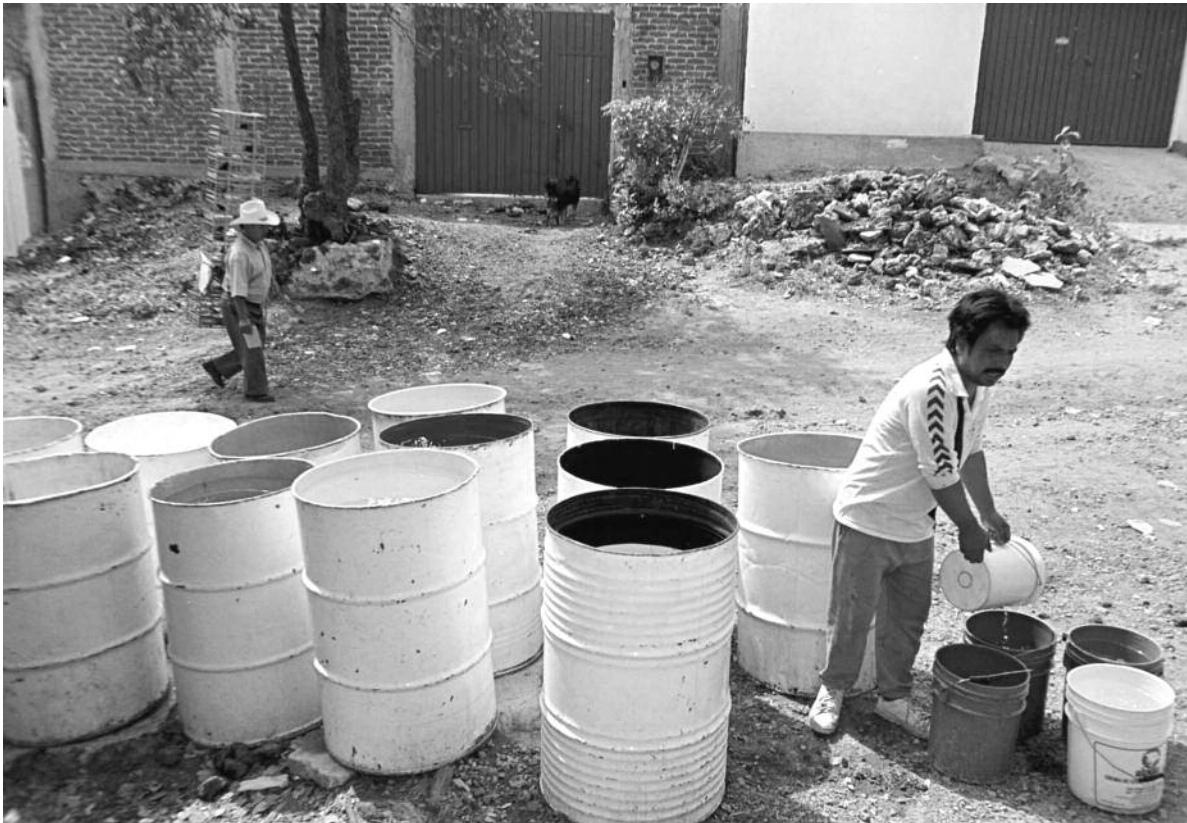


Conflicts over Water

Part 1: The Rio Grande

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INTRODUCTION

The world's water supply threatens to be the springboard for a crisis of major economic and social proportions. And this is despite the fact that 75 percent of the planet's surface is covered by

water, a renewable natural resource.¹ This will have a negative impact on all nations' sustainable development and security. The problems are more dramatic in some developing countries, with overpopulation, scarce water resources and very little technology for treating the so-called "blue gold."

In recent years, this crisis has been one of the causes of international con-

flicts over countries' sharing water, particularly in the cases of scarcity in the world's 260 mega-basins. However, none of the more than 1,500 disputes has led to armed conflict.² On the contrary, most have been resolved by diplomacy. In almost all cases, bilateral and multinational treaties and accords have been prepared and implemented to negotiate the different parties' interests.

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TABLE 1
POPULATION AND HYDRIC STRESS (1997 AND 2025) (in millions)

	NO STRESS		LOW STRESS		MEDIUM STRESS		HIGH STRESS	
	1997	2025	1997	2025	1997	2025	1997	2025
U.S. and Canada	27	30	280	310	–	–	–	–
Western Europe	18	18	180	180	300	310	15	14
Pacific	–	–	25	26	120	122	–	–
Ex-USSR	14	15	200	220	50	52	18	20
Eastern Europe	–	–	50	65	16	18	17	20
Africa	100	200	395	810	200	400	27	160
Latin America	–	15	360	480	140	200	–	–
Middle East	–	–	27	45	138	300	29	40
China	–	–	120	700	1.20	1.680	–	–
Southeast Asia	–	–	480	500	1.08	1.685	–	–

Source: <http://www.cidob.org>

In that context, one of the conflicts is between Mexico and the United States over the Río Bravo/Rio Grande. The dispute, until now handled diplomatically, became more heated in the early 1990s, when our country stopped meeting its commitment to turn over 431,721,000 cubic meters of water to the United States every year, its part of the Rio Grande water as established in the 1944 Treaty Relating to the Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande.³

Mexican authorities justify their actions by pointing to the droughts along the northern border, as occurred in 1992 and 1997. This led the U.S. and Texas governments to demand that our country review the status of water in the Rio Grande basin, which they hold is not as serious as alleged. They base their contention on aerial studies carried out in the United States according to which northern Mexico has sufficient

water resources to continue to meet its commitment. The Mexican government, for its part, continues to point to the local obstacles to covering the debt.

The tension in bilateral relations arising from this problem was behind both nations' agreeing in 2001 to put the issue on their joint agenda.

THE STATUS OF WATER IN THE WORLD TODAY

Water is, quite literally, the fountain of life. As we know, 70 percent of the human body is water. When it loses 10 percent of its water, it can die. In contrast with other natural processes in which basic fluids can be replaced, human beings cannot substitute the water they need to survive.

Several countries have begun to suffer from water scarcity. It should be noted that most of them are in the

South. This ensures that the water crisis will extend throughout the world.

Among the causes of the crisis are the irregular distribution of water over the planet, high pollution levels, the lack of technology for desalinization, increased consumption, waste, deficient management and irrational deforestation that impedes the renewal of underground water tables.

Of all these factors, the most important is irregular distribution, which, as I already said, leads to scarcity. As we know, of the planet's total water supply (almost 1.4 billion cubic kilometers), only 2.8 percent is fresh water. Of that, only 0.40 percent is accessible to people in lakes, rivers and underground reservoirs. The rest, or 97.2 percent of the world's supply, is ocean salt water, which covers three-quarters of the planet's surface (see graph). It should be pointed out that this distribution is beneficial for the northern countries,

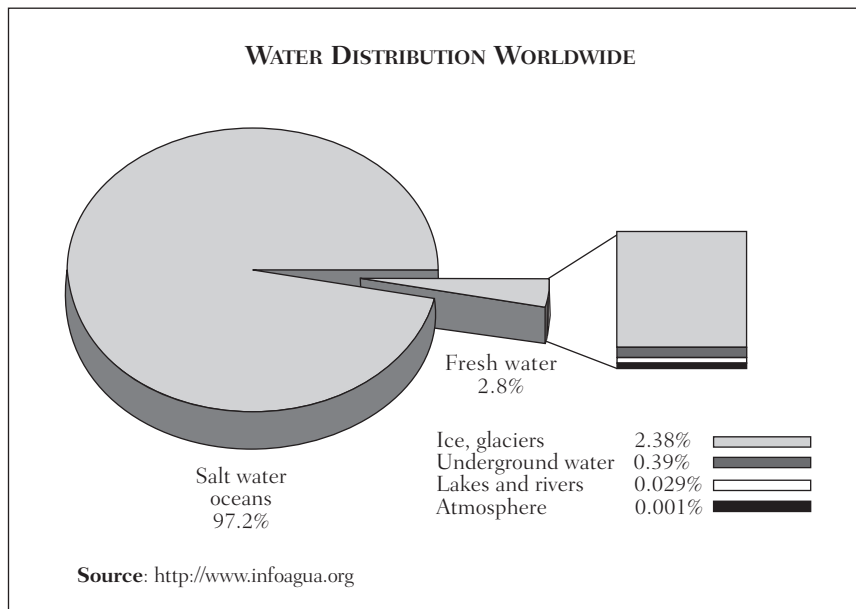
but not for those on either side of the equator, in the South. The northern countries have an excess of fresh water, whereas in the South, scarcity is becoming very serious.

Another result of this crisis is that the inhabitants of some countries, particularly developing nations mainly in Africa, Asia and the Middle East, consume barely 10 liters of water a day per person, far below the UN established minimum of 50 liters. In contrast, in the rich regions, such as Europe and the United States, consumption per capita is 150 liters a day. From this we could think that in these countries there are no conflicts over shared water. However, sometimes it is not scarcity but contamination that is the cause of conflict.⁴

The United Nations established a three-tiered classification to measure water scarcity: on the first level, when annual water supply drops to less than 1,700 cubic meters per person, the country or region experiences what is called hydric stress. This stress can be of two magnitudes: when supply is between 1,000 and 1,700 cubic meters, the area experiences a periodic or limited scarcity; when it is under 1,000 cubic meters, there is total scarcity.

HYDRIC STRESS

By 2030, an estimated 2.8 billion people will suffer from hydric stress: that is, they will lack the water to satisfy their most basic needs. This will cause them serious health problems and difficulties for the general development of society. In the worst of cases, it will also threaten their very survival. Most of these people will live in 48 countries in Africa and the Middle East.



Water has been used
as a political instrument, a terrorist weapon
or a military objective.

Table 1 shows the stress that some regions of the world faced in 1997, and the one that could exist in 2025 if measures to mitigate the effects of the crisis are not taken.⁵

Comparing the information on these tables, we observe that the countries most affected are and will continue to be those of Africa, Latin America and, to a lesser extent, Asia. It should be pointed out that a certain, though lower, amount, of hydric stress is also predicted for the United States, Canada and Europe.

In all cases, the number of people suffering from a lack of fresh water will increase. The Middle East countries deserve special attention, particularly Saudi Arabia, where a barrel of fresh water already costs more than a barrel of oil.

Table 2 shows that by 2025, the number of countries suffering from

hydric stress will also increase. The most serious case is Africa, which has no resources for finding water, treating contaminated water or much less purchasing it from other regions. This table reveals that the fresh water supply in the Middle East will remain unchanged despite its ready supply of fossil fuels and petro-dollars.

Another point that should be mentioned is that most of the nations on the table are currently going through local or international conflicts involving two, three or more countries. The most obvious cases are in the Middle East, Sub-Saharan Africa, Eurasia and the former Soviet countries of central Asia. All these regions suffer from sometimes brutal fresh water scarcity or contamination. This causes conflicts among countries, which in some cases threaten to turn into armed clashes.

The most grievous cases of contamination are those of the Rhine River in Central Europe and the Dnieper in the Ukraine, where industry has practically destroyed the water supply.

HYDRIC STRESS AS A FACTOR FOR CONFLICT

Our forebears preferred to settle on the edges of rivers and lakes, allowing them to stop being nomadic and become sedentary. This is how the first civilizations emerged and developed, in time turning into empires. The proliferation of empires brought disputes over territory and natural resources, among them, water. In the battles between these peoples, one of the most frequently used tactics to defeat the enemy was to sabotage or destroy

the water supply both for human consumption and agriculture.

Today, one of the main causes of conflicts is the hydric stress plaguing countries to a greater or lesser degree. As a result, it is increasingly common that participants in conflicts use water as a military tool, a factor for controlling society, a political instrument, a terrorist weapon or a military objective.

In the opinion of specialist Peter Gleick, because of its importance, water is beginning to be used in international relations as an excuse for starting wars just as terrible or worse than those sparked by the control of fossil fuels.⁶ We must not forget that since the invention of the internal combustion engine brought about the second Industrial Revolution in 1870, oil has been considered a strategic resource,

which, if necessary, had to be controlled through cruel warfare.

It should be pointed out that, until now, common sense has prevailed in most decisions about the 1,600 conflicts in human history due to improper use of shared water in the world's basins. The Middle East is one specific case, where Palestinians and Israelis, despite their bloody confrontation, have decided to respect the water supply that in some cases they must share.

CONFLICTS OVER WATER

The first conflicts over water occurred in Africa and the Middle East, lands where the first civilizations flowered. The Nile, Volta and Niger rivers in Africa and the Tigris, Euphrates and Jordan rivers in the Middle East have



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always been disputed by the peoples who settled on their banks. Today, these regions experience the world's greatest hydric stress and therefore a greater threat to the sustainable development and security of local states. However, due to the capitalist, and even the socialist, development model that most contemporary societies have followed, Central Asia, Central America, South America and even Central Europe have been added to the list.⁷

Table 3 lists the regions where clashes over shared water or scarcity and contamination exist.

SHARING THE RIO GRANDE'S WATER

Mexico and the United States share a 3,000-kilometer border, which in some places, runs along the Colorado, Grande and Tijuana rivers. This means that both nations share these rivers' water.

In order to fairly distribute the water, Mexico and the United States signed the 1944 Waters Treaty.⁸ The document establishes that the United States must pay Mexico 1.85 billion cubic meters of water from the Colorado River every year. Mexico, in turn, must turn over to the United States one-third of the water that flows to the main body of the Rio Grande, which will not be less overall than an average 431,721,000 cubic meters in cycles of five consecutive years. Considering the periodic climate change along the border, the treaty also allows for both countries to postpone the payment of the water in the case of extraordinary drought. If this happens, the debt can be paid in the following cycle.

Mexico punctually receives its quota from the Colorado River. However, the water is very contaminated by phos-

REGION	1997	SCENARIO 2025
U.S. and Canada	————	————
Western Europe	Belgium	Belgium
Asian-Pacific	————	————
Ex-USSR	Azerbaijan	Azerbaijan Turkmenistan Uzbekistan
Africa	Egypt Lybia	Algeria Egypt Lybia Morocco South Africa Tunisia
Latin America	Peru	Peru
Middle East	Middle Afghanistan Bahrain Iran Iraq Israel Jordan Kuwait Qatar United Arab Emirates Yemen	Afghanistan Bahrain Iran Iraq Israel Jordan Kuwait Qatar United Arab Emirates Yemen
Southeast Asia	Korea Pakistan China	Korea Pakistan China Singapore

Source: "Frente a la escasez de agua," <http://www.infoforhealth.org/pr/prs/sm14edsum.html>

phates and other pesticides U.S. farmers use and then throw in the river. Although Mexican authorities have lodged several complaints about this, very little has been achieved in terms of a solution.

In the 1990s a diplomatic tussle between Mexico and the United States began because Mexico began to make

irregular Rio Grande water deliveries to its northern neighbor. This was the case, for example in both the 1992-1997 and 1997-2000 cycles. Mexico justified the irregular deliveries pointing to the extreme drought in the border area. The United States did not accept this and warned our country's authorities that they should meet their

**TABLE 3
CONFLICTS OVER WATER**

REGION	RIVERS DISPUTED	COUNTRIES INVOLVED
Africa	Nile	Egypt, Sudan, Somalia, Eritrea, Kenya, Uganda and Tanzania
	The Great Lakes	Congo, Tanzania, Kenya and Rwanda
Middle East	Jordan	Israel, Syria, Palestine, Lebanon and Jordan
	Tigris and Euphrates	Turkey, Iraq, Syria and Iran
Central Asia	Amudarya	Uzbekistan, Tajikistan and Turkmenistan
	Syrdarya	Uzbekistan, Kyrgyztan and Kazakhstan
	Caspian Sea Basin	Russia, Kazakhstan, Iran, Turkmenistan and Azerbaijan
	Aral Sea	Kazakhstan and Uzbekistan
East Asia	Indo	China, Afghanistan, India (Kashmir) and Pakistan
	Ganges	India, China, Bangladesh
	Yellow River	China
Western Hemisphere	Ogallala Underground Table	Southeast and Central Western U.S.
	Guarani Underground Table	Paraguay, Uruguay, Argentina and Brazil
	Rio Grande	Mexico and the U.S.
<p>Source: Miguel García Reyes, "Los conflictos por el agua: el caso de la frontera México-Estados Unidos" (paper read at the international seminar "Los recursos naturales estratégicos: los hidrocarburos y el agua," organized by CISAN-UNAM, 28 May 2004, Mexico City).</p>		

commitment because farmers, above all in Texas, were ready to take the matter before U.S. courts. Mexico's situation worsened during the 2000 Texas elections, when the technical water problem became extremely politicized.

That same year, Washington emphatically demanded that the Mexican government pay the outstanding water

debt, which at that time came to 1.616 billion cubic meters. According to the Texas government, losses due to non-payment included 30,000 jobs and almost a billion dollars.⁹

Given this difficult situation, the U.S. and Mexican governments, headed up by George W. Bush and Vicente Fox, decided to include the issue

of water along their common border on their bilateral agenda. This means that in every bi-national meeting, whether of presidents or legislators, the topics will include the use of the shared Rio Grande water. This shows that through dialogue, the two countries can find solutions to their common problems. ■■

NOTES

¹ Some specialists think water should be considered a finite resource like fossil fuels. This is questionable since, despite the current deterioration in the climate, the hydrological cycle continues to operate regularly. What is occurring is a depletion of fresh water supplies, particularly underground ones, that we use irrationally. It is only logical that if these bodies of water are not replenished, scarcity will increase, but this does not mean that water is disappearing.

² Peter Gleick, "Water Conflict Chronology, Version 2000," 10 June 2003, at <http://www.worldwater.org/conflict/Intro.htm>

³ Texas Center for Policy Studies, *The Dispute over Shared Waters of the Rio Grande/Río Bravo*, July 2002 at <http://www.texascenter.org/borderwater>

⁴ "Soluciones para un mundo con escasez de agua," *Population Reports*, series M, no. 14, pp. 1-3 at <http://www.inforhealth.org/pr/prs/sm12edsum.html>

⁵ Carlos A. Fernández-Jáuregui, "El agua como fuente de conflictos en el mundo. Repaso de los focos de conflictos en el mundo," *Reporte de la Oficina Regional de Ciencia y Tecnología de la UNESCO* (Paris: UNESCO, 1999), p. 6.

⁶ Peter Gleick, op. cit.

⁷ Alexander López, "Conflictividad en cuencas transfronterizas" at <http://www.una.ac.cr/ambiente/108/lopez.htm>

⁸ *Tratado sobre la Distribución de Aguas Internacionales entre los Estados Unidos Mexicanos y los Estados Unidos de América* (Mexico City: Gobierno de México, 1944), p. 22.

⁹ Patrick Crimmins, "Texas Outlines Legal Position on U.S.-Mexico Water Treaty," Texas Commission on Environmental Quality at http://163.234.20.106/AC/comm_exec/communication/media