

First appropriate innovation from local ...Ooh yes!

Mwanza, well known as ‘Rock-city’, has geographical advantages attributed by greatest lake in Africa, Lake Victoria with its thriving ports, shores, beaches and resorts. Many people view the lake as an economic resource or a local recreation spot. Despite the hustle and bustle of this economic heart of the Lake zone, Mwanza maintain its casual and favourable economic reforms and mature innovation ecosystem makes it stands out positively. Early in the morning you will meet countless local community entering the lake to fetch water for domestic and agriculture activities while others are leaving the lake after acquiring significant amount of fish during the night. Then expect to meet John Makonda and his team doing some routine experimental playground for the testing of his new wave-powered water pump named after him Makonda Pump with the potential to revolutionize irrigation activity for the farmers farming near the lakes Victoria.



Picture1. Normal life at shores of Lake Victoria

“Man, this lake is a wild place! If you stay a bit longer, you will notice more than 1,000 farmers are coming to fetch water daily for irrigation activity and if you have time you can follow up with them to see how many miles they come from just to fetch water for their irrigation activity”
said John Makonda.

Does harnessing wave-powered sound?

Harnessing wave energy isn't a new idea. Currently, this is done with conventional water pumps driven by wind mills or generators using steam, diesel, or electric engines to pump water from the Lake to the nearby local community habitats. But most efforts so far have focused on generating electricity from the water. Large-scale electricity production has dominated water energy efforts, with ambitious governments awarding huge grants to develop megawatt-scaled electrical production.

John Makonda has another idea, one that would use wave energy to pump water with no need for conversion to electric power reminding us once again of the power of innovative thinking. His hard work and dedication will bring forth a new technology that can then be utilized by communities in search of a cost and energy efficient method of pumping freshwater inland for more of irrigation activities.

“With all the hustle farmers and local community living near lake shores are going through for years, it's almost irresponsible to not try to harness the power of Lake Victoria waves as an open-ended means to a more sustainable end, with water that may be used for many purposes using environment friendly methodology for marine and human co-exist’ Says John Makonda.



Picture 2: John Makonda benefiting with irrigation using Makonda Pump

How Makonda wave-powered Pump works:

Makonda pump is manipulating the concept of buoyancy, pressure head and hydraulics in his invention benefiting from rise and fall of the water waves, collecting and pushing water all the way to main tank through a wide pressurized hose—all without an external energy source. This low-tech wave energy system comprises of an oscillating-water-column wave chamber and a series of specially shaped basins, stacked on top of each other, with room in-between for water to flow, in principle, climb to any height, even when waves are small. The higher the wave is the higher water is pumped and the higher distance water can travel with high pressure!

"So imagine, with a complete system of 4 buoy pumps sending water at an even greater pressure of 150 psi to the distance of more than 3 kilometres benefiting more than 15 acres of farming , that's a lot of water for irrigation and domestic uses" Says Makonda.



Picture 3: Makonda pump in operation in Sengerema, Mwanza-Tanzania.

Life changing innovation!

SIDO Mwanza office saw John's innovation prototype and decided to incubate him at their innovation hub called SIDO Tled Hub. *"As rapidly population growth happening in all countries around Lake Victoria is really shocking hence the significance of innovation of wave-powered water pump we see it will be answering the demand for a whole agriculture value chain. As SIDO we are re-thinking how we can significantly sophisticate and commercialize this great innovation from such derivative local person. We believe that this is the kind of innovation that not only produce water for the local people and irrigation, but also create jobs and a new sustainable economy"* Says Bakari Songwe, the SIDO Tled Hub Manager.

100 reason to why this is the best!

Apart from needing no external power, the Makonda pump has the advantage of being completely viable with off-the-shelf parts, allowing local fishermen and mechanics to easily maintain and repair pumps for their communities. More than that, the pumps has undergone several test over 10 years and improvement enough to have a characteristics such as storm survivability, no emission at all, scalable and clean enough to co-exist with marine life!

Who else want to be in this better future ahead for the community impact?

"We see a huge potential of scalability and we have started to look for the whole value chain and how we can impact thousands of local farmers living near the Lake Victoria. Our commitment as hub will be on how we can invent the best 21st century business model that will commercialize, remain competitive, patent right and sustainable with huge social impacts" says Hassan Ally, the SIDO Tled Hub coordinator



Makonda pump during exhibition on 21st EAC MSMEs Trade Fair –Mwanza December 2021 visited by government leaders.

Hello world, let's embrace this appropriate innovation in renewable energy as the answer to the climate change crisis!