandary will neither be painless nor simple, but it is certain that a coordinated effort beyond contemporary policy is needed to truly address this persistent obstacle to progress.

Figure 2

Photos of plastic pipelines siphoning water that are allegedly connected to cartels



Photographer Gerardo Nava for VICE, 2022

While tense relations seem omnipresent in the modern era, the United States has a long history of aiding México. The U.S. Department of State (2022) contends that diplomatic relations have been established for a little over 200 years, and that México is “one of the United States’ closest and most valued partners.” The United States has spent millions on both sides of the border towards humanitarian assistance, policing, and even climate control. In fact, the Environmental Protection Agency (EPA) has even launched the Border Water Infrastructure Grant Program (BWIGP) to help with the water crisis in select areas of México (Kinard, 2023). Though such efforts may be extremely beneficial, they are heavily targeted to areas that are directly connected to the United States or its interests. When so much of American political debate centers around what problems lie past the southern border, it is abundantly clear why there would be a precedent to be more proactive in its improvement. Even a small amount of the allotted funds and energy the United States puts towards other matters could fuel lifesaving government programs, contribute to beneficial collaborations like the BWIGP, and establish trust for years to come. Water scarcity directly impacts the stability of Mexican society, and the United States has long proven it has a vested interest in what happens to its neighbor. Restricting U.S. involvement solely to border communities will likely prove a gross oversight if the United States truly wants a safer, healthier México.

Conclusion

While water scarcity is hardly a black and white issue, the solutions are largely evident. An effective national government, appropriate aid, and responsible resource management are essential to combatting civic failure, nescience, rapacity, and global temperature shifts. Inaction would mean certain tragedy, and treading water is no longer enough to ensure survival.

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