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Somalia, Water scarcity

The water problem in Kismayo, Somalia

I have always liked water, not only to drink it, but also to be in it. Being in the sea and hearing the sounds of the waves makes me very calm. Water is one of the things that I enjoy the most in the world. Is something that I interact with daily and it is essential for my life. So, living without water would be impossible for me; then, to think that there are people who live without it, it is very difficult to process.

Somalia is a country in the Eastern part of Africa with an average population of 15.8 million people (Datos macro, 2022), the majority of whom live in a rural condition (Macrotrends, 2020). Climate in Somalia is divided by dry and rainy seasons, the rainy seasons function to supply houses and families in this region, but with the climate changes there has been stages of rain where it is too scarce and does not reach the water to provide all the country (Janzen, J. et al , 2021). Another point that needs to be touched on is all the wars in which Somalia has participated. This has led to a loss of cities and towns, deterioration of heritage and many other things. Kismayo was a very important city in Somalia, which was very rich in all aspects, but after the war it fell into a tailspin, causing more than 300 000 people to migrate to other towns and cities, and the ones that stayed, have very difficult times getting basics resources, such as water and food (African Development Bank Group, 2019). This is why it is necessary to bring water, not only to rural areas, but also to areas affected by war.

Somali families are large, families can raise up to 10 children (CASCW, 2010) and usually they work from a very young age, being the girls that are in charge of bringing water with their moms and the boys helping in work, bringing money to the house. Somali families have a lot of problems regarding health care, this system is very weak, people do not have water, about 3.2 million women and men are in need of emergency health services. Health indicators in Somalia are among the lowest in the world, one in every nine Somali children dies before their first birthday; and the mortality ratio is 850 deaths per 100 000 (Hundred thousand) live births (WHORP, 2015).

The education and the institutional systems are weak, Somalia has the lowest primary cost enrollment rates in the world (Concern USA, 2019). This problem exists in rural and urban sectors, but in the rural areas the problem is worse, nomadic pastoralists account for about 65% of the Somali population, and only 22% of children in this situation receive formal education, of this number less than 50% are girls. (Borgen project, 2018). This is caused by many things, rural families in Somalia are normally nomadic, making it impossible for them to attend a particular school, in Somalia there is not as much internet access as in other more developed countries, only 1.95 million people in Somalia have access to the internet, contrasting with 15.8 million of the population, showing that only 11.6% of the population frequently access the internet. (Kemp, S, 2021) There is also the problem of girls, and since they are the ones in charge of bringing water and cleaning the house, as in many other places, the mind in Somalia is still very conservative, pigeonholing women in the kitchen and not accepting different people.

The weather in Kismayo rounds around 88 Fo (31.1 Co). The problems that this can lead to, is dehydration, so much heat can affect the physical integrity of a human, and without having the

resources needed to hydrate and regain energy can lead people to faint from high temperatures. The number of clouds that generate rain and shade vary by season, during September, the skies are mostly clear, making the sun non stop hitting the city directly; The season with the most shadow and rain clouds is in February (WeathersPark, 2021) where the rainy season called "*The Jilaal*" is supposed to take place(Janzen, J. et al, 2021).

The Horn of Africa, Somalia, declared the situation a "national humanitarian state of emergency" and nowadays, is battling the worst drought in 40 years. At least 6 people, —mostly children—die weekly; these victims die due to hunger, thirst and starvation. Nearly 90% of the country face severe water shortages that have left 3.5 million people with food insecurity; also, some areas are facing their driest season in 40 years (Dhaysane, M., 2021). This problem is very serious, the lack of resources in Kismayo and in general Somalia is something that people should worry about, only 52% of the population in Somalia has access to a basic water supply. Private water suppliers are very rare to find, and normally have a very high price that many families cannot afford. This leads them to use open wells, since they do not have particular security, are usually contaminated by external things, causing the use of this water for drinking, cleaning or rinsing be a dangerous practice, adding that open defecation is also very normalized, 28% of the population practices this. All these factors together can lead a person to contract diseases such as diarrhea, acute watery diarrhea, cholera and respiratory infections. (UNICEF, 2019). The groups that are most affected by this problem are children and women, children have a less developed immune system than adults, meaning that dirty water can do more harm to them than to adults, causing them to die from this (World vision, 2022). For women and girls, it is something even more complicated and serious, since they are the main ones in charge of bringing water to the house, making the path they walk dangerous, since they are vulnerable to physical and sexual abuse (UNICEF, 2019).

Urban areas are very common today, they are places where people live. This carries a lot of responsibility since there are many people in very little land, so it needs more resources than normal to supply the city. This is the case of Kismayo. In the past, it was a very nice city, full of life and resources, but after the civil war it fell apart and plummeted. More than 300 000 people emigrated to other provinces and even other countries due to the situation in Kismayo, but there were people who could not leave because of the money invested in businesses, houses, properties, etc. This caused all the people who stayed to suffer from a lack of resources and life became difficult for them (Britannica, 2008). When a city does not have enough resources, it can be even more difficult to live than in a rural area, which is why the area chosen was Kismayo, it is a very needy place with a well-established population, which has a place to sleep and stay; not like in rural areas, which are normally nomads, that is why a water well would not be a good solution for rural areas, since it would not take advantage of what it can give (UNESCO, 2015).

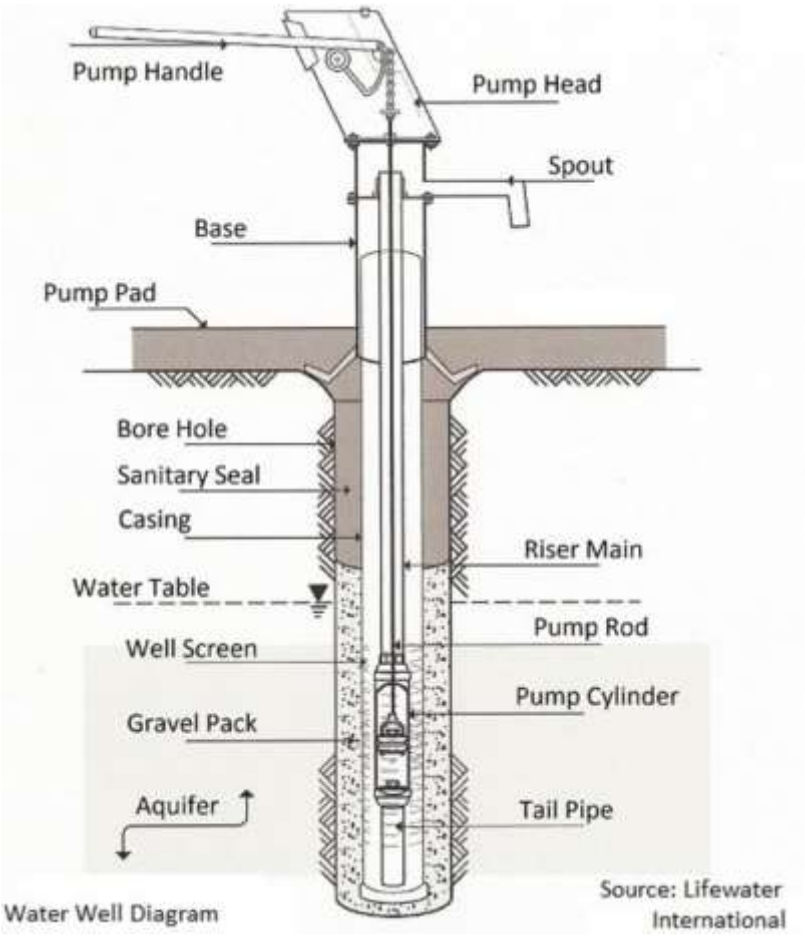
The proposed solution is to access underground water with the implementation of water wells, which are devices that raise the water from the aquifers, making the underground water can be used by the people who live on the surface, this water can be used for many things, hygiene would be more common in Kismayo improving health with it and would make families want to return or enter the city of Kismayo. The water wells are not a permanent solution, since there are many factors that can affect its duration, the care of the people who use them, the possible amount of extractable water , because if the water well dries, it decomposes. Most of these devices live for 20 to 30 years

(Mosman, E. 2017), after these years they can begin to dry out and not efficiently raise the water. Near Kismayo there are 5 different types of aquifers with different types of water, the one that could be used is called "Sedimentary Intergranular/Fracture", which has good water quality and can be used for

drinking (Earthwise, 2019). The cost of water wells is very varied, the main factor is the material from which it is made, the better the materials, the more expensive it will be and therefore it will last longer, so knowing that the cheapest cost could be $17 250 US dollars but it could climb to $28 850 US dollars (Homeguide, 2022) puts in perspective in things how different the quality of these wells can be. The price of labor would be $10 US dollars a day. In order to get the most out of water wells, many things are needed, education is extremely needed, knowing what to do and when to do it is very important, and knowing how to manage water wells in order to have them in good condition. The following diagram illustrates the components found in Proper Well Construction.

Figure 1.*The Components Found in Proper Well Construction* This diagram was produced by Lifewater International in 2015, it shows all the components that need to be in a well- functioning water well.

The second thing that will be implemented is to implement courses for adults for the good care of the water wells. One of the most basic things that must be taught relates to the superficial care of the water well. It is necessary to maintain hazardous chemicals, such as fertilizers, pesticides, paint and motor oil away from the machinery. The next thing is to instruct about the constant checks on the top cover to make sure it doesn't have bulges or scratches and if necessary, change it. Another thing to take in account is that the well needs to have a considerable separation between buildings, drains or chemical stores (OGWA, 2022). If these recommendations don't get followed it can lead to the deterioration of the well, or the contamination of the water, making it no longer useful. The third part that is going to be executed is the implementation of sand dams, a sand dam is a reinforced rubber



Water Well Diagram

cement wall built across a seasonal sandy river. This has many benefits, as there will be water in a place, it can serve as a reserve for emergencies, and it also serves as a way to store rainwater. In Kismayo and in general in Somalia, the rains have been very poor lately, because of global warming and other environmental factors. However, when it rains, the Kismayo population could make the most of it. Another benefit would be the humidification of the soil, combating the problem of soil degradation, as there will be a lot of water in one place, this make the earth begin to absorb the water, rehydrating it (The Water Project, 2021) and in this case, since it will be as close as possible to the aquifer, it will serve to fill it up and prevent it from drying out so quickly and so that the project is sustainable. Another benefit of the Moist soil is agriculture, the areas around the sand dam will always be moist and alive, making it a good ground for planting or grazing animals. The cost and care of the sand dams is normally very low, no more than $8 000 US dollars and their benefit is spectacular as exclaimed in this paragraph; all these solutions complement each other, leaving a great help to Kismayo and its surroundings.

To finance and carry out the proposal. organization needs to be contacted, the first organization that will be contacted is the " Federal Republic of Somali Ministry of public works and reconstruction", in order to obtain a permit that lets the workers build the water well and the sand dams. The second organization that will be contacted, searching for an alliance it's "The Water Project", which is an association that collects money to bring water to poor places where there is none, this has had a lot

of success since it has helped more than 659 400 people in the world (The Water Project, 2022), it gets its money from donations from outside sponsors or people who want to donate, our proposal would be published on their website and they could choose to donate on it. A second option would be to propose this idea to The United Nations , since they have an initiative, the 17 goals, which aim to bring a decent life to all corners of the world (SDGS, 2022), they could listen to the proposal and allocate the necessary money to carry it out.

As mentioned before water wells are not a permanent solution, but it can be a part of the long term solution. In order to stop these water shortages it is necessary to know all the factors that make the city of Kismayo and Somalia so difficult. Climate change is affecting everyone, this phenomenon is here to stay, so Somalia has to adapt to this change (Concernusa, 2022). The political and governmental situation in Somalia is also affecting the situation as it is not possible to make deals with other countries to get help. The way to make this proposal permanent or as long lasting as possible would be to adapt all the houses to be able to store water from the seasonal rains. Another point would be to have the sand dam well protected so that they are not contaminated or harmed by others. One of the best ways to get water is to take care of the water that already exists and use it in the best way. This is not only a change of the government, nor a change of a single person, it has to be a change of the whole community for the greater good. On the other hand the water well would have to have regular maintenance before something rusts and contaminates the water or further deteriorates the artifact so that its life span is as long as possible and can even be centuries. There is evidence that this is possible, these artifacts have been used since the Mesopotamian era, and several have been found from this era and with very little maintenance they were functional again, giving evidence that these can last a long time(Faiella, G. 2006).

This would increase the cost of the proposal by the right amount, since the maintenance would be regular and the replacement of pieces has a cost, not only the cost of the piece itself, but also the cost of transportation. It is expected that all parts can be sourced domestically and that no border crossings with other countries will be necessary. But if it is required to export parts from nearby or more distant countries it will be financed by the selected organization. These parts can be brought by plane or by

land transport depending on the distance in which it is.

Rainwater is a blessing for human beings, it can be used for watering, cleaning and in some cases drinking. Rainwater harvesting is a system which is placed on top of houses and through pipes the rainwater is transported to community or individual wells (Ogale S., 2019). Analyses of these systems show that the cost-effectiveness is very good, since the benefit that is achieved with these water storage systems (Machiwal, D., et al. 2018). Rainwater harvesting also contributes to food security, providing water during dry seasons for agriculture. If this solution is implemented in Kismayo and even in the whole of Somalia, it would increase the quality of life of the inhabitants of this country (UNEP, 2022). Both projects can be implemented at the same time, if there are very strong droughts, water from the water table or the sand dam can be used.

To conclude I would like to talk about the importance of this, water is an essential element for the life of living beings on this planet, all humans should have having it is even a violation of the human right to drinking water and sanitation, this right is essential to live with dignity. This is why it should not only be treated as an economic good, but also as a social and cultural good, which, when not present, degrades the lives of the affected people.

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