

TENGWOOD ORGANIZATION

NEWSLETTER DECEMBER 2016



www.tengwood.org

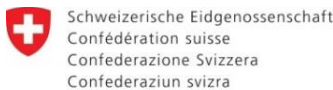
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DEAR FRIENDS OF TENGWOOD ORGANIZATION,

This newsletter is devoted to our drinking water project, which we call 'Clean Drinking Water for Conservation'. The idea of this project is to provide clean drinking water in combination with species protection and environmental education.

Our first order of business is a heartfelt thanks to our sponsors; the Aqua Pura Organization (Aqua-pura.org), the Swiss Embassy Nigeria, the Reformierte Kirche, Opfikon and one anonymous donor, who have made this project possible.



Embassy of Switzerland in Nigeria



Drinking water and species protection - how do these two work together?

A healthy watershed plays one of the most important roles in nature. Stated simply, water is life - for wildlife and humans alike. In keeping with this idea, our clean water for conservation program is designed to link nature and people together in helping to preserve wildlife and protected areas in Cross River State, Nigeria.

Wildlife Rangers are on the frontlines in species and habitat protection. Ranger patrols help to ensure direct protection of wildlife and forests - an important factor in fighting illegal human activities occurring inside protected areas, such as hunting for the bushmeat trade, logging and other human activities that destroy the habitat. Ranger patrols are challenging work, often carried out in difficult habitat. Clean drinking water helps keep the rangers healthy and allows them to do this physically demanding work. Our water project was designed to provide clean, safe drinking water for the Rangers working in Cross River's protected areas.

The second goal of the project is to inspire communities around protected areas to help preserve these areas and better protect species. This is being accomplished by combining the provision of clean drinking water with environmental education for schools and support communities around Cross River's protected areas. Our educational materials are designed to teach about the links between wildlife, structures in the forest habitat, such as trees and watersheds, and the human activities that impact these natural structures, and in essence, impact all living things.

The first water system we installed was a small, handy water purifier (the "Waterdrop 1" system from Aqua pura) this system purifies water in a 1 ½ liter PET bottle, and was ideal for the Afi Ranger's base camp in the Afi Mountains. This system has already been commissioned in this location, and the Afi rangers trained in the use of this system. They are currently using it to provide clean drinking water for their patrols in the Afi Mountain Wildlife Sanctuary.

We successfully installed a second and much larger system (the ‘Waterflow 600’ system from Aqua-pura) in the Cross River National Park’s Okwangwo Divisional Headquarters in Butatong. This water system is now providing clean drinking water to the Park’s Rangers and staff, and the nearby community of Butatong, a small village of approximately 200-300 families. The water situation in the park’s headquarters and the community was precarious (see below), and we improved it considerably, thanks to this new purification system. We also decided that additional attention to the environment for this project, and chose not to work with a generator/diesel driven energy source, but rather with a green one - solar technology. This has the advantage of incurring less ongoing costs (as money requirements for diesel would be a limiting factor for the system), but more importantly, by not burdening the environment. Cross River National Park Rangers and the community of Butatong alike were very happy about our project. Clean, bacteria-free drinking water is now available for all.

The Installation process in pictures

The former point for Cross River National Park Rangers and the community of Butatong to collect all their water needs was a perineal stream inside the park headquarters that provided water during the dry and rainy season. During the rainy season, communities can also collect rainwater, alleviating some of the dependence on this stream. However, during the dry season, it quickly becomes one of the only dependable water sources, and provides drinking water, cooking water and bathing water for the majority of the Park staff and the Butatong community (see pictures below). Due to over-use, it can become depleted - rangers explained that both the park staff and the community attempt to visit the stream very early in the morning or late in the night to insure they are able to collect water. As the day goes on, constant use results in the water becoming silted or depleted. The only other water source in the Butatong community is a shallow borehole that incurs long lines and causes community strife.



A Very Small Stream for the Needs of Many People; Pictured above, Bruno Tenger at the small stream, which provided the park staff and the community of Butatong with water. A failed damn built in 1997 by WWF lessened the water flow. After evaluation, we determined the stream was not adequate for our water system, making it necessary to drill a borehole. On right, Dr. Kathy Wood collects a sample for water quality analysis.



Cross River National Park Staff and the Butatong Community: On left/center, Tengwood with the Cross River National Park Okwangwo Division Rangers and Staff; rangers play an important role in protecting nature. On right, the nearby Butatong Community shares the stream with the park. Only one shallow borehole exists in the village, from which water must be hand-pumped; this borehole has a low yield, and experiences long daily lines, which cause conflict within the community.



Borehole Drilling; The borehole equipment included a specialized truck that came from India, with enough drilling rods to go down to 140 meters deep. The drilling rods were extremely heavy with a special 2 man staff whose job is to lift these rods into place; pictured here, they worked very hard throughout the day.



Water and Granite; Above, the crew fixes the drilling rods in place. Once we were down to about 40 meters, the first groundwater was seen – likely a shallow stream above the solid granite that runs underneath the park. After that, the drill began to bring pulverized granite to the surface as it bored through this rock to find water. Pictured on the far right, a chunk of granite dust from deep in the ground, mixed with water, makes a good cement.



Water is Found! At a depth of 140 meters, water was found!!! This is likely a stream that runs through the rocks, and will provide a year round water source. After this, 140 meters of piping was put into the borehole, and the heavy rods removed.



Park Staff and the Butatong Community are Interested; Throughout the installation process, workers had a rapt audience, as park staff and children and adults from the community enjoyed days of free entertainment, in anticipation of fresh, clean water. The community provided food and palm wine for the workers in thanks.



Borehole Completed; The borehole pipe was temporarily covered once drilling was done, as the process was not yet finished for Engineer Chris. However, once the drilling was done, the borehole workers cleaned up by having a little fun rolling up the drilling material.



We Have Water! The solar pump was then immersed deep in the borehole, followed by cementing and sealing. Our first test of the system with a generator and water flows! A very good moment!



The Drilling Crew; The drilling process was documented by Dr. Kathy Wood with the help of some of the local children. The hard-working drilling crew is pictured with Bruno Tenger in center. On right, Engineer Chris Jukpah, with the drilling crew, kept a close eye on every step of the work.



Water Storage Tanks; Two 3000 liter water tanks were placed on the tower - but first steel plates were laid down to stabilize the tanks.



How to Tie the Tanks? We got help tying the tanks so that we could lift them to the top of the stand – this assistance came from a young man named Thomas, who was very proud of his work!



The Power Lift; To lift two 3000 liter water tanks up to the platform was not easy – in fact, it was a real power act that required the assistance of almost every ranger within shouting distance in the park, and a little ingenuity using bamboo poles and lifting together to make it work.



The Piping Process; Pipes were laid and connected to the water tanks and to taps installed at the main gate. This main gate was chosen as the location for the water system as it allows both the park staff and the community to collect water inside and outside the park gates.



The First Solar Power in the Park; Solar panels were laid out and connected for the first test of the solar system, which will pump water from the borehole throughout the system. This is the first time the park has used solar power, a much cleaner type of energy than a generator. It is also the first time the Aqua-pura system is run by a solar-powered borehole.



Water is Now Flowing; The water is now flowing with the solar current. Children of the park staff were so excited about it they couldn't wait and were ready to help one another take their first buckets of water home.



Solar Panels Mounted; The mount for solar panels was created by a local welder and the solar panels assembled and connected by the engineer of this project, Chris Jukpah.



Solar Power for the Water System Too; An independent solar system was installed to run the UV-C light that purifies the water in the Aqua Pura Waterflow system.



The Water System; The centerpiece of the system, the Aqua Pura Waterflow system is now installed and connected. Information on this fantastic water purification plant can be found at www.aqua-pura.org. Our project was featured in their April 2016 and December 2016 blogs at <https://saubereswasser.wordpress.com>.



Discussions with the Butatong Community; We took some time to meet with the community leaders (on left) in order to explain the water system and work out guidelines for its usage. The Butatong community, which has approximately 200-300 families (between 1000-2000 individuals) has been very appreciative of our efforts.



Ready for the Community; The first clean drinking water was ready to be obtained. For that honor, one of the Chiefs from the community of Butatong was delighted to assist!



Platforms for Placing Basins; Finally, cement platforms for the water canisters were placed. Rangers and the community can now obtain clean, bacteria-free water, free of charge.



Learning How to Maintain the System; Park staff is taught how to clean and maintain the system. The opening ceremony will take place in January, with pictures to follow in our next report. We are very proud that our water project has been put into operation with great success.



Group Photos; Photos after the successful installation of the water purification system of Aqua Pura and Tengwood Organization's Clean Water for Conservation project; Tengwood Organization's Dr. Kathy Wood and Bruno Tenger with Engineer Chris Jukpah, Chief Rangers T.A. Kareem, Mr. Yusef Baku, and park staff, and one of the Butatong Chiefs.

Our Educational Program Begins

During our stay, we had an opportunity to begin our educational program, participating in a program run by WCS Conservation Education Coordinator - Okwangwo Project, Louis Nkonyu, with the nearby conservation club from the secondary school in Wula, a community close to the park. This was our first opportunity to test some of our information on watersheds, wildlife, and environmental protection. Together with WCS Nigeria, we are designing and printing educational materials that will be used in an ongoing program for the support communities around the park. Already, we have designed a series of posters, notebooks, and a board game, that will link natural structures/activities (i.e. watersheds, forests, and wildlife) to human structures/activities to teach school groups surrounding the park about the importance of healthy watersheds. We also plan to supply a new conservation center inside the park with these materials. Our educational program will continue to provide important information about the environment into the future.



A Start for our Educational Program; Dr. Kathy Wood is pictured here with the Wula Conservation Club, teaching about the importance of watersheds and water resources.



An opportunity for Learning; We also provided signage about the project's sponsors and educational posters that allow the community to learn about watersheds while they are collecting water. These are already popular and are being read by many people while collecting water.



WE THANK AGAIN ALL OF THE DONORS WHO HAVE SUPPORTED TENGWOOD ORGANIZATION WITH FINANCIAL CONTRIBUTIONS, MATERIALS, OR KNOW-HOW. WITHOUT THESE SPONSORS, DONORS AND MEMBERS, IT WOULD BE VERY DIFFICULT TO IMPLEMENT THESE PROJECTS!

With Kind Regards from Nigeria,

Your Tengwood Organization Team



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