

TECH TIMES & BUZZ



Technology Profiling

In this quarter, the Portable Erosion Chlorinator (PEC) was subjected to Technology Applicability Framework (TAF) assessment. The exercise was intended to inform stakeholders whether PEC could provide the envisaged service sustainably.

PEC is a technology attached to piped water supply systems and is used to dose chlorine into water in a regulated manner so as to enhance water quality before bulky supply.

PEC is promoted by Water Mission and has been

installed on at least 12 piped mini water supply systems in Luuka district. All the 12 water supply systems were included in the TAF assessment.

The TAF assessment of PEC looked at six (06) dimensions i.e., social, economic, environmental, institutional/legal, technological, skills and know how. Data on the six dimensions above was collected from technology promoters/providers, end users/buyers and regulators/facilitators.

From the assessment, performance of PEC as a technology for strengthening safe water chain was commendable. PEC comes in to address safe water challenges aggravated by people using very dirty jerrycans to fetch and store water, littering/unsafe disposal of both human and animal faeces which harbour germs that end up in water, something that increases the risk of faecal oral diseases. Boiling drinking water is not a common practice for many Ugandans since it is considered to be a wastage of cooking energy thus, many people drink the water without treatment and this exacerbates the risk sanitation related illness. Water Mission's portable erosion chlorination technology comes in handy to



enhance water quality and address gaps in safe water chain since residual chlorine in the fetched water helps to eliminate any impurities that could be in the water storage containers.

The technology was largely given a green light since it excelled on almost all the six dimensions with a call to reduce manual operation of valves, modify the chlorine holding bowl to include a visualisation bar to reduce regular opening and encouraging operators to frequently change the rubber gaskets as a way of reducing the negative effects of wear and tear.



Water, Sanitation and Environment Innovators' Forum



We held an inaugural meeting for the newly formed Innovators' Forum. The meeting brought together over 30 innovators united by the desire to take their technologies to scale. These were largely in-country innovators with technologies addressing challenges of water quality and quantity, poor sanitation and hygiene, environmental pollution and degradation, declining agriculture and food production.

Innovators unanimously agreed to form a forum that brings them together to leverage the power of unity and solve complex innovation challenges. To take forward the forum, an interim committee was elected with Richard Egessa of Egessa innovations Ltd based in Lira as the President and Dr. Julianne Sansa Otim from Makerere University as the Co-president.



As part of the forum, innovators are categorized based on thematic areas i.e., climate smart technologies, sustainable sanitation, water supply and management, health and wellness, smart agriculture, circular economy, and technology development. All the thematic areas have representatives on the interim committee. The need to come up with a common plat-

form emerged from the annual ATC Expo where challenges crippling technologies scale up were emphasized. The Forum is one step in the desired direction with willing members working together to leverage resources, shape and influence technology introduction and promotion in the country.

Borehole Functionality Research

Using uPVC Poldaw pipes to Improve Functionality of Point water sources

Technical breakdown (40.7%) is the leading cause of non-functionality of boreholes in Uganda. This is followed by dry/low yields (18.6%) and poor water quality (11.7%) according to Uganda Water Atlas (2024). With field evidence, functionality improvement research partially attributes all the three challenges to shortfalls in water supply system components.

WaterAid Uganda implemented a borehole upgrade project in Masindi and Kabalore districts with intentions to address the challenges above. The project had a target of 100 boreholes i.e., 80 in Masindi and 20 in Kabalore district. This project was informed by prior study that highlighted corrosive iron as a key challenge compromising water quality and overall functionality of point water sources. As part of the project, poorly performing or broken-down boreholes were identified and repaired. The repairs involved replacing corroded steel pipes with uPVC poldaw pipes. The ATC took part in project monitoring and during the exercise, we observed that;



i) Deep boreholes had been turned into shallow wells in the due course of operation and maintenance. This contributed to reduced volume of water yields in the respective boreholes. For example in Masindi, Kyangamwoyo borehole had been reduced from thirteen (13) to three (03) pipes. Users reported that every time the borehole broke down and needed repair, 1-2 pipes were removed by the team that conducted repairs. Consequently the water yields from the borehole would significantly reduce during the dry season. To restore optimal functionality, Kyangamwoyo borehole and many others were upgraded and reinstalled to 13 pipes under the Water Aid project.

ii) Almost all rehabilitated boreholes under the project had evidence of corrosion with rusty pipes that were replaced. The corroded parts would end up in water, visualized as corrosive iron that compromise portable water quality.

Upon upgrade, functionality of the targeted boreholes improved and communities were happy. However, progressive monitoring is still on-going to observe long-term performance and inform technology scale up. As per the current status quo, access to safe water in the country stands at 62% and 45.3% of the people accessing safe water are served by borehole technology. Thus, the WaterAid project aimed at improving functionality of boreholes is of significant importance.

TECHNOLOGY Transfer



Since the project started, biogas project has reached 325 people in nine (09) months

ATC continued with the technology transfer drive. For this quarter, technologies were transferred to seven (07) villages in addition to continued promotion in the old villages. Technologies focused on included; storm water harvesting using locally made low cost ponds, smart drainable latrines constructed using plastic bottles (fossa alterna), smart energy options (bio-briquettes and biogas), use of BSFL and vermicomposting for managing biodegradable waste and boosting agriculture production.

We also continued to popularise ATC bio-briquettes as an alternative cooking energy source for people who may not afford other smart energy options such as solar and biogas.

At institutional level, we promoted use of locally made organic bio-enzymes to improve functionality and prolong lifespan of pit latrines. We also promoted technologies for solid waste management in Bishop East primary school, Nasejjobe UMEA, Kyabakadde R/C, Nakifuma C/U all in Mukono district.

These interventions have already registered success stories, demonstrating the need for the low-cost innovative solutions in relation to addressing pressing community and environmental challenges.



674 households, 10 schools and 32 chicken brooding businesses have bought and used ATC briquettes; 26 resellers in Mukono are selling ATC briquettes



246 people from 09 villages have been reached BSFL farming and vermicomposting technologies in three (03) months



9885 people from 20 institutions have benefited from use of bio-enzyme for enhancing functionality of pit latrines



The low cost pond based storm water harvesting project has reached 254 people from 23 villages in Mukono since inception



46 people in three (03) villages have been taught about low cost fossa alterna latrine technology.



2727 pupils in 04 schools have benefited from the solid waste management project

The BSFL Eco-friendly Nutrition solution to crop and livestock Farming

In the era of climate change, crop and animal production are both faced with nutrition challenges that warrant a search for smart alternatives. On one hand, soil quality has continued to deplete to the disadvantage of crop farming and on the other hand, livestock suffers lack of organic nutritious feeds. These challenges pose negative consequences on the quality and quantity of food production though agriculture continues to be the backbone of the country. In search for breakthroughs, farmers opt for inorganic supplements that may increase health risks to humans who consume the food products. Amidst such challenges, the country generates a large chunk of organic waste which is poorly disposed in the environment and these contribute to Green House Gases emissions as well as human catastrophes.



"This project is good. It helps me save money that I would use to buy nutritional supplements for my chicken and also reduce solid waste coming from my house"

The recent explosion of Kiteezi landfill is just a synopsis of how disastrous poorly managed solid waste can be. Such disasters can be avoided if we only embrace the zero waste production paradigm. The ATC has for long been profiling use of Black Soldier Flies Larvae (BSFL) for solid waste management. The BSFL technology is positioned to address multiple challenges mainly in relation to solid waste management, sanitation, environment and agriculture. It is ideal for enhancing adaptation to climate change by farmers. ATC builds capacity and structures at community level to enable households use the magic BSFL to address pertinent challenges at a low cost and sustainably. Nampiina's story is a demonstration that the BSFL technology offers a versatile solution, addressing multiple challenges while providing various benefits with ecological sustainability.



Ms. Nampiina Annet of Kitanda village Kyampisi sub-county in Mukono district is one of the farmers that embraced the BSFL technology. Ms. Nampiina has passionately incorporated BSFL farming as a farm complementary project. In the short period of only 2 months of technology use, Ms. Nampiina is happy that she can make nutritional feeds for her chicken by simply managing all the solid waste produced in her household. She started the journey with only 1kg of 5days old larvae and was able to grow the farm 7kgs in only one cycle of 21 days. In the period of two months, her BSFL farm has grown at a rate of 6.8%. She fed 10kgs to her chicken, sold off 1kg to her neighbor who also desired to start a BSFL farm, produced 27kgs of compost which she used on her banana plantation.

She indicates plans to start backyard vegetable farming since she will be producing rich compost continuously.

Off season Agriculture



Mbalule of Nagojje in Mukono district continues to shine with storm water harvesting. He received support from ATC to install a storm water harvesting pond which he continues to use effectively. Since installation, he at first planted off season Sukuma wiki and tomatoes that brought him economic returns as anticipated. Apparently, he planted cabbage (2.5 months old) and pumpkins (2 months old) both of which are progressing well with irrigation. ATC has continued to routinely monitor and provide technical support to Mr. Mbalule and other beneficiaries.

What does Mbalule have to say?

"I had lost hope in farming because it had turned out to be a money wasting venture. I would buy seeds expensively, dedicate my time to till the land and look after what I have planted but would end up registering losses because the crops would often dry before maturity and the few that would survive were always miserable yields.

This problem was affecting all of us in this community and some people actually gave up farming in substitute for brick laying and other petty jobs. Even when ATC came to teach us about the pond technology and storm water harvesting many people attended the meeting but had a lot of doubts and were skeptical about trying. I personally thought about it and decided to try. Since February 2024 when I started using the pond, I have seen good results and I am cultivating non-stop. I am capitalizing on short gestation period crops that I sell off season. In the first round i.e., in February, I planted Sukuma wiki a regenerative crop that I am still benefiting from. I am still harvesting/enjoying sales from sukuma wiki. I also planted cabbage on 1.5 acres and pumpkin on 01 acre. The crops are growing well and looking healthy yet my neighbors are grappling with challenges of intermittent rains. Right now I am celebrated as a model farmer and people keep on coming to study about my garden.

The recent group to come was from Buganda Kingdom led by Mr. Wycliff Luyombo, Kyagwe county chief. The group appreciated the pond technology I am using and requested me to connect them to ATC to go and promote it in Bukoba and Ntenjeru in Mukono district"

Promotion of solid waste management in schools

Polythene bags commonly known as “buveera” create a menace in our environment. Every visit to the shop or fresh food stalls, one goes back home with a polythene bag regardless of the quantity of goods bought. Even when one buys already packaged products like soda, soap and salt the seller still packs the goods to symbolize good customer care. With a population of 50million people according to Worldometer (2024) and the widespread poor solid waste management one can only imagine how much buveera end up in the environment daily. There is general lack of knowledge and hard skills on how to safely manage waste buveera without harming mother nature. Upon this background, ATC coiled a buveera management project that involves sensitizing people about the dangers of dumping buveera into the environment and also imparts the necessary skills to innovatively repurpose buveera in a more sustainable manner. Direct project beneficiaries so far are primary school pupils whom we are empowering to take a front line in protecting the environment for a brighter future.

They are encouraged to solicit for used buveera, clean them and bring to school for making different products under the guidance of ATC team. Lydia Namuyimba, the lead trainer on the project narrates how pupils picked interest and started growing bigger plans.

“It is a very interesting though a hectic experience standing to attend to over 65 pupils in one group. We train these pupils in groups i.e., a class of 65 pupils is divided into seven (07) groups and each group is guided on products to make. Some make door mats, others make bags, mats, rain jackets and cushions. In the first place they didn't know sewing so I had to teach them. I also have to keep guiding them on how to cut appropriate shapes. Though they work in selling the products they were making and targeting their groups, learner call for individual attention i.e., they keep



on calling me to see whether they are doing the right thing. The class is always filled with ...“teacher me ... teacher here ... teacher seeblabla”

Interestingly, when we sent them for materials for the first time, some did not bring. We started the project with the few materials brought. We asked those who had not brought materials to just sit and learn by watching what their friends were doing. In the middle of the hands-on exercise many pupils ran to the garbage skip outside their class and picked buveera with passion to also do what others were doing. We encouraged them to wash the buveera with water and soap then enrolled them into hands-on. By the end of the first interaction, pupils were very happy as their products had started shaping. Some of them started chatting about possible businesses by selling the products they were making and targeting their parents as prime customers”... Lydia Namuyimbwa.

