

Emma Robinson
Wayne Community High School
Corydon, Iowa
South Africa, Factor 2: Water Scarcity

Water Scarcity in South Africa

Picture the morning routine of a typical American. Wake up, walk into the kitchen, and turn on the faucet, hearing the beautiful sound of water rushing into the ready glass. Take a few quick steps into the bathroom and jump into a nice warm shower. Go over to the laundry room and turn on the washing machine, the clothes will be clean in a few minutes. Now back into the kitchen to turn on the dishwasher. No harm, no extra amount of work. Just a few steps, turns, and buttons. We think nothing of this routine. It is normal for us.

Now picture this:

Anathi places her worn, cracked feet into a pair of ragged shoes and begins her wearisome duty of gathering water for her family. The only noises she hears are insects and the pat of her feet on the soft ground. She feels a cool sweat running down her aching back. It is a long, hard walk. Five kilometers later when she reaches a small mountain-fed stream, a tributary of the Zitimbili River, she pours in as much water as her pail can hold. She bends down to the stream and splashes water on her face. She prepares herself. The journey home is always the most excruciating and painful part of her daily responsibilities. She is now carrying a heavy, fifty pound pail filled with water, atop her head. Every pain and sore feeling is doubled. Anathi gets back to her village and portions out her water in order to have enough to water the radishes, carrots, peas, and cabbages in the kitchen garden. Anathi's mother would also need a portion of water to do the cooking. The family needs daily drinking water. Her mother and father are working in their two-acre wheat field. Her father steers the ox-drawn plow as her mother plants. Her father worries how he will be able to feed and water the ox after the two acres are planted. Maybe he can lend it to his cousin to also use and take care of. Her brother, Mandla, is herding their sheep. Anathi lives in a small isolated village called Kavu (meaning dry) in the remote and desolate Amathole District Municipality of the Eastern Cape. One hundred eighty-seven people live there, most of them are Xhosa. They have a local traditional tribal herbalist for health needs. The nearest hospital is over one hundred kilometers away. There is a one-room elementary school where Anathi and Mandla attend free of charge. There is also a high-school twenty kilometers west of the village that Anathi could attend if she pleases to do so. There would be a fee to attend the school. Anathi would also need a means of transportation to attend classes every day. That would be another fee. This vivid image of Anathi and her family is real, and they experience the true struggle of life every day (Countries and Their Cultures).

Anathi's family struggles with a serious water shortage problem. Climate change has affected them in a large way. A lack of rainfall has caused nearby dams to dry up, forcing them to use the small amount of water they have on crops and the garden. Her family's field is a large part of income, but if the wheat is not properly watered they could face a dead crop. The herd is another source of not only income but food for her family. Sheep drink an average of four liters of water per day. In order for them to have a sufficient amount, Mandla must take them to the stream twice a day, along with the ox. If the stream is running deep enough, he likes to take a little swim. The animals must drink downstream to prevent pollution in the water used by Anathi's family. If the stream were to dry up, the sheep and ox would have to be butchered and taken to market to sell. Anathi's father earns a large part of the family's income. He travels to the capital city of East London, two hundred kilometers away, to work in a motor manufacturing industry where he earns an hourly wage of twenty-one South African rand or two United States dollars (South Africa's minimum wage). He stays in East London for three to four weeks at a time.

South Africa has a list of Millennium Development Goals. Goal seven (target ten) states that by 2015, the rural areas of South Africa will have sustainable access to safe drinking water. Due to the fact that it is the government's responsibility to strive for and reach these goals, I believe that they should be involved in a large portion of the solutions that I will offer.

Climate change is becoming a large problem for South Africa. Temperature is predicted to increase by between one and three degrees, and the country's rainfall is predicted to decrease by five to ten percent. Climate change will lead to a decline in the availability of surface water resources. Summer rainfall is likely to be delayed and over a shorter period of time (Simply Green).

Another issue South Africa faces is water theft. A Water Research Commission study in June of 2013 indicated that South Africa lost 1.58 billion kiloliters of water a year, or just less than 132 million kiloliters a month. Fifteen percent of this water loss was caused by theft. The Vaal River is the largest tributary of the Orange River in South Africa. Water is drawn from the Vaal to meet the industrial needs of the Greater Johannesburg Metropolitan Area and a large part of the Free State. It is a major source of water for irrigation. Water drawn from the Vaal supports twelve million consumers in Gauteng and surrounding areas. Farmers have been stealing about 175 million cubic meters of water from the Vaal, contributing to a significant reduction in the river's yield. With the amount of water being stolen, a small drought could turn into a crisis without a sufficient water supply (Water Rhapsody).

Population growth is another issue on this factor. According to census 2011, the country's population stands at 51.77 million, up from the census 2001 count of 44.8 million. This growth rate is becoming a threat to South Africa. With more people, the demand for water is increasing.

Another factor is the way available water is getting fouled up by acid water flowing from mines, and the way sewage is spilling into rivers. Operating mines have strict controls of their acid water. They have to treat water pumped out of mine tunnels into reservoirs to get the acid levels down before releasing it into rivers, which in turn can only happen when these are in reasonable flow from rain. The problem comes with low-budget mines for which licenses keep being handed out, despite the attached cost and inexperience resulting in acid-water spillages. The biggest problem, however, lies with long-abandoned mines which are filling up with water and decanting their toxic contents, with the original owners no longer being around to take responsibility for pumping out the water and treating it. If this continues, water shortage would be at an even greater risk. This water that would normally be used for animals and crops would now be useless.

South Africa is one of the top thirty water-scarce countries in the world, with sixty percent of its land classified as semi-arid. Climate change is expected to worsen, leaving people like Anathi and her family at a great risk for dehydration and disease. Improving water scarcity could reduce these risks.

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One solution to water scarcity is conservation. In 2009, a water project funded by the South African government was established in schools with a large amount of water consumption (South African Government Online). The Karoo area of the Western Cape was chosen for the pilot because it is a water scarce area. Water is one of the most vulnerable resources in the province under accelerated climate change and due to strong demand as a result of growth. The schools, and their hostels, that were retrofitted are Laingsburg High School, Teske Primary School in Beaufort West and Bridgton Secondary School in Oudtshoorn. According to the government report, the activities that were planned for this water efficiency campaign included a replacement of all inefficient taps, showerheads and toilets with more

efficient water saving devices or interventions, an audit of the water use at the schools and the hostels before and after the intervention to demonstrate the effectiveness of this initiative, and developing awareness and technical capacity of the maintenance staff, supervisors and decision makers of these buildings with regard to fitting more efficient water saving devices in the future. The results were very promising, resulting in water savings from fifteen to thirty percent a year. Conserving water in larger cities could result in a positive outcome for rural areas. Getting the word out to people to conserve would be simple, maybe announce it over a radio station or local news to reduce daily usage of water and identify ways to be efficient in water usage. Another option would be to employ Peace Corps-like volunteers, domestic charitable volunteers, or government trained local workers to demonstrate water conservation techniques. A good idea would be to encourage young South African college graduates to help the less fortunate rural areas. The workers would need to be able to speak the language of the family they are teaching. This hands-on idea could turn into a very positive outcome. Virtually all water coming out of a tap can be used at least twice. The people would need to identify water that can be re-used elsewhere. They would need training on how to repair leaking pipes, taps, toilets and cisterns. A dripping tap can waste as much as sixty liters of water per day or one thousand eight hundred liters per month. A leaking toilet can waste up to one hundred thousand liters of water per year. It is significant that the South African people are more cautious in water conservation (Department of Water Conservation).

This is the story of a small village named Cabazane in the Alfred Nzo Municipality of the Eastern Cape, population one hundred eighty. Alfred Nzo has a steep terrain with cold winters, mild summers, and abundant fog. Most people look at fog and see it as an annoyance, or an unnecessary fact of nature, but not Jana Oliver. Jana Oliver saw fog as a new beginning. Jana and The University of South Africa's School of Agricultural Sciences discovered a way to take this annoying and unnecessary fact of nature and turn it into a life source.

In March of 2010, at an altitude of one thousand, six hundred meters near Brooks Nek Pass, a contraption was built. The contraption consists of seven hundred square meters of double layer shade cloth nets stretched between steel cables and supported by posts. As fog passes through the contraption, water droplets are formed. The droplets run down the mesh and are collected by gutters under each net. The water is then sent directly down the mountain to the village below. Each square meter of netting collects up to five liters of water every day depending on the weather. No electricity is needed. It is not only eco-friendly, but low cost and suitable for areas with no power infrastructure. The equipment does not need maintenance, and the water quality is very high. The municipality budgeted forty thousand dollars for the construction while a piping system would have cost five million. Villagers say that this has changed their lives (Murray).

Fog frequently forms in mountainous regions due to the air being forced upwards by the mountain itself. This causes the air to cool and condense its moisture into fog. A great portion of South Africa is mountainous, making fog harvesting a probable solution. Now, not every rural village in South Africa is directly at the base of a mountain such as Cabazane. One solution could be to install a piping system from the mountain to other rural areas. This would not only cost a great deal of money, but maintenance would be needed in order to keep the system intact. Another solution would be to transport the water using a truck carrying durable fifty-five gallon barrels. A certain amount would be taken into the village each week. Each family would receive their own amount to use for their everyday needs. In order to take action on this project, there would need to be a presentation to the leader or leaders of the village receiving aid. There would need to be a presentation of pros, cons, and prices. The source of money to fund a fog harvesting system would either need to come from donations or the government of South Africa.

Picture this new story:

Anathi wakes up and walks over to her family's water barrel. In the top of the barrel there is a place for a screw-on nozzle to make it easier for access. She opens the nozzle and takes out a sufficient amount of water for the day. She then slips on her shoes and walks outside. The sun is shining, and Anathi is smiling with content. Today there will be no five kilometer walk to obtain water. There will be no sweat dripping down her aching back and no pain in her feet. Today she will have enough water for all of her chores, not having to worry about saving the last bit for bathing. Today she will listen to that beautiful sound of water rushing into her ready glass and feel the cool touch of it running down her throat. There will be no worries. Today is a good day.

During my research, I contacted numerous charity organizations that deal with water scarcity. Twelve organizations responded, and out of those twelve, not a single one had relations to South Africa. This could be seen as a very negative outcome, but I see it as eye opening. This is called "The Quiet Water Crisis" for a reason (South Africa: The Quiet Water Crisis). Because South Africa is so very rich, it is often overlooked by these common charitable organizations who concentrate their efforts on poor nations. Does this mean there are no troubles there? Does this mean that South Africa has no troubles, no worries, and no problems? Absolutely not. Look at America, for instance. We are one of the wealthiest countries in the entire world, yet every day there are people who are without homes and people who are dying from starvation. We cannot overlook a country simply because we see it as "wealthy". There are always issues. There are people who slip through the cracks and are overlooked because they are not the majority. All we have to do is listen to their cries for help, and do everything in our power to provide aid.

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