

A dramatic, high-contrast image featuring a central splash of clear water against a background of intense, swirling fire. The fire is rendered in vibrant shades of orange, yellow, and red, with a dark, almost black background. The water splash is captured in mid-air, with numerous droplets and a central stream of water, creating a stark contrast with the fiery background. The overall composition is dynamic and visually striking.

Is Water the New Oil?

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Introduction

Global demand for fresh water is growing steadily. Not only is the human population growing, it also consumes more water per capita than it used to. Agriculture is the single biggest consumer of water, accounting for 70% of the total volume we use.

Conflicts over water are evident, especially in regions where the resources are scarce.

Health problems caused by poor water quality are also hard to deny, with an estimated 80% of diseases in the world linked to it in one or another way. However, a 2006 UN report on global water deficit points out that much of the problems stir not from the physical absence of fresh water, but rather from poor governance and lack of investment into things like sewage treatment and efficient use of water.

The goal of the future is to deliver the existing water from places of abundance to those in need. Water is much cheaper than oil or gas, which means the cost of its transportation puts a greater barrier on trade, and annual volumes consumed are much greater. The solution could be great channels, which would bring water to buyers in a natural flow, but those require extremely high capital investment, what is economically not viable. Also, unlike with energy, alternative sources of fresh water are there to be used. Sea water desalination has been improving over the decades, and the most cost-efficient facilities produce water at affordable prices. Former World Bank Vice President Ismail Serageldin predicted, "Many of the wars of the 20th century were about oil, but wars of the 21st century will be over water unless we change the way we manage water."

Is Water the New Oil - History and facts

In the past human beings have used the Earth's resources for comfort and survival. As civilizations advanced we developed greater needs and used these resources to satisfy them. Chief among the resources we have used is oil. Oil has allowed us to be comfortable and efficient. Because of our dependence on oil we hoard, argue, and fight over it. History has shown that the more oil some countries have the less democracy there is. The wealth that the government gains allows it to increase its reach and the rest of the world's need for the oil causes it to turn a blind eye towards any abuses it commits. While oil has a powerful hold on us there is something else that's even more important; water. The United Nations General Assembly resolution in 2010 recognized water and sanitation as a basic human right. While the planet has 1,360 billion cubic kilometers of water about 97% of it is seawater, which is unsuitable for drinking, and 2%

is locked up in icecaps and glaciers. The remaining amount is in underground aquifers supplied by rainwater that seeps through the soil. While the Earth's population is growing rapidly water usage is growing even quicker with agriculture making up for 65%. Despite efforts over 1.2 billion people don't have access to clean drinking water and almost 2.5 billion don't have proper sanitation services. In fact, over half of the world's water is contained in just nine countries. Over 5 million people, mostly children in Africa and Asia, die every year from water based illnesses that are preventable. The problem isn't that there isn't enough water to go around but that it's in the wrong places at the wrong times. Governments and companies drained aquifers and ship the water to different areas without thought for those who need it the most. In some places water scarcity is more obvious but its effects are starting to being felt in more and more areas. Climate change has added to the problem. In Australia there have been so many dry years that one of their leading climatologists suggested they stop saying that they are gripped by drought and accept that the lack of rainfall is permanent. In the U.S. the Red Cross came to the town of Orme, Tennessee to hand out water supplies and in California the governor declared the first drought in 17 years. The state now has a special branch of the police force to educate and enforce water regulations. Some experts believe that the state has only 20 years of water left in it. 2/3 of the cities in China are also experiencing shortages and arable land is becoming deserts. In Barcelona the Spanish government brought in tankers of water to meet their needs while in London they are planning to build a desalination plant to meet theirs.

Another problem is that the amount of drinkable water on this planet is being decreased by pollution. An example of this is massive dumping in bodies of water all over the world. One of the results of this is a massive pile of plastic and other garbage between San Francisco and Hawaii. It's called the North Pacific Garbage Patch and it is twice the size of Texas. Eventually there was 46 times more plastic than plankton in that part of the ocean. Unfortunately, it's not as simple as removing the debris because some of it has become so small that the fish mistake it for food. What is being recommended is that people take preventative measures by reducing the amount of plastic waste they make.

Beside the regular garbage there is also a large amount of pharmaceuticals being found in water all over the world. These substances got in to water systems either by people flushing unused medication or by the meds passing through their bodies. After a five month investigation the Associated Press found that pharmaceuticals were

present in the drinking water of 24 major cities in states that included Southern Caroline, New Jersey, and Michigan. Water providers don't usually release the results of pharmaceutical screenings unless pressed for them. The head of a group that provides water for much of California made the statement that the public doesn't know how to interpret the data and could be unduly alarmed. Other providers cited post 9-11 security issues for not releasing the information. Among what was found was medication for blood pressure, mental illness, epilepsy, anxiety, pain, as well as other kinds of pharmaceuticals. This contamination has even reached to the watersheds that feeds the systems. Of 35 watersheds that were tested as part of Associated Press' investigation 29 were found to have pharmaceuticals in them. It is not just an urban problem, a fact proven by the high levels of caffeine found in the watersheds of upstate New York. Experts speculate that a reason for this could be septic systems, which are unmanaged and often fail, leaking substances in to the ground. It's also not just a problem for the U.S with more than 100 different types of chemicals found in bodies of water all around the world. While these substances are being found in small doses there is no data on what long term effects they could have on people. Studies recently done have shown that small amounts of these medications affects human embolic kidney, red blood, and breast cancer cells. The kidney cells are slower to grow while the cancer cells grow more quickly and the red blood cells show activity linked to inflammation. Male fish have developed characteristics of females which some say is due to exposure to pharmaceuticals in the water. Also effected are earth worms found in the wild and zooplankton in the lab. Some scientist stress that the studies that have been done are only preliminary and there's still a lot we don't know. Adding to our lack of knowledge is the fact that the federal government doesn't require screening for these chemicals or set any limits for them in the water. Of the providers that do screen for them the water is only tested for one or two substances. Around 2008 the EPA analyzed 287 chemicals for possible inclusion on a draft list of candidates for regulation under the Safe Water Act. Only one is made it on to the list. It is nitroglycerin; a heart treatment drug. Supposedly a major reason for that was the fact it can be used to make explosives. This leaves a lot of substances unaccounted for. Even if they are detected most purification systems don't remove all drug residue. While reverse osmosis removes most chemicals it's too expensive for large scale use and it creates several gallons of waste water for every one that becomes drinkable. Adding chlorine to water, which is a common method used by water providers, may make some medicines more toxic.

If this continues then the situation could lead to terrible fighting over what drinkable water remains because we won't be fighting just for political gain but for our

very lives. As one man said; “whiskey is for drinking and water is for fighting.” Already companies are staking claims on the world’s water. Like countries with oil deposits their power is growing because they have what we all need. If this race to control water is like what is happening with oil then the companies with the most water will have the most power and they will abuse it. One of the things that we need to do to avoid such a dark future is to find new, innovative solutions for water scarcity and make sure water is available to all. First we will take a look at some of these solutions.

An area where water is a source of conflict is the Middle East. Israel has long controlled the aquifer in its area and has opposed the creation of a Palestinian state partly to continue having control. The distribution of water has been uneven which has fueled the conflict. James L. Hecht; a senior fellow at the Center for Public Policy and Contemporary Issues at the University of Denver, proposed desalination plants using what was at the time the new technology of reverse osmosis. Part of his proposal was that the plants would be run by both Palestinians and Israelis. Since both sides would benefit from working together they would see the value of cooperation. This could lead to the integration of the two countries similar to those in Europe after the forming of the European Coal and Steel Community. However, getting both sides to go along with the deal could be tricky. There are tensions between them but they both need to be involved. If only one side takes part in the project it could lead to another imbalance of power but if an outside force is behind it things could be worse. A small group would be in control of the water supply and the situation would be rife with opportunities for abuse. This is the problem facing many solutions for water shortages; the technology is new so developing and using it often requires money. This leads to the wealthy controlling it and is the situation with oil. A small group controls it and this has let them set its price. They have become rich and powerful as the rest of the world has become dependent. We must avoid this for water. Not only should we avoid abuse of power but it is only by working together that we can truly solve the problem. Examples of the problems and solutions can be found around the globe.

They can even be found in developed countries like the United States where there are still things that need to be done. With such a long history of getting the water they need people have taken it for granted. This is part of the problem because as they waste large amounts of water the infrastructure that brings it to them like dams, levies, and piping, is becoming outdated yet few even know about this. To repair and maintain the current system the U.S. may need to spend at least \$250 billion over the next 30 years according to a study that was released in 2001 by the American Water Works Association. There needs to be a reworking of water infrastructure around the country

as well as people taking simple steps to reduce waste. These steps include low-flow showerheads, low-flush toilets, drip irrigation, side-mounting washing machines, storing water underground instead of above ground, where it evaporates. These low tech steps can help fight the monopolies that can come with more technological solutions. Unfortunately in some places these high tech fixes are still needed.

One of these more complex solutions for water scarcity that are found in is the Ground Water Replenishment (GWR) system in Orange County, Florida, U.S. A joint effort by the Orange County Water District (OCWD) and the Orange County Sanitation District (OCSD) the GWR provides recycled water for aquifer recharge and injection in to the area's aquifers to prevent saltwater intrusion. The GWR is the largest indirect portable water reuse project of its type in the world. The 70-million-gal-per-day (mgd) system uses microfiltration (MF), reverse osmosis (RO) and the TrojanUVPhox UV-oxidation/disinfection system. The last of the three uses high-efficiency lamps to minimize energy usage which is another bonus for the environment.

Another person who knows the value of using ultraviolet light in treating water is Dr. Ashok Gadgil, Senior Staff Scientist at Lawrence Berkeley National Laboratory and University of California. Dr. Gadgil grew up in Bombay, India where he lost five cousins to unhealthy drinking water. Despite having developed water systems many people in India still rely on open wells and bodies of water to meet their needs. Even those that use the water systems often get water that is contaminated. This led him to invent the UV Waterworks which is a low cost and energy efficient device that uses ultra-violet light to render pollutants harmless. The UV light is admitted at a special range which damages the DNA of bacteria and viruses so they can't reproduce. It was after a cholera outbreak in 1993 that he began work on a way to purify water cheaply and efficiently for those living in poor, rural communities. The first version of the UV Waterworks was too large and too costly to be used in these sort of environments. After redesigning it the new model has no moving parts and is more compact in size. Powered by a car battery, solar energy, or a bicycle generator it is environmentally sound and requires little maintenance. The water pan has to be changed every few months and the UV lamp once a year. It is also very efficient, disinfecting 4 gallons at a minute with proven results from field tests in India, Mexico, and the Philippines. Not only does it have the potential to help communities living in poverty but it can serve as a backup in the event that an area's main water purification system goes down.

While there's hope with these new technological breakthroughs we have to be careful that they are not controlled only by the few. In the future the question will be who will control the water? Will it be the people, the government, or a wealthy few? History has shown that precious resources have been hoarded and given out sparingly so that hoarders can obtain great wealth. With that wealth comes power and greater control over the goods. With such control the providers can become more and more ruthless which became a vicious cycle. You can find examples of this with diamonds, oil, and telephone service. In 1957 historian Karl August Wittfogel wrote a book titled *Oriental Despotism*. In it he described a society that controls its people by controlling their water which he called a hydraulic civilization. It is believed that Ancient Egypt, Ancient Somalia, Sri Lanka, and Pre-Columbian Mexico were such places. If it happened before then it can happen again which is why those who fear such a system say that water companies should be watched very closely. Another thing these goods have in common is that to get them people had to be exploited. From resources shipped from conquered lands to cheap labor provided by slaves to oil imported from countries ruled by tyrants. As long as the lights are kept on no one asks too many questions. With companies providing water to countries with failing infrastructure will history repeat itself?

Already large corporations are making purchases, gathering up water systems under their tents. During September 2010 financial group J.P Morgan bought a large national water company called South West Water. Sometime later the Carlyle Group announced its plan to purchase Park Water Company which owns water systems in the U.S. states of Missouri, Montana, and California. Other groups are making deals as well. Aqua America, Inc. has made arrangements to purchase Texas water operations from American Water Works Company, Inc., while at the same time selling their operations in Missouri to American Water. These growing groups are swapping territory, growing stronger. In 2010 alone Aqua America acquired 23 systems. More and more competition is shrinking and they're doing all this quietly. Since 1991 at least 144 local governments have privatized their water systems. Once companies get ahold of the systems they then increase the rates. An average household will see the bill increase by an average of 10% per year once a water system becomes privatized. Another way to make profit is to sell water to nearby systems that need it. By increasing their rates companies can force these communities to sell their water systems thus increasing their monopolies.

On the international scale, two French companies; Vivendi-Generale des eaux

and Suez-Lyonnaise des eaux control nearly 40% of the world market. This isn't surprising because France has been using private water providers for hundreds of years. With over 110 million customers each they supply a lot of people with what they need which can lead to a lot of power. In Tucuman, Argentina there were allegations of price gouging, averaging around a 104%, and lower quality of supply when a subsidiary of Vivendi took over the local water system. This led to a campaign of civil disobedience by the consumers who refused to pay their bills. The company responded by threatening to cut off supply then try to renegotiate its contract before finally pulling out all together. Afterwards it brought an action against the consumers with the International Centre for the Settlement of Investment Disputes (ICSID). The Centre sided with consumers.

Another example of abuse by private water companies is what happened when the systems in La Paz, Bolivia were taken over by Aguas del Illimani consortium (which belongs to Lyonnaise des eaux). The price of water has risen from 2 to 12 bolivianos (Bs) which most of the population couldn't afford. Since then showers have been replaced with communal washing areas which they still have to pay for.

What was a team of 18 technicians who were in charge of checking nearly 80,000 water meters in the northern district has been cut in half and the remaining have been given other tasks. This had led to homes getting bills for nowhere near what they've used. In desperation people and business have turned to old wells. While the government had occasionally prosecuted Aquas del Illimani for turning off the municipal water for several weeks in general they have cut off supply with little consequence. Other times the water is interrupted because the system is so poorly maintained. Sanitation is also an issue with diarrheal illness being the country's number one killer of children which has been attributed to water hook ups only being in 31% of rural homes.

In 2004 protestors in the city of Cochabamba were met with violence from the Bolivian government which resulted in 6 dead. By sparking in to violent conflict our relationship with water is again mirroring the one we have with oil. The protests were over the 35% price increase in water provided by International Waters Ltd. Of London. The company though based in England is controlled by the San Francisco construction company Bechtel. The price hikes were a result of IWL's need to recover from losses from a Misicuni dam project despite the fact it hasn't been started and that there's no evidence that they spent any money on it. What's more the company managed to get the area's entire water system for almost nothing which has been attributed its partnership with former Bolivian President Jaime Paz Zamora, leader of a political party allied to current president; Hugo Banzer. Following the protest the President announced

the end of the water system's privatization but the next day word spread that International Water Ltd. Would regain control. The conflict would later be the inspiration for the storyline of the movie Quantum of Solace.

Even in the U.S. which is one of the richest countries in the world there are places where people are being denied water. After the fall of the local auto manufacture industry Detroit, Michigan faced massive poverty. This led to the city declaring bankruptcy which caused the Water and Sewage Department to try to clear away \$90 Million in bad debts. To do this they started to shut off the water for anyone who owned at least \$150 on their water bills or was at least two months behind on paying them. Unfortunately this resulted in nearly 19,500 people having their water shut off or interrupted since March 1, 2014. Adding to the situation is the fact that the shutoffs came with little of the usual warnings like notices hung on doorknobs or representatives being sent out to homes. This had led to a controversy and backlash against the struggling city as well as condemnation from the United Nations for denying its citizens a human right; access to water. Groups like the Detroit Water Brigade and the Detroit Water Project have come to the aid of those who had their service shut off by giving them bottle water and helping them pay their bills. These groups are made out of people from all over the nation and even from nearby Canada. Years before the present water crisis steps were taken to make sure everyone in the city got enough of the precious resource. In 1854, 9 special hydrants were placed throughout the city to give water to those who needed it. This was called a smart way to "promote health of the poorer classes." Now people are looking in to adapting that idea to the current situation. However, these efforts are hindered by the enormity of the problem and several compounding factors. Like in many places around the world the infrastructure that's use to distribute water has fallen in to disarray. Pipes in many of the city's 78,000 abandoned homes have broken and are spraying water about wasting what some need so desperately. Adding to the problem is that after plans were announce to ease the setoffs the city faced massive amounts of rainfall and the worst flooding it has seen in 89 years. This will most likely lead to sewers backing up and possible contamination in the pipes. Ironically the city that's surrounded by 84% of North American's fresh surface water has citizens who are being denied the resource. Water everywhere water and not a drop to drink.

Companies that control vast numbers of water systems exist all over the world. These groups do more than just lay pipe and pump out water. They also purify it,

managed wastewater, and even sometimes dispose of toxic waste. It is a \$400 billion global industry making it the third largest one after electricity and oil. They include Thames and Water and United Utilities that's headquartered in Great Britain, Enron whose headquarters can be found in the United States, and Aguas de Barcelona whose home is in Spain. Making things more complicated is the fact that many of these companies have interest in each other. During the spring of 1999, Vivendi purchased U.S. Filter Corporation. United Utilities of the UK has a number of joint ventures with Bechtel. United Water Resources in the United States is partly owned by Suez Lyonnaise des Eaux. With so much collaboration and connections it's not hard to see why people are afraid that these groups can easily work together to turn the tables on us and they'd be little we could do. Decades ago telephone service in America was provided by a monopoly which could set the prices and the consumers had nowhere else to go if they didn't like it. Is history repeating itself?

It's not just the companies that deliver water by pipe that causes problems. There are also issues connected with bottle water as well. For starters, it takes a large amount of oil to make the plastic for the bottles. Despite what the ads or labels will tell you the water isn't from exotic paradises but most often more local areas with 40% coming from municipal sources. After it's collected the companies simply filter it and sell it to the public at a high mark up. After the consumers are done with them only about 20% of the bottles are recycled. Those that aren't recycled end up in landfills and even the ocean where they, because of the durable nature of plastic, can last for millions of years. Besides not coming from mountain springs the water's content may not even be as pure as advertised. In a study done by the National Resources Defense Council (NRDC) 1,000 bottles from 103 brands were tested and about a third of them were found to have synthetic organic chemicals, bacteria, and arsenic. In some ways the bottle water industry is less regulated than tap water with the companies not even having to reveal the contents of the water. This goes against much of their advertising which states that bottled water is much cleaner than tapped. One ad called bottle water the most environmentally conscious product there is which simply isn't true. Aside from the issues surrounding bottle water there's also an irony that companies have gotten people to pay a severely marked up price for something that millions can just get from the tap.

Water can be used for a lot of things besides drinking which adds to the power of the water companies. Water's also used in hydraulic fracking; a process for extracting

natural gas and petroleum from deep underground. It involves pumping many gallons of pressurized water, chemicals, and sand in to a previously dried well to blast the surrounding shale rock thus releasing any remaining gas or oil. Usually the water comes from the local area or is brought in from outside the state when resources are low. This has caused people to oppose fracking because of claims that the process uses so much water that it leaves hardly any for the locals. To support this two studies were released. One came from the Western Organization of Resource Councils (WORC) and the other came from the sustainable business organization Ceres. The first report found that fracking activities remove 7 billion gallons of water annually from the supplies of 4 states they studied; North Dakota, Wyoming, Montana, and Colorado. WORC blamed poor state and federal level protections of groundwater and called on states to protect the resource. Another problem facing the locals is energy companies have the ability to pay many times more than they can for water. This allows them to obtain more water leaving less for the locals which has caused some farmers to shut down their farms. The second report stated that fracking is draining groundwater from places that already have little to begin with like Texas and Colorado. It used data from about 25,000 wells collected by the website FracFocus.org. Using this information it concluded that 47% of the wells that are being developed are in areas where the water basins are under stress. Ceres recommended that energy companies involved in fracking use non-freshwater alternatives like they themselves do. They also stated with the growth of natural gas the companies' need for water will also grow and this will have a massive impact on those who depend on local water sources. To lessen that impact companies like Halliburton, Baker Hughes, and FTS International are experimenting with ways to use recycled water in the process. Recent results show that water that has been treated just enough to be used for fracking is just as good as water that is crystal clean. FTS International said that it's using up to a 100% reused water at some locations in Oklahoma and Texas. So far the results seem to be comparable with that of freshwater. The reasons that companies are experimenting with recycled water is to reduce the environmental impact of fracking and also because of the cost of using fresh water. In some areas the water has to be brought to the wells in millions of barrels and then transported to the disposal wells. This makes transportation of the water the most expensive part of fracking. By recycling the water companies can save tens of thousands of dollars. However, as Halliburton's strategic business manager of water solutions, Water Dale said; recycling in its pilot period. The concept is still experimental and costly. Also water usage is a local issue and different areas have different approaches to managing it.

There is also the fear that by pumping water and chemicals in to the ground the local reserves will become contaminated. Hundreds of complaints have been filed

throughout the U.S. claiming that wells have been filled with waste water from fracking. A recent investigation was done by Associated Press in to 4 states that each had a high number of such complaints. These were Pennsylvania, Ohio, West Virginia, and Texas and there are a number of differences in how they reported these issues. Texas provided the most detail thanks to legislation put in to effect in 2011 and 2013 which required them to do so as well as provided funds for information keeping technology. The other states though, only provided general outlines. This lack of information most likely feeds the worries of the anti-fracking movement which spans across several countries. This movement includes actor Mark Ruffalo who produced Gasland; a documentary about potential hazards of fracking. The proponents of the process point out that those against it have no evidence of any negative environmental effects. This still hasn't sway the critics' concerns. It's feelings like theirs that have cause nations like France to ban fracking. There has also been a number of protests like the Balcombe drilling protest of 2012 in the UK. Numerous reports have been made with inclusive results. A reason for this is because water pollution already exists and it's difficult to tell what has been caused by fracking or some other activity. With the amount of drinkable water decreasing it will become more and more valuable which will increase water companies' drive to control it.

In parts of the United States water privatization has occurred as well as the problems that come with it. In 1998 the city of Atlanta entered in to a \$400 million dollar contract with United Water to run the city's water system. United Water provides water related services to more than 7 million people in 17 states. It holds five of the nation's largest water contracts. In 2004 the city delivered a report detailing how United Water had failed to keep their end of the bargain. The report was more than 450 pages long and contained accusations that the company hadn't maintained the water system, improperly billed the city, failed to collect customers' bills, and haven't allowed the city to review their records. The city gave United Water 90 days to fix the problems but ended up ending the partnership. The company stated that the damage to the water infrastructure was worse than what the city had led them to believe which led to its inability to keep up. Some people who watched the whole event unfold say that both the city and United Water had unrealistic ideas about what a partnership could solve.

Whatever the reason the collapse of the Atlanta water privatization deal has been a rallying cry for those who oppose the private sector taking over water. They say that water is a natural right that should be given to all and that corporate greed will hurt the consumer. However, others point out that the reason for Atlanta making the deal was that they couldn't afford the repairs that their water system needed. They say that a crumbling water infrastructure is all too common and privatization can relieve the

financial pressure governments face. The developing world will need more than \$60 billion for water infrastructure though some analysts say that figure can be reduced with intelligent use of resources. They add that the potential for abuse can be held in check by strong governments but strong governments are hard to find in some of places that turn to water privatization. Also, corruption runs rampant in the developing world so putting a system in place with some much potential for abuse can be like adding fuel to the fire. They also say that a competitive market will make sure that the quality of service will be good. Unfortunately as more and more of the world's water systems are taken over by a few companies that are at least partially intertwined no one has given a clear way for completion to truly exist.

Many have still rejected the notion of water privation. They say that it leads to the same things in nearly every country; increased prices, less jobs, less upkeep on the infrastructure, and less access to water which is a human right. They say that it leads to less funds for the government because it's no longer collecting the fees for the services that it use to provide. This has led to an end of several partnerships. Atlanta broke its deal and several French cities have taken back control of their water from private companies which has reportedly lowered their rates. In 2011 voters in Italy struck down a law that called for the privatization of their water systems in order to raise funds for their upkeep. The measure was defeated by 96%. The European parliament voted against privatizing the water systems throughout the continent. In various places where it has been proposed groups have been form to stand against it. They include STAL (Sindicato Nacional dos Trabalhadores da Administração Local) [National Union of Local Government Workers], Associação Água Pública [the Public Water Association], the CGTP/Intersindical Nacional [General Confederation of Portuguese Workers] in Portugal, Public citizen in the U.S., 'Plataforma contra la privatización del Canal de Isabel II' (Platform against the privatisation of Canal de Isabel II) and the "Aigua és Vida («Water is Life») campaign in Spain, the Italian Forum of Movements of Water in Italy, and M-POWER (Mindanawons against Privatization of Water and Energy Resources). They are made up of laborers, politicians, and water experts. Together they've launched campaigns, voted, sign petitions, and held lectures in order to keep their water under public control. Victories like those against Vivendi in Argentina keep them going.

However, despite these setbacks and the continuing opposition against them private water companies have made significant gains. In Spain 50% of water services are managed by the private sector. In 2009 Veolia Environment made \$49,519 million with Suez and a U.S. company; ITT Corporation following behind with \$17,623 and \$10,900 million respectively. Every year the water industry makes 10s of billions of dollars and

with the water crisis the potential for growth is high. With such power and wealth at their disposal some fear that we will all wake up one day to a world where water companies decides who lives and who dies according to the bottom line.

Even without companies vying for control of it water is still a source of conflict. This can be seen in numerous wars where it was an underlying factor. Tensions between groups can get even more heated if one of them controls a source of water like in the Israel/Palestine conflict mentioned earlier. Not only does the group who controls water controls a life giving resource but something that's important to sanitation, agriculture, and economics. Water is use in providing services and making products. The group who controls water not only has a better standard of living but has an economic advantage adding to the tensions. The places with the most incidents of water related conflicts are the Middle East, Africa, and Central Asia.

The Pacific Institute has created a database of water related conflicts in categories, or types of conflict, now include:

- Control of Water Resources (state and non-state actors): where water supplies or access to water is at the root of tensions.
- Military Tool (state actors): where water resources, or water systems themselves, are used by a nation or state as a weapon during a military action.
- Political Tool (state and non-state actors): where water resources, or water systems themselves, are used by a nation, state, or non-state actor for a political goal.
- Terrorism (non-state actors): where water resources, or water systems, are either targets or tools of violence or coercion by non-state actors.
- Military Target (state actors): where water resource systems are targets of military actions by nations or states.
- Development Disputes (state and non-state actors): where water resources or water systems are a major source of contention and dispute in the context of economic and social development

[\(http://worldwater.org/water-conflict/\)](http://worldwater.org/water-conflict/)

Other ways water have played a role in conflict includes when it is a part of an area to be captured by an invading army, a target of terrorist attack, or a symbol of patriotic pride. While currently no war has been fought over only water experts say that it is only a matter of time. Fortunately research and effort have been put in to trying to resolve conflicts over water. Strategic Foresight Group has partnered with the governments of Switzerland and Sweden to form the Blue Peace approach. Similar to the possible

solution to the Israel/Palestine conflict/water problem mentioned earlier the approach centers around that instead of giving the water to one or both countries have them work together to secure it. This cooperation can form the basis for a lasting peace. The Blue Peace approach has seen some success in the Middle East and the Nile basin. When disputes over water are commercial in nature then the World Trade Organization can arbitrate them. It can also get involve in agricultural related cases if the disagreement is over a specific source of water. While the WTO is not the authority on international water disputes the work it does sets up a structure that can be use in the future when water becomes more of an issue. Despite these steps in the right direction there are difficult questions to answer. How do we prevent the companies from getting too much control? Water should be available to all but how do we get it to them? Who decides which way we go to preserve this resource? There is still more work to be done.

Fortunately, all around the world people are looking for new solutions to water scarcity. One example of this is the UAE Suqia Water Aid Campaign which is a drive by the government of Dubai to provide water for 5 million people. The word suqia in Arabic means to provide water for drinking. It was started in the beginning of Ramadan; a holy month to Muslims. Working with the Red Crescent Authority and other charitable organisms the drive aims to dig wells as well as provide water pumps and water purification technology to areas in need. The initiative provided better water resources for 61 counties and raised Dh 103.2 million in 10 days. The driving force behind the campaign; Sheikh Mohammed bin Rashid Al Maktoum, who is also the ruler of Dubai and vice president for the United Arab Emirates has offered \$1 million for a solution to the water issue. The device or process must also be powered by solar energy. He made the announcement for the reward at a reception for the supporters of the campaign at Za'beel Palace. Included in the statement was that any individual or group from anywhere in the world can participate. The amount of money and effort that is being raised shows that there are people willing to tackle this issue.

It's not only through the technological advances that will come in the near future that will help solve the crisis but a number of methods that already exist. These were discussed earlier and also include planting more trees, using stones to prevent erosion, rain harvesting, among other small acts. They could be simple like making sure trash on beaches or by rivers are collected so that they don't make their way in to the water system or complicated like restructuring how a society deals with water. In Spain new ways of treating this resource that could help everyone have been put in to effect. The Water Act of 1985 treated the whole water cycle as public property which was a first. They were also the first country ever to have public management of river basins through

water boards while the responsibility for supplying and maintaining the quality of water is on various ministries. Examples of this is the Ministry of Environment is in charge of water resources management and the Ministry of Health is in charge of monitoring the water's quality. Basin Agencies are in charge of multiple aspects of the water infrastructure including planning, conducting, operating major parts of it such as dams; elaborating on plans for basins, giving permits regarding water usage, and inspecting facilities that these permits were given to. Despite all this a great deal of the water in Spain ended up in private hands with most this controlled by the companies Argar and Aqualia. It appears that more and more water is in control of a few select companies that are working together. This is what some fear and say is reality.

This fear is echoed in our literature and entertainment. In fiction the idea of an evil corporation or government controlling the world through water has come up again and again. Throughout the fictional world of Frank Herbert's Dune series there is a water controlling empire based on the planet Arrakis. In Larry Niven's book; A World out of Time, the idea of a hydraulic empire is discussed and becomes a central theme. There are numerous stories that features the hero fighting against the villain's plot to control a town or planet through its water like in the movie Rango and China Town as well as the anime series Now and Then, Here and There. In Rango a character makes the statement that; "Control the water and you control everything." Fiction is often a mirror to real life and in this case of our fear that we are going to lose our freedom to some faceless group who will control us with our thirst.

Some say that this is reality and they back it up with facts shown in documentaries like the award winning Blue Gold directed by Sam Bozzo and the film Flow. A number of other films also touch on the subject though a few of these looked at it through a single part of the issue. Films like The Colorado River: Running Near Empty by Peter McBride, The Water Front, and the classic 4 part Cadillac Desert: The American West and its Vanishing Water focuses on specific areas affected by the water crisis. Tapped from Atlas Films and the Story of Bottle Water focuses on the bottle water industry and the harm it does. Thirst and Water on the Table ask the question whether water is a commodity or a human right. Finally, Liquid Assets: The Big Business of Water takes a look at the water industry as a whole. The fact that film makers can look at the water situation from so many angles shows what a complex issue it is.

There is still hope though as countries work towards different solutions to the problem. The EU Water Framework Directive of 2000 reframed the issue of water from

“resource management” to “ecosystem management” inviting more proactive action from its citizens. Drawing on earlier water legislation from the 1970s and 80s the new guidelines are an attempt to get Europe’s water cleaner and to keep it that way. The European Parliament was driven to create these guidelines partly due to surveys showing that water pollution was one of the environmental concerns most on their citizens’ minds. Much of the focus of the Directive will be on caring for the river basin; a major entry point in to the ecosystem. By getting people involve the European Parliament hopes that the solutions they present will work for everyone’s needs and that member states will be more willing to enforce the new guidelines in good faith. Another focus of the Directive is to get the price of water to what it’s really worth which will help keep water providers from exploiting the consumers. Presenting water at a lower price specifically for those who are less well-off is also covered. Whether this price is paid to a private or public provider of water will vary from member state to member state.

Another proposed idea is a symbolic local referendum for citizens to vote on issues relating to water management. This would put democracy in to the situation and could assure that everyone is given equal access to the resource. Of course this could be more difficult to implement in places where governments are weak. Even if people could set up these systems there are a numbers of challenges that they have to face. These include how to get the water to those who need it, how to keep it clean, how to make sure everyone gets equal access to it, and how to keep the infrastructure needed for it intact. These challenges are going to need time and money.

A number of possible solutions have been suggested. For the U.S. one of these ideas is a National Infrastructure Reinvestment Bank. It was first suggested by Senators Christopher Dodd and Chuck Hagel in 2007 and was backed by President Obama in 2008. He repeated his support in 2010 this time calling on the government to put up \$60 billion in seed money for the project over the course of 10 years which would be leveraged up to \$500 billion in private investment. The original bill expired with the 110th U.S. Congress but a different version of it was submitted by U.S. Representative Rosa L. DeLauro into the 112th Congress as H.R. 420. The proposed legislation would have the bank be in terms of administration a lot like the Federal Deposit Insurance Corporation (FDIC). It would be able to conduct hearings, issue subpoenas, accept funding for any infrastructure project with the potential cost of \$75 million or more, give out loans, and provide loan guarantees to state or local governments issuing debt to finance qualified infrastructure projects. The new bill would make the bank’s Board of Directors responsible for monitoring and overseeing projects regarding transportation,

energy, environmental, and telecommunications. It would be able to issue bonds and subsidies to projects, borrow on the global capital market and lend to others for funding infrastructure projects, and buy as well as sell loans/securities on such a market. The Board would be required to set criteria which projects would be eligible for aid under the Act. While those behind this idea are aiming to use it first for the nation's surface transportation it would be very useful for handling the problems facing its water infrastructure. It will take time to get the legislature past and even then the focus will most likely be on other matters before water. Time will tell if the nation can wait that long but it is still a step in the right direction because failing infrastructure is one of the matters that needs attention.

These needs are why some say privatization is really the answer. Among them is Peter Brabeck-Letmathe CEO of Nestle, a Swiss conglomerate that has more than 80 brands of bottled water including Perrier, San Pellegrino, Vittel, and Pure Life, who stated that in order to manage our water we must give it a price. "If something isn't given value then they tend to waste it," he said. He went on to call water a "foodstuff" and said that it should be privatized in part of our efforts to make sure everyone gets what they need. If water is a "foodstuff" then wouldn't privatization make sense? Things like fruits, vegetables, and meats are privatized and controlled by major corporations and we need food to live just like water. Several critics though argue that if he gain control he could decide which farms would be the ones to get the most water. He could favor his favorite farms that grow Genetically Modified Organisms (GMOs) which he has publically supported stating that "organic isn't the best". This sort of selective service is what drives fear of water privatization. Though if we could avoid this then his view of privatization can be seen as a conservation measure. In theory a group of highly educated businesspeople could strategically distribute water to where it is needed. This, though, would be depended on companies putting their consumers' needs before profit and the examples of water privatization mentioned earlier argue against that happening. In fact, Nestle has its own accusations of misconduct. Members of a group called Sum of Us issued a statement claiming that a bottling plant near the Pakistani village Bhati Dilwan is causing the water table to sink hundreds of feet. Nestle has denied the claims and states that the factory's process is closely monitored but this isn't the only water related conflict that the company has been involved with. Citizens of Mecosta County, Michigan went to court with Nestle over their pumping of a stream in the area. These controversies are why some say that Nestle or any company shouldn't have control of a country's water supply.

If privatization isn't the answer then how are countries around the globe going

get the water to the people who need it? Even if it's free for all there is still the matter of its purity as well as the ability to use it for all needs like cleaning and personal hygiene. With more and more countries entering the developed world the need for water is rising and therefore the profit for it as well. This drives companies to try to corner the market on this precious resource. Past events have shown that they will use political clout, bribery, force, and any means that they can in order to be the one everyone turns to for their water.

On one hand you have corporations seizing water and charging people high prices just to keep living and on the other you have people fighting and dying over who gets to drink. These facts make the overall picture look dark but there is still hope. People are coming up with new ideas and working tirelessly to make sure that the right of water and sanitation is held by all people. However, to make this happen it's up to every politician, activist, business owner, citizen, to stand up and do their part. We can and must do this either through coming up with ways to provide water or giving those who are denied it a voice. Through the efforts of us all there could be a day in which no one doesn't have the ability to drink up.

About the author

In 2012, Alex P.M. Pasmans with his team has established the African Development Organization, a non-profit organization, based on the principle that charity is not about simply donating funds, but building a platform for partnerships establishing economic and social stability within a region. By using his business experience he is initiating the tools for Poverty Alleviation and Social Cohesion.

The Global leaders from tomorrow will need to address not only the banishing of poverty but also a lot of other matters such as climate change, diseases, conflicts, and many more challenges to come.

In addition to his vast list of organizations and affiliations, he is an active Board member in several Investment Companies mostly active in research, manufacturing and implementing of Sustainable Energy Projects.

Together with a team of writers supporting the efforts of the organization, Alex wants to express the efforts in research, copywriting and editing to both Lindsay Tunstall and William Hillman to make this work possible.

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