

Logan Dennis
Parkside High School
Salisbury, MD
Namibia Factor 9 Water and Sanitation

Namibia: Sanitation Realities and Recommendations

Water is an essential resource for a sustained life. Contaminated sources pose life threatening health risks. Water is essential for local development particularly for sectors such as health, agriculture, economic development, education and environment. “748 million people in the world lack access to an improved source of drinking water and 2.5 billion people live without basic sanitation facilities”. (How) Water scarcity and proper sanitation mostly impacts less developed countries and rural areas, preventing people from living a healthy and productive life while also resulting in huge economic losses.

Namibia is a melting pot of cultures. These cultures include larger ones such as The Ovambo, Kavango, Herero, Damara, and the Caprivian people as well as smaller ones such as the San and Himba (both of which still kept their nomadic lifestyles). The San continue to live off the land by hunting with bows and gathering whatever they can. The Himba raise farm animals and cover themselves in animal skins, which is unique to their people. With all the different cultures comes different languages. Some of the languages include English (the official national language), Oshivambo (most widely spoken), Kavango, Otjiherero, and Khoekhoe. Many Namibians are also Christians. “Namibia’s major problem includes children dying from diarrhea, malnutrition, and in general being unhealthy from poor water quality.” (Namibia: Our Africa) The droughts that have occurred yearly don’t help with providing rain water for the farmer’s crops, which in turn affects the food supply. Most families are run by women or the eldest child of the family if the mother has died. Most children are forced to skip class, if they even have to opportunity to go to school, because they have to continuously gather food and water and care for younger siblings.

“Namibia has one of the lowest rates of sanitation coverage in Eastern and Southern Africa. Nationally, only thirty- three percent of the population has access to improved sanitation and only fourteen per cent of the rural population has improved sanitation access. These figures represent one and a half million people living in Namibia who do not have access to improved sanitation facilities.”(Health) According to a 2009 Namibian Ministry of Education report, approximately twenty- three percent of schools do not have toilets. The national rate of open defecation was fifty two percent in 2010. This is alarming within the context of health risks associated with seasonal flooding and the contamination of water supplies. Lack of improved sanitation facilities, poor knowledge and the low practice of basic hygiene or proper environmental sanitation behaviors are manifested in increasingly high levels of diarrheal-related mortality. The situation of sanitation remains a concern and represents a considerable challenge to the people and government of Namibia.

Namibia, a developing country located in southwestern Africa is directly bordered by South Africa, Angola, Botswana, and Zambia. The territorial area of Namibia is 318,177 square miles. Namibia has a dry desert climate and a scarce water supply. In comparison, Pakistan, a country of similar size, has twenty-five times more surface water than Namibia. The lack of surface water and annual rainfall make water conservation and sanitation essential for sustainability in rural Namibian communities (Valerie Boutin). According to the Water Supply and Sanitation Sector Policy (WSASP) of 2008, the first priority for water is domestic use. Agriculture uses seventy five percent of the water in Namibia. Twenty- three percent of the water is used in community households and the remaining consumed by other sectors such as mining.

Six ministries are involved in sanitation issues. The Ministry of Agriculture, Water and Forestry is responsible for the overall management and regulation of the water cycle and water resources in the country within the Water Resources Management Act. Local authorities have difficulties in properly managing sanitation systems and water treatment plants because regulations and national standards required for the protection of public health and environment lack resources for enforcement. Lack of coordination and involvement of key ministries, as well as inadequate budget allocation, are major reasons for the poor achievement in the water and sanitation sector of Namibia. Water-borne public sewers are the main sanitation system used in Namibia for fifty percent of the population living in urban areas and thirteen per-cent living in rural areas. “On-site sanitation systems - wet and dry - are not well developed and cover only a few percent of the population.” (Namibia) Shared toilets are used by eighteen percent of the urban population, while sixty seven percent of Namibians do not have access to sanitation and practice open defecation. Sanitation awareness has not been raised among the population “Sanitation facilities have been built through recent housing programs, while sanitation-specific projects implemented with government or donor support have been limited.” (Namibia)

Public defecation occurs virtually everywhere in the rural areas of Namibia, but is most commonly found close to a water supply due to the easy access people have to rinse themselves off with the nearby water. That means that local villagers retrieve and ingest water that is laden with bacteria. This entrance of pathogens to the human body leads to diseases such as enteropathy and diarrhea. Enteropathy does not allow calories and nutrients to be absorbed, which explains the increasing rate of malnourishment in Namibian children. The direct contact with pathogen filled human feces leads to contamination of food and drinking water. Diarrheal diseases go hand in hand with the deaths of thousands of young children each year. Twenty-three percent of children under the age of five die from diarrhea in Namibia while pneumonia accounts for twenty-five percent of under five deaths, and malnutrition for another nine percent (de Albuquerque). Without considerable improvements in water, sanitation and hygiene, these health problems will not effectively improve. The situation is compounded by the fact that twenty- four percent of health facilities in Namibia do not have a regular water supply, placing sick people who go to these facilities at further risk of acquiring additional diseases. “As the population continues to grow, the number of individuals practicing public defecation will increase, causing the intermixing of human feces and crops inevitable” (Valerie Boutin).

There is a general lack of knowledge of sanitation issues at central, regional and local levels – in both the technical/hardware aspect and the softer/people/education/capacity building aspect. Small local authorities experience difficulties to properly manage their sanitation systems/wastewater treatment facilities. On-site sanitation and effluent reuse for irrigation are some of areas that have not been well developed. “User involvement in the choice of sanitation systems and their construction, operation and maintenance is limited.” (Ministry) This leads to sanitation facilities not being used, operated, or maintained properly by people. Various critical factors such as affordability levels are often not properly considered leading to people or communities, connected to sewer systems, who cannot pay for the water to flush their toilets, going back to open defecation. Sewer blockages are often observed due to the inappropriate use of toilets, e.g. too low quantities of water used for flushing and various objects thrown into flush toilets and sewer manholes.

Namibia depends largely on groundwater. Over the past century, more than 100,000 boreholes have been drilled. These boreholes produce groundwater for industrial, municipal and rural water supply. Boreholes are machine dug wells usually digging to a depth of 150-200 ft. to access the groundwater. As the hole is dug, a casing is installed to protect the hole from collapsing. A concrete pad is poured then left to dry. Subsequently, a pump is installed and the water quality checked for use. “Only half of these boreholes are still in operation as most have succumb to contamination or lack of maintenance” (Groundwater). These

boreholes provide drinking water to communities, livestock and game, irrigation for crop production and mining operations. The advantage of using groundwater sources is that even isolated communities and those economic activities located far from good surface water sources like mining, agriculture and tourism, can be supplied from groundwater. Despite the considerable investment in drilling, borehole design and construction as well as pumping and maintenance, groundwater is the most economical way of supplying water. Groundwater resources, being closely associated with underground rock types that vary with the geological landscape, are unevenly distributed across the country. There are few favorable places where high volumes of groundwater can be sustainably abstracted. Unfortunately there are also places where no groundwater is even found at all. Even if there is enough groundwater in a region, it might be unfit for human use because of its poor quality and contamination. The environmental protection of these boreholes is critical for the health of the people and quality of life.

Sanitation fees and tariffs vary considerably across the country. Government subsidies are not sufficient to cover the costs of sanitation services. The promotion of safe hygiene practices is rarely included in sanitation projects. A national participatory approach for the promotion of behavior change, based on appropriate educational materials and methods, has not been developed. Limited information on population knowledge, attitudes and practices linked to sanitation is unavailable. Regulations and national standards required for the protection of public health and the environment are on the way to being developed. The majority of these regulations center on providing water services that are equitable, prices transparent, and communities are represented in negotiations of these services and prices. Seemingly, “Insufficient resources are available for proper enforcement” (Ministry).

In 2008 the directorate of Water Supply and Sanitation Coordination developed policies to ensure equitable access to sanitation services. These policies stress community involvement and participation as well as environmental sustainability. Local authorities and regional councils are responsible for water supply and sanitation in urbanized areas and rural settlements, where demand is continually increasing and a growing backlog exists. The Regional Councils implement and support communal rural water supply and sanitation. Among the policies that needs to be updated is the Public Health Act (as the country is currently using that of 1919) to provide guidance for sanitation and hygiene. Water pollution in Namibia is largely of two types: toxic chemicals (pesticides, heavy metals and chemicals) and organic material (largely sewage but also silt and soil from run-off). One major threat to groundwater comes from rainwater flowing through landfill sites. The fishing industry is also a major polluter of the seawater in Walvis Bay due to lack of discharge treatment measures. Legislation from 1956 and 1958, along with the Sea Fisheries Act of 1992, regulates pollution and places the responsibility for protecting Namibia's harbors and fishing grounds from pollution.

The Desert Research Foundation of Namibia (DRFN) learned that the majority of communities had believed that their water was of suitable quality. None mentioned observing any changes in water quality over time, as many community members had recently moved. Almost all people claimed to use no sanitation systems, and instead relied on bush or bucket waste systems. Some communities attributed instances of local sickness to poor water quality. Regarding waste management, all simply burned their garbage. Through community meetings (DRFN) found that most communities were unaware of the dangerous implications of water contamination by human and livestock defecation. Although all community members were aware of flush sanitation systems, none were familiar with the concept of dry sanitation. The communities all demonstrated interest in piloting dry sanitation systems yet were concerned with the cost of such solutions.

A pilot study of a community integrated implementation of the Otji Toilet system was highly successful. The construction was conducted primarily by the recipient, though members of neighboring communities were heavily involved. The recipient incorporated personal variations into the system design

demonstrating their investment in the pilot. The Otji toilet is a dry system that separates liquid from solids. The Otji Toilet will not only improve community hygiene, but will also prevent contaminants from entering the groundwater. Case studies conducted in the Namibian towns of Havana and Aranos have demonstrated that these toilets are effective sanitation methods in the Namibian environment. Additionally, “the DRFN has begun to organize implementation of ion exchange filters, chlorine treatment, and more dry sanitation systems in the rural communities” (Valerie Boutin).

Namibia and its neighboring countries, Botswana and Angola, suffer from frequent floods and devastating droughts. Many of their people live in abject poverty and have limited access to adequate water and sanitation services. USAID through its Southern African Regional Environmental Program (SAREP) is addressing these issues by improving the water supply and sanitation services, as well as conserving biodiversity within the Okavango River Basin. This basin supports the livelihoods of more than 880,000 people in Namibia, Angola and Botswana. USAID is working with the Southern Africa Development Community and the Permanent Okavango River Basin Water Commission to implement strategies that integrate biodiversity protection, increase access to water supply and sanitation and focus on global climate change (Water). For communities surrounding the Okavango River in Namibia, the program provides easier access to clean water and sanitation, opens the door to better farming techniques and new employment opportunities.

The Coca-Cola Africa Foundation (TCCAF) in partnership with USAID's SAREP, initiated a project in which 13,000 people received safe, clean water in twenty eight communities across Namibia. Other partners in this project who supplied water includes the Water and Development Alliance (WADA), the Replenish Africa Initiative, and the Directorate of Water Supply and Sanitation Coordination. The project goals are to provide community access to clean water that is more proximate and available year round. Through this project WADA is installing new boreholes, cleaning and rehabilitating existing damaged boreholes, and extending pipelines in drought-stricken West and East regions “The boreholes are equipped with three 10,000-litre water tanks, a trough for cattle and other domestic animals, two taps for drinking water and a solar panel to power the newly installed water systems” (Water).

A system being studied and trialed in Senegal seems a perfect candidate for trials in Namibia. The project is called the Omniprocessor, and it was designed and built by Janicki Bioenergy, an engineering firm based in Seattle. The Omniprocessor is a new generation of Micro Sewage Treatment facilities. Today, in many places like Namibia without modern sewage systems, truckers take the waste from latrines and dump it into the nearest river or the ocean—or at a treatment facility that doesn't actually treat the sewage. Either way, it often ends up in the water supply. If they took it to the Omniprocessor instead, it would be burned safely. The machine runs at such a high temperature (1000 degrees Celsius) that there's no nasty smell; in fact it meets all the emissions standards set by the U.S. government. Through the use of a steam engine, it produces more than enough energy to burn waste and power itself. “These next-generation processors eventually could handle waste from 100,000 people, producing up to 86,000 liters of potable water a day and a net 250 kW of electricity” (Gates).

UNICEF Namibia through its WASH (Water, Sanitation and Hygiene) project in last years has conducted over one hundred and fifty information and education sessions. These sessions focus on hand washing and household treatment of water. Over fifty five thousand water purification and hygiene kits have been demonstrated and delivered. Additionally WASH had granted 34 water tanks to communities for the storage of clean water.

I believe Namibia should initiate a program in construction of dry toilet systems and accompanying education. This should be a public works program that would put large numbers of people to work, facilitate the adoption of hygiene and good sanitation practices, and would save precious water resources.

Additionally, these dry systems can be used to collect composted waste that can be subsequently used as fertilizers for crops.

Efforts supported by outside countries and agencies should be based on community involvement and participation. Communities should be supported through education and information campaigns to raise awareness in regards to the health and environmental necessities of sanitation practices. Technologies such as the Otji toilet and Omniprocessor should be utilized to empower communities and protect valuable water resources. Sustainable and efficient utilization of the water resources and sanitation services can be attained through education and intervention. Drinking water and sanitation facilities are essential to the population of Namibia. The public health problems caused by the lack of these facilities not only represses health, they also disrupt economic and social progress.

Essential water supply and sanitation services should become available to all Namibians, and should be accessible at a cost which is affordable to everyone. The equitable improvement of water and sanitation services should be achieved by the combined efforts and cooperation of the government and the people. Namibia must engage the people as stakeholders in the efforts to improve sanitation in order to be successful.

Bibliography

De Albuquerque, Catarina. "General Assembly- Report of the Special Rapporteur on the Human Right to Safe Drinking Water and Sanitation." *Encyclopedia of Public Health* (2012): 472. United Nations. Web.

Gates, Bill. "This Ingenious Machine Turns Feces into Drinking Water." *Home*. N.p., n.d. Web. 29 June 2016. <<https://www.gatesnotes.com/Development/Omniprocessor-From-Poop-to-Potable>>.

."Groundwater Namibia." Ed. Greg Christelis. Ministry of Agriculture, Water and Rural Development, n.d. Web. 30 June 2016.
<http://www.bgr.bund.de/EN/Themen/Wasser/Projekte/abgeschlossen/TZ/Namibia/groundwater_namibia.pdf?__blob=publicationFile>.

"Health and Nutrition." *UNICEF Namibia*. UNICEF Namibia, n.d. Web. 28 June 2016.
<http://www.unicef.org/namibia/health_nutrition_13817.html>.

"How Can We Achieve Universal Access to Water and Sanitation?" *UNDP*. United Nations Development Programme, n.d. Web. 29 June 2016.
<<http://www.undp.org/content/undp/en/home/blog/2015/4/10/How-can-cooperation-between-local-authorities-help-to-achieve-universal-access-to-water-and-sanitation.html>>.

."IEO Annual Report 2014." (2014): n. page. UNICEF Namibia. Web. 29 June 2016.
http://www.unicef.org/about/annualreport/files/Namibia_Annual_Report_2014.pdf

Ministry of Agriculture, Water and Forestry. "Namibia- National Sanitation Report." *NATIONAL SANITATION STRATEGY 2010 to 2015* (2014): n. page. Republic of Namibia- Ministry of Agriculture, Water and Forestry. Web. 29 June 2016.

."Namibia: Analytical Summary - The Physical Environment - AHO." *Namibia: Analytical Summary - The Physical Environment - AHO*. World Health Organization - Africa, n.d. Web. 28 June 2016.
<http://www.aho.afro.who.int/profiles_information/index.php/Namibia:Analytical_summary_-_The_physical_environment>.

"Namibia." *Our Africa*. N.P., n.d. Web. 04 July 2016.

."Namibia: Water Scheme Benefits 310 Villagers." *AllAfrica.com*. All Africa, 17 Mar. 2015. Web. 29 June 2016. <<http://allafrica.com/stories/201503171537.html>>.

Survey. *IWRM SURVEY AND STATUS REPORT*: (n.d.): n. page. Global Water Partnership. Web. 29 June 2016. <<http://www.gwp.org/Global/GWP-SAf%20Files/Namibia%20IWRM%20report.pdf>>.

Valerie Boutin, Caitlin Butler, Samuel Kesseli, and Mary Clare Mccorry. "Improving Water Quality and Sanitation in Rural Namibian Communities." (2010): n. page. Worcester Polytechnic Institute. Web. 29 June 2016. <https://www.wpi.edu/Pubs/E-project/Available/E-project-050411-061538/unrestricted/Improving_Water_and_Sanitation_in_Rural_Namibian_Communities_Final_Compressed.pdf>.

"Water | Namibia | U.S. Agency for International Development." *Water | Namibia | U.S. Agency for International Development*. USAID, n.d. Web. 29 June 2016. <<https://www.usaid.gov/namibia/water>>.

"WATER SUPPLY AND SANITATION POLICY." *WATER SUPPLY AND SANITATION POLICY* (n.d.): Ministry of Agriculture, Water and Forestry. Web. 29 June 2016.
http://portal.unesco.org/en/files/47370/12670872251Namibia_wsaspolicy.pdf/Namibia_wsaspolicy.pdf