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Water and Sanitation

Overcoming Argentina's Water Crisis Author Deepak Chopra writes, “Although we take it for granted, sanitation is a physical measure that has probably done more to increase human life span than any kind of drugs or surgery.” Since water and sanitation needs are not being met in developing countries like Argentina, citizens are more vulnerable to disease. Additionally, the population is also greatly affected by economic instability. Individuals work hard to balance work and family as well as the demands of a modern world with improved access to healthcare and technology, but the lack of water access holds them back. Sanitation ultimately affects the quality of water for those who are lucky enough to have access to it. In order for Argentina to continue developing physically and economically, clean water must be made available to everyone.

Argentina is located in the southeastern part of South America. It is the second-largest country in South America after Brazil. The population of Argentina is about 45 million. It is a developing country that has faced major setbacks in its economy since the 1990s. The crash in the economy caused a big increase in the unemployment rates and since then has leveled out around 10%. Also, less money has been put into the education system and now 19% of children don't go to school (Children of Argentina). Still, compared to other developing countries they are on the more developed side. More than 90% of people live in urban areas where they work in factories. Those working in factories are mainly part of the oil and gas industry, mining, shipbuilding, or the food, tobacco and automotive industries in Argentina. The rest of the population lives in rural areas on farms that grow soybean, wheat, sorghum, rice, and barley (Kennedy). These crops contribute to Argentina's main export which is cereal (Factory and Manufacturing Average Salaries in Argentina 2020). Due to Argentina's great size, variety in geography and climate is broad. Most of the farms are located in the north, which is subtropical woodlands and swamps. Large cities are located on the coast with more temperate weather and large amounts of annual rainfall. In addition, 75% of Argentina is considered arid or semi-arid (AmerQuarterly). This land is mainly located in the west.

The typical family lives in a high-rise apartment in the city with one child, while poorer families usually live in low-cost tenement buildings. In the suburbs, families live in ranch-style, concrete homes (Calvert). In the morning, breakfast is often a light meal made up of rolls or bread with jam and coffee. For those who work in the cities, lunch is usually just something small from a cafeteria; people that work on farms eat a hot lunch, like beef and potatoes, which is brought out to them in the fields. A *Merienda* is eaten at 5 PM, which consists of tea, sandwiches, and cake, before dinner at 9 PM. Dinner is a three-course meal consisting of an appetizer, entree, and dessert. Appetizers are *empanadas* (meat turnovers or dumplings), *chorizo or morcilla* (pork or blood sausage) and the entree is usually *bife de chorizo* (T-bone steak) and various types of salads. Finally, dessert is *flan* (custard) topped with *dulce de leche* (caramel) and whipped cream (Argentina). Families get their food from markets and they cook meat like lamb and beef over an open fire.

Most of the population works in the oil and gas industry, mining, shipbuilding, or the food, tobacco and automotive industries. Also, Argentina has very good healthcare. Medical prices, in general, are much lower than in the United States (Healthcare in Argentina). While all of Argentina has access to electricity, only 77% of people have access to the internet (Argentina - Access To Electricity; Chevalier). Moreover, families have access to roads and local markets. One of the biggest issues families face in Argentina is the lack of clean water because there is irregular access to the public water supply. Argentina has enough water to support the entire country but the water is not evenly distributed. Due to the country's size and variety of different climates it is difficult to get clean water to everyone. Many families lack water pipes causing them to have to get water from unsanitary rivers and lakes. Along with the absence of clean water, many people are left without access to toilets and proper sanitation.

In urban areas, the population is dense, and people primarily live in high rise apartment buildings. More than half the people in cities don't have access to sewerage. A sewerage system is a network of pipes, pumps, and force mains (pressure surge control devices) for the collection of wastewater, or sewage, from a community. John Faldet, an agronomist from the University of Wisconsin, writes, "Their landfills outside Buenos Aires, Rosario, and other large cities take in massive amounts of waste each day, (up to 5000 metric tons). This landfill system, like many others, does have its flaws. There are many open dumps and open burning of waste in the cities of Buenos Aires and Rosario" (Faldet). Improper waste disposal leads to contamination of water, especially because of the high rates of rainfall in Buenos Aires. Lack of sewerage also contaminates water by the soy and livestock manufacturing industries (AmerQuarterly). Older adults are more likely to live in poverty, which puts them at greater risk of being exposed to contaminated water. The effects of illness are also greater because they have weaker immune systems.

Water is not centralized in Argentina, which leads to inconsistent water access. There are many small public water companies but none are controlled by the government. Due to a lack of public funding, the companies have just enough money to cover operation and maintenance costs and cannot self-finance investments. Also, a study by the environmental organization Green Cross Argentina (GCA) found that approximately 85% of the total surface water used throughout the country is drawn from the Rio de la Plata basin (AmerQuarterly). Water is not evenly distributed across Argentina. Unequal water distribution is another main factor in irregular water access. Eleven percent of the population lacks piped water, leaving those without consistent access to water. Displaced people have the greatest struggle in gaining access to water in Argentina due to discrimination and racism. Homes without pipes lead to families that don't have access to drinking water, forcing citizens to drink from wells, which increases the already high chances of disease. Arsenic, chromium, copper, zinc, and lead have been found in the Riachuelo river which runs through Buenos Aires. Pregnant women are most at risk of being affected by the contaminated water. Women and girls are the ones mainly in charge of cooking and cleaning so they are the most exposed to contaminated water. If children are exposed to contaminated water their immune systems are much weaker, also placing them at a higher risk of being affected. As well, families that live in rural areas with an arid, desert climate are more at risk to droughts which may lead to people with no

water at all. Another factor that contaminated water affects is plants and animals. If water isn't safe for humans to drink then it will also alter the environment. In a country that relies heavily on agriculture, if contaminated water is used for irrigation, major effects may be seen.

Argentina began a plan to improve water under its president in 2012. They have a Democratic Republic and their president is the head of government, elected every four years, with control of armed forces (Sawé). In 2012 the president started the \$12.96 billion National Water Plan to increase water and sanitation coverage to 75% by 2022 from its current at 60% (AmerQuarterly). Journalist Ben Miller notes, "The National Water Plan implements adaptation to climate change, preservation of water resources, sanitation and reuse" (Miller). Along with increasing water for sanitation, the National Water Plan will also improve water for food and energy. If continued, these steps will not only help improve water and sanitation but will do so in a sustainable way.

For the National water plan to be successful, a three-step solution is necessary to make clean water available to everyone. The first step to improving water and sanitation is by centralizing the water companies and having them run by the government. Currently, the water companies are all publicly owned and don't have the funds to consistently run. Under the control of the government, the water plants will have more money to run and for repairs. The government will first use money from the National Water Plan to improve water and sanitation and will add to that budget from taxes. A tax on Argentina's largest export which is cereal would be able to greatly increase money to improve clean water standards. The goal of a centralized system is to create clean water standards that would be enforced across the entire population. Along with higher water standards, more pollution regulations will need to be placed on industries. Arsenic, chromium, copper, zinc, and lead have been found in the Riachuelo River. The pollution of the Riachuelo River puts the people who live around it at risk. If not properly treated, drinking water may be unsafe to drink and citizens who lack pipes may have to use the Riachuelo River as a water source. The Riachuelo River runs through Buenos Aires, which is the largest city in Argentina. Having a centralized water program would also open up new opportunities to generate energy from water. Renewable energy would be less expensive and would lead to more citizens having access to electricity due to reduced electricity costs. As well, centralized water will give farmers greater access to clean water for irrigation, increasing crop production in Argentina because 74% of the water used in Argentina is for agriculture (Miller). More soybeans, rice, and barley will increase exports and will help Argentina's economy. For the water standard to increase and continue long term in Argentina, water must be recognized as an essential need by the government. Paris, France is one of many European cities that have made clean drinking water available to everyone, by creating *Eau de Paris*. The public organization is responsible for all public water supply and wastewater collection for the city of Paris (Beardsley). By implementing the same concept in Argentina, not only will the water standards be higher, but also the availability of water will be more consistent.

The next step is to connect all homes to the water system. Once the water companies are centralized, then it will be much easier to get pipes into the rest of the homes in Argentina. Pipes will first be placed in the cities, where most of the population is located, and where the resources for installation will also be closer to the buildings that need pipes. Then working outwards from the cities pipes will be installed for citizens who live in the suburbs and rural areas. It will be a priority to give citizens who do not already have pipes

access without any discrimination among any groups of people. People who don't have pipes usually end up having to get their water from wells or streams. These sources of water are not safe to drink from because they can be easily contaminated. *Giardia* and *Dysentery* are both disease-causing organisms that can be found in feces contaminated water, which mainly affects children in Argentina. Therefore, putting pipes into all homes will prevent the spread of waterborne illnesses such as these.

Finally, to address the sewerage problem in Argentina, at least one toilet is placed on every floor of every building in the major cities like Buenos Aires and Rosario, along with the necessary addition and improvement of drains and manholes. Currently, only 11% of wastewater is treated in Argentina by increasing sewerage and water standards, more wastewater will be treated increasing the amount of water reused. Climate change is one of the important issues the National Water plan hopes to focus on. Warmer global temperature will cause sea levels to rise and increase rainfall in coastal cities. So with better piping in cities, streets will be less likely to flood. Water treatment plants will all be run by the government so all the water collected can be treated and reused. Having a centralized system will then lead to an even distribution of water for agricultural, industrial, and domestic use. This water can then be treated and reused. All of the buildings would run to a wastewater treatment center outside of the city, where wastewater would be processed and cleaned for reuse. Due to the centralization of water companies, all recycled water would be available to everyone. The waste would then be put into the landfills that already exist. This improved sewage system will dramatically increase sanitation in cities because the open dumps would be obsolete, preventing water contamination and further improving the health of the community. These three steps can be implemented into the National Water Plan that has been put in place in Argentina. It will cost a significant amount of money but it will have a significant impact on Argentina's economy. With fewer people having to worry about having access to water and being contaminated by it, more people will be able to work. More citizens will be able to pay higher income taxes and more money can be put into Argentina's water and sanitation. This will lower poverty levels and more children will be able to attend school. It will also increase the economy and Argentina's influence on the rest of the world.

A different approach to solving the problems in Argentina may be found in public accessible restrooms and water facilities. The majority of those who need plumbing are located in the cities so everyone is already near each other. So instead of placing plumbing in every building, public facilities could be placed on every block. Public restrooms won't completely solve Argentina's water and sanitation problem, but it is a smaller step that can be taken towards a larger solution. As well, displaced persons would greatly benefit because they would have access to these public facilities without any discrimination or racism. One of the biggest changes that the *Eau de Paris* has made in Paris is the addition of over 1,000 water fountains across the city. The water comes from a local spring. The only chemical added to the water is CO₂ to create sparkling water, which is available at many public fountains. Instead of buying bottled water, Parisians can purchase an empty bottle from *Eau de Paris* vending machines and then fill it with the free water with the ultimate incentive to reuse and reduce plastic waste. All of the profits made from selling the bottles goes back into the organization (Beardsley). A similar system could be put into place in Buenos Aires and other cities across Argentina to give everyone access to clean drinking water. A sewerage system would still be needed, but this would be a cost-efficient solution until plumbing is provided in every building. A downside is that it would not be as convenient for the people. A non-profit organization could be created to raise money for the creation of these public restrooms. It would also

improve the access people have right now and would decrease water contamination from open dumps and the burning of waste. In addition to the three main parts of the water and sanitation solution, these steps also help to further improve water access in Argentina.

Creating access to clean water in Argentina will further develop the country physically and economically. The quality of the citizens' water is determined by the regulated sanitation standards of the community as a whole. The lack of clean water access prevents Argentinians from fully engaging in a global economy while meeting personal and family needs. Clean water will also help stabilize its economy and grow its global engagement. By improving Argentina's water and sanitation infrastructure for all citizens across the country, all other aspects of society will greatly improve as well.

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