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## [Water Crisis: The Stress of the Planet](#)

*This is the blood of the Earth*

Water appeared on Earth 3.5 billion years ago and it is perhaps the most valuable resource of the planet. H<sub>2</sub>O means life to anything, from bacterium to elephants and humans. There is no biochemical or physiological reaction in the absence of the water. We must consume on average 2.5 liters of water from food and beverages to remain healthy. Water is also necessary for livestock and farming, the means for producing our food. The vital liquid covers 75% of the surface of the Earth. If even, our planet could be covered by a global ocean 2.5 km (1.5 mi) deep. Since most of it is salty seawater, a human drinking seawater would die from dehydration. Crops cannot be irrigated with this water and if used in the industry, it quickly oxidizes any machinery. Only 2.5% of the Earth's water is freshwater, but this number decreases to 0.77% when we consider water stored in glaciers and polar ice. Even this quantity, if uniformly distributed and rationally used, would be enough to sustain a human population two-three times larger than the current one. 82,000 cubic kilometers of water are found in the table waters, soil, lakes, swamps, rivers and plants, but the water available to people is just of 37,800 cubic kilometers. Two thirds of this water draw off, so that we actually can use just 0.001% of the amount of water of the planet. **Water resources around the world** Water is found in a continuous movement: evaporation-transpiration, precipitations, draining and infiltration. Because of the spinning movement of the planet (which generates a non-uniform distribution of the heat required by evaporation), of the continental drift and plate tectonics (that generated the current irregular repartition of the oceans, occupying a larger surface in the Southern Hemisphere) and because of the precipitation values depending on the convergence of the wet air masses, the planet is not and cannot be uniformly watered. This causes an unbalance between the water resources of the world's countries. In theory at a global level, there would be 1800 cubic meters of water available for each human annually, but the unequal distribution makes that an Egyptian disposes of 30 cubic meters annually, while an Icelander can use 708,000 cubic meters of water annually. Water is one of the biggest issues of the 21th century. In the US, the consumption is over 350 liters of water daily per person, as much as for filling 2.5 bath tubs, used for showering, in water taps or flushing toilets. In developed countries, water is at the reach of a tap and always available, while in most Africa, the closest water source can be a river kilometers away and coming back with a big recipient of water can take an entire morning. This water must be filtered to eliminate parasites and only afterwards used for drinking, domestic use, and bathing. Clothes are washed in the river. While Asia contains 36% of the world's lakes and rivers, it also harbors 60% of the world's population. In turn, the Amazon river holds 15% of the water contained by the world's rivers, still only 0.4% of the world's population use its waters. The hydric stress affects over 30 countries, which dispose of less than 1,000 cubic meters of water per person annually, the minimal threshold for ensuring vital and health requirements of water. **Human impact on water resources** Earth's climates also have variable dry periods, which means that people can "work" around them. Deforestation, excessive agriculture and grazing provoke desertification. The light reflected into the atmosphere increases and more heat disperses the rain-bringing clouds. That's why 84% of the Greek territory is now menaced by desertification and 8% of it is already dry. A great part of the rainfall in forests is water evaporated from the vegetation. When trees and bushes are cut, water amounts forming the decrease of the clouds. Naval traffic can influence weather on coastal areas. The cloud layer has turned thinner on coastal areas and thicker above the densely navigated maritime ways. The ash particles from the smoke of the ships act like condensation nuclei, leading to the formation of more water droplets. In the past 50 years, the fuel burned by ships has increased four times. **Water and humans** Indeed, the water crisis is getting more and more severe. History has various examples of civilizations whose faith was decided by water shortage or the deficient way of using crop irrigation, like Garamantes in Sahara and Maya in Central America. The lack of water menaces the economy and people's health in 80 countries. Developed countries can build dams, use expensive technologies to recycle water or even desalinize seawater, while poor countries must choose between rationalizing water, thus impeding economical development and decreasing food production. Reusing untreated water is another option but this increases the spread of diseases. Water requirements are

increasing everywhere, in close connection with the growth of the population. By 1990, 1.2 billion people were exposed to disease contaminated water and annually 3.4 million persons die because of these diseases. In the last 100 years, the water consumption doubled per capita and in ten years it could be doubled again, whilst the available water amount per capita is twice smaller than 50 years ago. Today, 20 % of the world's population does not have access to drinking water and over 50% does not have access to basic sanitation. Annually, 3-4 million people die because of diseases connected with the consumption of impure water, of which 2 million are children. At each 8 seconds, a child dies because of a disease transmitted through infected water. Water lack is connected to 80% of the pathologies affecting the third world. And this got even worse in time, as in less than one century, the world's population doubled and the water consumption increased by 6 times. Water transmitted pathogens, like those causing amoeba-linked diarrhea, cholera and typhoid fever (mostly at the tropics), kill 25 million persons each year. But in 1993, 400,000 persons from Milwaukee (Wisconsin, US) got sick after consuming tap water contaminated with a microbe resistant to chlorine. In the same year, dangerous microbes were found in the sewers of Washington, New York and Cabool (Missouri). By 2050, developing countries could increase the world's population to 9.3 billion. 4.2 billion people won't reach their water and food requirements. 2.1 billion people are already experiencing this. The idea that more people who need more food and more water for their agriculture competes with the basic requirements of the industry and people. This is aggravated by the use of low production fields, which require a high water contribution. Moreover, the demographic boom occurs in most developing countries where, in the majority of cases, water is also scarce. What's worse, people from poor countries are more directly connected to the natural sources of land, wood and water. 1.2 billion people worldwide suffer from malnutrition: they get enough calories, but lack essential vitamins and minerals. The growth of megacities in developing countries occurred explosively and in a chaotic manner, crowding poor people in huts lacking paid salubritization and hygienic conditions. These people must buy water, which is often dirty and always expensive. **Water and contamination** Over 50% of the world's rivers are now drought or polluted. One factor that contributed to this was the wrong use of water and soil. The wastewater from industrial and municipal use, dumped in rivers worldwide, stands for over 450 cubic kilometers. Many rivers are contaminated from springs to mouth. In developing countries, the drain off of untreated waste waters contaminates almost all rivers. 80% of the Russian rivers present risky levels of bacterial and viral load. Today, the healthiest rivers are considered Amazon and Congo (the world's largest) because of the very few industrial centers located on their banks. The table waters and rivers in developed countries are often poisoned with toxic chemicals coming from farm fertilizers. Almost all coastal countries discharge untreated waste water in shallow waters, severely polluting the beaches. All that is thrown, washed or swept in the coastal cities goes directly into the sea, untreated, like oils and car liquids, as well as pet feces. Bathing close to those sewage channels increases the risk of fever, vomits, respiratory infections and ear pain by 50% as compared to those doing it at least 360 m (1,200 ft) away. The reverse too can be harmful. A healthy beach accumulates twice as many organic marine remains daily, like wood, algae, grass, and even dead animals. Small crustaceans decompose these dead organic materials, that afterwards work as a binding material for the sand. Cleaning the beach leads to the decrease in the number of crustaceans and, in this way, shorebirds feeding on them are gone. Experiments have revealed that estrogen mimicking chemicals from wastewater cause reproductive issues in fish and amphibians. **Water and politics** The water crisis leads to tensioned situations and conflicts worldwide. A major issue is the distribution of water coming from the great rivers which cross different countries or separate them. 40% of the world population lives on rivers crossing several countries, like Brahmaputra, Indus, Mekong, Niger, Nile and Tiger and each country wants to exploit its water at maximum. The lack of accords on the common and rational use of these resources exacerbates conflicts. Unfortunately, like always throughout the years, water turned into an issue of menace and blackmail, of military. Political pressure and "hydroconflicts" between countries, generated by dam constructions, can anytime cause a "water war". The water crisis also affects the wildlife. In Somalia, baboons and hyenas attack villages affected by drought. In the scimmages for water, many baboons died and shepherds were hurt. These monkeys position themselves at crossroads or on bridges to attack trucks loaded with foods for the local markets, from where they steal water melons or clusters of bananas.