**SAFE WATER AND AIDS PROJECT (SWAP)**

**Annual Report – 2022**

Safe Water and AIDS Project (SWAP)

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**List of Acronyms**

| | |
|---|---|
| ABHR | Alcohol Based Hand Rub |
| ANC | Ante Natal Care |
| BMGF | Bill and Melinda Gates Foundation |
| CBO | Community Based Organization |
| CDC | Centers for Diseases Control and Prevention |
| CHMT | County Health Management Team |
| CHPs | Community Health Promoters |
| CHVs | Community Health Volunteers |
| CoP | Community of Practice |
| COVID-19 | Coronavirus Disease 2019 |
| DPDM | Division of Parasitic Diseases and Malaria |
| ECD | Early Childhood Development |
| FGD | Focus Group Discussion |
| FBO | Faith Based Organization |
| GWCN | Global Waste Cleaning Network |
| HCF | Harber Charitable Foundation |
| HCF | Health Care Facilities |
| HENNET | Health NGOs Network |
| IPC | Infection Prevention and Control |
| IUSSP | International Union of Scientific Study on Population |
| JOOUST | Jaramogi Oginga Odinga University of Science and Technology |
| KAP | Knowledge Attitudes and Practices |
| KEBS | Kenya Bureau of Standards |
| KEMRI | Kenya Medical Research Institute |
| KES | Kenya Shilling |
| KEWASNET | Kenya Water and Sanitation Civil Society Network |
| KIWASCO | Kisumu Water and Sewerage Company |
| LREB | Lake Region Economic Bloc |

| | |
|---|---|
| MNCH | Maternal Neonatal and Child Health |
| MOH | Ministry of Health |
| MORBID | Morbidity Operation Research for Bilharzia Implementation Decision |
| MOU | Memorandum of understanding |
| MRC | Medical Research Council |
| NIH | National Institute of Health |
| NTD | Neglected Tropical Diseases |
| NGO | Non-Governmental Organization |
| MUSERC | Maseno University Scientific Ethics Review Committee |
| NACOSTI | National Commission for Science, Technology and Innovation |
| OVC | Orphans and vulnerable Children |
| PLWD | People Living with Disability |
| PCR | Polymerase Chain Reaction |
| POC CCA | Point of Care Circulating Cathodic Antigen |
| PPE | Personal Protective Equipment |
| SARS 2 | Severe Acute Respiratory Syndrome 2 |
| SBCC | Social Behavior Change Communication |
| SCHMT | Sub County Health Management Teams |
| SOP | Standard Operating Procedures |
| SWAP | Safe Water and AIDS Project |
| SWE | Safe Water Enterprises |
| USAID | United States Agency for International Development |
| USC | University of Southern California |
| USD | United States Dollar |
| WASH | Water Sanitation and Hygiene |
| WSU | Washington State University |

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**FROM THE COUNTRY DIRECTOR'S DESK**

I am pleased to share the year 2022 annual report during which the country was still under the COVID -19 pandemic waves. Campaigns by political parties were heightened coupled with the general election that was held in August. Kenyans voted peacefully and remained calm during and after the election results were announced. SWAP in collaboration with the County Government of Kisumu, Department of Public Health and Sanitation organized 20 COVID-19 vaccination outreaches with support from Global Giving crowdfunding, Private donor and OXFAM.

The outreaches targeted vulnerable people including elderly, people living with disability, traders and families living in evacuation camps. A total of 3,267 people were vaccinated. SWAP supported Kisumu County with clearing of the backlog in the MOH Chanjo system. In total 7,602 data entries were done.

SWAP entered into a new partnership with PATH to test a prototype hand washing station in Dunga Primary School that has three spigots and is foot operated. New fund management was established with The University of North Carolina at Chapel Hill to manage a sub-award for a project titled: Randomized Controlled Trial to Address Unintended Pregnancy Rates in Low Resource Settings. SWAP received a team of 4 scientists from the University of Illinois at Chicago to train our Laboratory Staff on waste water based epidemiological and analysis for SARS 2 COVID-19. A PCR testing kit was donated to the Lab to conduct surveillance of COVID-19 in waste water including other parameters. SWAP entered into a new partnership with the Solar Soaker team from the Netherlands. Solar soaker is used for laundry whereby the solar heats up to 40 degrees. SWAP was officially registered as a member of Global Waste Cleaning Network (GWCN) for the period between 1st May 2022 to 30th April 2025

SWAP is an award winning organization. While celebrating the World Water Day observed on 22nd March, the Energy Globe Foundation announced a call for applications for the 2022 Energy Global Price. SWAP applied in the category of water focused on the community scale solar water treatment "sola maji" projects and won the award. SWAP was included in the application of the Medical Research Council (MRC) Impact Prize 2022: Outstanding Team Impact for our impact titled: *The impact of poor menstrual health and hygiene on adolescent schoolgirls and interventions to improve girls' health and equity.* We were recognized as an inspiring and successful team whose exceptional collaborative team science approach made an outstanding impact in medical research.

Two graduation parties for the Orphaned and Vulnerable children(OVCs) supported by SWAP with funding from Harber Charitable Foundation were organized. One completed her studies at

Jaramogi Oginga Odinga University of Science and Technology (JOOUST) and the other at Meru University. The two were hired as interns at the finance department and programs and research. SWAP staff were involved in the development of the 2023 to 2025 Strategic Plan. All organizational policies were reviewed and updated and summarized in popular versions.

SWAP received the KEBS approval for the liquid soap production and distribution at the 47 health care facilities and 56 hot spot areas in Nyando and Nyakach Sub Counties.

KEWASNET approved the application on capacity strengthening on the integrated management toolkit for small scale water supply systems and the Training Manager and M&E Coordinator attended the TOT training. A one-week scientific writing workshop was organized by Washington State University (WSU) and CDC and attended by the Country Director and Data Manager.

CDC awarded SWAP under the NOFO GH22-001 entitled, "Enhancing Capacity for Strategic and Applied Research Activities in Support of Control and Elimination of Malaria and Other Parasitic Diseases". This is a 5 year co-ag between 30th September 2022 and 30th September 2027. A collaboration with the University of Southern California in an Early Childhood Development (ECD) project for four years using mobile phone technologies.

SWAP hosted a stakeholders' meeting with Kisumu County Government Department of Water, Environment, Natural Resources, Siemens, Korumba and Sondu Safe Water Enterprises (SWE) representatives and Kisumu Water and Sanitation Company (KIWASCO). Successful handing over of Sondu Safe Water Enterprise to community members was accomplished.

I take this opportunity to thank all our partners for these enormous achievements and wishing everyone a prosperous and happy new year 2023.

When we work together, we achieve great things.

**Alex Mwaki,**
**Country Director**

**FROM THE TECHNICAL ADVISOR DESK**

2022, the 17th year of SWAP's existence in the public health space. A turbulent year with highs and lows. SWAP became even more relevant during the ongoing COVID-19 spread which was an opportunity to scale our activities. We promoted hand hygiene through the production of Alcohol Based Hand Rub and more recent Liquid soap. These products were distributed together with hand washing stations to health care facilities and hot spot areas. Support was given to Kisumu County to accelerate COVID-19 vaccination outreaches targeting the most vulnerable communities such as people with disability, street families and people living in informal settlements. We participated in COVID 19 waste-water based epidemiology research which data helped to project and plan for preventive measures. SWAP provided technical support to 8 facilities to generate their own chlorine for infection prevention and control. I am an active member of the Lake Region Economic Bloc COVID-19 advisory committee of eminent persons and we continued with weekly meetings, advisories and policy briefs for the Governors, Ministry of Health and Education from 14 counties in the lake region on COVID-19. We also established a semi real time data base for COVID-19. Under the Adopt a School Initiative SWAP continued to provide support to help schools comply with COVID-19 preventive measures. A new partnership was established with Durham University undertaking ethnographic and epidemiology baseline surveys on infection, prevention and control at health care facilities. We successfully handed over the Sondu Water Enterprise to Kisumu County to be managed by the community. Our two other solar powered water disinfection units remained very vibrant and offered quality water at an affordable rate to the vulnerable communities. SWAP because of this effort became winner of the Energy Globe Award in Kenya 2022, which was handed by the Austrian Ambassador during a ceremonial dinner in Kisumu. We were pleased to receive another 5 years of funding to do more research and interventions on neglected tropical diseases with a focus on bilharzia. Our state of the art water lab attracted more stakeholders and donors for research on products, innovations and interventions and water quality testing. Social marketing of life saving health products continued by community health volunteers and to stakeholders. Crowd funding through Global Giving and Donor See provided support for health care facilities and vulnerable cases in the communities such as people with disability, widows, orphans and vulnerable children. SWAP remained fund manager for a number of projects which created more revenue. We are thankful for ongoing support and dedication from all those who have contributed and engaged with us towards a healthy Kenyan Society. Hope to work together in 2023!

**Alie Eleveld**
**Technical Advisor**

**SWAP's VISION, MISSION AND CORE VALUES**

**Vision***:* A healthy and empowered community where everyone enjoys high quality life.

**Mission***:* To provide innovative solutions for improved health and economic status of communities.

**Core values:**

- **Dynamic:** We progressively look back, and use those experiences to determine our future direction.
- **Resilient:** We are resilient, and adapt to positive and negative changes and needs in society.
- **Integrity:** We ensure integrity in staff, by having controls, systems, processes in place and practice zero tolerance to corruption.
- **Efficiency:** We strive for better results & high productivity in products and services, and excellent execution of our duties.
- **Professionalism:** We believe in maximizing the skills and expertise of our human resource in the delivery of health interventions and research, providing quality, efficient and effective services.
- **Result Oriented:** We strive to provide result-oriented health services, minimizing costs and maximizing outputs.
- **Innovative:** We are innovative, and change is our constant. We embrace the unknown and are willing to go the extra mile to achieve our goals.
- **Diversity:** We embrace diversity among staff, partners, and stakeholders. We always ensure there is a positive spirit which underpins the way we interact with others.

**COMMUNICATION**

Facebook: www.facebook.com/Safe-Water-and-AIDS-Project-338690551549/?ref=hl

Twitter: @swapkenya

Website: https://www.swapkenya.org/

**ACKNOWLEDGEMENTS**

SWAP could not have achieved the successful implementation of its core business single handedly without the external support from the partners listed below.
To all we say a big **THANK YOU**.

- Lwala Community Health Services
- Center for Diseases Control and Prevention in Kenya and US.
- University of Illinois at Chicago
- Stockholm Environment Institute
- Harber Charitable Foundation
- VOx Impuls Foundation
- University of California- Davis
- International Union for the Scientific Study of Population
- Bill and Melinda Gates Foundation
- Gabriele Norado
- University of Southern California
- Kenya Medical Research Institute
- Kenya Bureau of Standards
- University of Durham
- Washington State University
- Oxfam GB
- STEMA
- Development Knowledge Link Africa
- Yellow House Health and Outreach Services
- Donor See
- Global Giving Foundation
- Board Members of Safe Water and AIDS Project Foundation - The Netherlands
- PharmAccess Foundation
- USAID Boresha Jamii
- Jaramogi Oginga Odinga University of Science and Technology
- Opero Services Limited
- Siemens Stiftung
- CARE Kenya
- Elascon
- SolaSoka
- Ama Vantastic
- Liverpool School of Tropical Medicine
- Ministry of Health/ Education/Water and other GOK departments
- KIWASCO
- KEWASNET
- Behan and Okero Advocates
- Lake Region Economic Bloc COVID-19 Advisory Committee
- Ujima Foundation

## 2022 IN A NUTSHELL

## 1. Program Activities

### I. Distribution Model of Health and Hygiene Products

The distribution of health products in Kisumu, Vihiga and Ahero offices is one of our major activities that aims to increase access to life saving health products to vulnerable and underserved communities within SWAPs area of operation and beyond. Social marketing of health products at the household level and community groups done by the community health promoters continued in Vihiga County. Refresher training to the existing Community Health Promoters (CHPs) and training of new CHPs was done to scale up distribution of health products, and increased awareness to communities on disease prevention through behavior change communication techniques. The CHPs become self-reliant and useful members of society through social marketing of the health products and improving health while generating income. Kegondi CHPs in Vihiga benefitted from a donation of KES 45,000 from Donor See that boosted their Village Savings and Loaning kitty. They also participated in a group village savings and loaning scheme and a percentage of what was collected in every sitting supported the purchase of health products. Health products in the basket include water treatment products, ceramic filters, soap, hand washing stations, sanitary towels, satopans, sanitary solutions, hand sanitizers, cook stoves, mosquito bed nets among others. Total sales made for each center during the year under review was as follows; Kisumu - Kshs 5,338,663, Ahero Kshs 203,727 and Vihiga Kshs 5,545,924. SWAP participated in various exhibitions organized by KEWASNET, during the NGO Week celebrations and AFRICITIES hosted by the County Government of Kisumu. Networking with different partners and stakeholders was key in the sale of WASH products.

*Figure 1: Cheerful CHPs from Sabatia receiving health products for social marketing activities in the community*

## II. Orphans, Vulnerable Families and Emergency Response

Orphans, vulnerable and emergency response program's main objectives are to support individuals and families from vulnerable backgrounds through school fees, medical needs, basic needs, psychosocial support and business startup costs to enable beneficiaries move towards self-reliance and sustainability. SWAP's role is to provide oversight and mentorship to beneficiaries through facilitation of basic requirements, school fee payment, medical needs, regular follow-ups and visits to beneficiaries. Under this program, we supported 10 beneficiaries. Several community members benefited from a one-time emergency support based on their needs and challenges.

All eligible beneficiaries were supported through annual subscription at the National Hospital Insurance Fund to cater for their medical needs. Roy, a boy with sickle cell received direct medical support in the form of cash to facilitate purchase of his monthly drug prescriptions and clinic appointments. He had a successful bone marrow transplant for his sickle cell anemia condition done in India and as a result has already exited the program as a beneficiary in December 2022. Another medical case included was Jamin, a child with autism and we supported her to attend medical appointments and treatment.

We continued supporting school fees for two family members of the late Jemima, who was a role model and one of the first widows who went public on her HIV status. We paid school fees as well for the younger brother of Nivah, who was a beneficiary of SWAP after her mother passed away during the post-election violence. Following a course at Ujima Foundation she is now working in the hospitality industry. We included Oscar whose mother was a very active community health promoter but died in a road accident. Oscar is head of the household with four orphans in the home left by his late single mother. He was supported with fees for the polytechnic to undertake a course in building and construction and a bicycle for his transportation.

Sheila and Armstrong, referred by Child Link many years ago, graduated with bachelor's degrees from JOOUST and Meru Universities respectively and were placed on internship and mentorship program at SWAP between May and December 2021. This was meant to be an exit strategy for beneficiaries to gain the relevant experience and become self-reliant. Armstrong will officially be joining the finance department for formal employment from January 2023. Veronica joined Ujima Foundation undertaking a course in Hairdressing and Beauty. Sheila and Veronica will exit the program in June 2023. This support was made possible through donations from Harber Charitable Foundation and Gabriele Norado for which SWAP appreciates and applauds them for making a difference and impacting positively on the lives of the needy in our communities.

*Figure 2: Armstrong and Sheila during their graduation celebration*

### III. Community Scale Solar Water Treatment "Sola Maji"

SWAP in collaboration with University of Illinois Chicago, County Government of Kisumu and local engineers established two communities scalable solar powered kiosk in Ahero and Chuthber. During the period under review, the two community solar kiosks served the community effectively with safe clean water. SWAP has supported the local kiosks in monitoring of the water quality every month. Tremendous improvements and achievements have been observed in the two water enterprises in terms of the quality of drinking water and provision of safe drinking water to the community members. Both systems had less breakdowns and more water due to bigger storage tanks. Other activities besides water sales in the centers included; table banking, car wash, tree seedling sales and social marketing of health products.

*Figure 3: Sola Maji water kiosk in Chuthber*

## IV. COVID-19 Response

SWAP facilitated 20 COVID-19 vaccination outreaches in 2022. A total of 3,267 people were vaccinated. Target groups were people from flood prone areas, informal settlements, traders and the general public visiting the markets, street families, the elderly and people living with disability. SWAP supported 5 days of data entry, in total 7,602 people were entered in the MOH Chanjo System. Funding for COVID-19 response was received from Global Giving and Harber Charitable Foundation. Weekly meetings with the LREB COVID-19 Advisory Committee of Eminent persons and issued advisories and policy briefs to Governors of 14 counties. COVID-19 Dx database with semi real time data and expanded to other infectious diseases for surveillance.


*Figure 4: COVID-19 vaccination outreach in flood evacuation camp*

## V. Adopt A School Initiative

Adopt a School Initiative support continued at Ombaka Primary School. This initiative was started to help schools to comply with COVID-19 rules and regulations. In 2022, SWAP delivered additional hand washing stations, liquid soap and sanitary pads for all eligible girls. A kitchen was constructed for the feeding program to continue and food items were procured. Toilet facilities were improved. Donation of hand washing stations and soap was done at Dunga Primary School following the evaluation of a prototype hand washing station. An assessment was done at Jamilo Primary School, a private school in Nyamasaria. Following the assessment gaps were identified and several supplies were donated, such as hand washing stations, liquid soap, ceramic filters and sanitary pads.

*Figure 5: Donation of handwashing stations and soap at Ombaka Primary School*

### VI. DonorSee

Donor see is a US charitable Crowdfunding platform. Cumulatively, SWAP has raised a total of USD 14,937. To support the projects SWAP would post a video and a narrative, then follow up videos to close out the project through the crowd funding platform. Most projects are in support of very vulnerable families such as widow and orphan support, wheelchairs for disabled, medical support among others. SWAP has fully supported 29 projects. More details on projects can be viewed at; https://donorsee.com/swap

*Figure 6: Support to a person living with disability to conduct business*

### VII. Global Giving

Global Giving is a US based crowdfunding platform. Two projects are active on this site. One project titled "Help Protect Health Workers in Kisumu County" was introduced during the start of the COVID-19 pandemic. Cumulatively, USD 4,835 was raised from 30 donations. Funds were used to support health care facilities with water tanks, hand washing stations, soaps, masks, gloves and other essential supplies. In December 2021, SWAP received an additional donation of USD 10,000 specific for COVID-19 response and this was used to support the acceleration of 20 COVID-19 vaccination outreaches targeting the most marginalized communities.


*Figure 7: Donation of a hand washing station during COVID-19 pandemic*

The second project uploaded on Global Giving was on liquid soap making to improve hand hygiene. SWAP received Kenya Bureau of Standards approval to produce liquid soap. An initial round of free supplies was issued to 47 health care facilities, but currently liquid soap is sold through social marketing by community health volunteers and to markets and partners. There is high demand for the soap. So far only USD 10 was raised through Global Giving.

*Figure 8: Liquid soap production at SWAP Laboratory*

## 2. Research Activities

### I. Building block for positive community health

STEMA is a disruptive research group promoting sustainability, health and wellbeing in low resource settings worldwide through community led research and action The study aims to develop tool kit and approaches that will bring the science of decision-making to the field of global health. This is being done through local community engagement in three regions in Kenya including **Siaya** County which represents rural settings, **Nakuru** County which represents an urban setting, and **Baringo** County which represents pastoral community. Through mathematical modeling, STEMA is building a system to support decision-makers in identifying the most effective health interventions. The study is in three stages and so far two stages have been accomplished and analysis is ongoing, plans are underway to continue with stage three in 2023.

The following activities done in both stage 1 and 2.

**Stage 1: Conceptualization**

To understand what constitutes positive health at the individual, family, and community levels i.e. the positive health building blocks. What are community priorities for health and wellbeing?

**Stage 2: Measurement**

To understand how each building block for community health can be conceptualized and measured i.e. to collaboratively define each health building block and to agree on how each building block for positive health can be measured.

### II. Monitoring, evaluation and reduction of Intestinal schistosomiasis and soil transmitted helminthiasis

Schistosomiasis is a parasitic disease belonging to the Neglected Tropical Diseases (NTDs) group. Transmission is by skin contact through specific water snails found in freshwater bodies. It affects more than 200 million people globally, and as a parasitic disease it comes second after malaria. Schistosomiasis is associated with poverty and limited access to clean water and sanitation. As a public health concern; WHO has recently published target product profiles (TPPs) of the assays that are needed for schistosomiasis control programs, both in the monitoring and evaluation (M&E) stage and the interruption of transmission and surveillance stage. New diagnostic antigens being developed for this purpose need to be evaluated. Therefore, more research is needed to provide evidence based decisions in the control of this disease. **Monitoring, evaluation and reduction of Intestinal schistosomiasis and soil transmitted helminthiasis** is a new study whose focus is to determine schistosomiasis-associated liver morbidity and markers for monitoring and evaluation of morbidity, and a level of water, sanitation and hygiene (WASH) that correlates with more

effective reduction in prevalence after mass drug administration (MDA) in a schistosomiasis (SCH) and soil-transmitted helminthiasis (STH) control program in endemic areas of western Kenya. The study has both cross sectional and longitudinal designs. It is borrowing most of the objectives from the previous studies done both in Homabay and Siaya Counties. Target population includes preschool age children, school age children and adults. The protocol was reviewed awaiting corrections from the Principal Investigator and Co investigators. Year one budget has been approved and procurement of supplies initiated. All the previous studies were closed after successful achievement of study goals and objectives.

*Figure 9: How people get infected with bilharzia through skin contact of infested fresh water*

### III. Markers for Monitoring and Evaluation of Schistosomiasis Control Program

This was a one year study whose objective was to generate sets of biological samples from persons with Schistosoma mansoni or S. haematobium infections that can be used for laboratory development and evaluation of new diagnostic tools for assessment of morbidity, monitoring and evaluation of ongoing control programs, and elimination and surveillance in Western Kenya. The study site was Homabay and Siaya counties respectively. The total number of participants enrolled were 1,279 in Homabay County and 290 in Siaya County. Study participants were adults aged 18 years and above. One objective had a longitudinal arm that saw study staff do follow ups at various intervals. Although the study ended in September 2022, follow up is ongoing. Part of the learnt lessons and research development from this study have been used to put up a bigger study that will run for 5 years. The study encountered two Serious Adverse Effects (SAE) including death of a participant and hospitalization for surgery of another participant that were reported to the Ethical and Scientific review committee. The good news is that the SAEs were not study related.

Dissemination meetings were conducted to all the stakeholders and relevant information about the study given out.

## IV. Solar Soaker

The Solar Soaker is a 10 liter basin of recycled plastic with a black plastic foil and a transparent plastic cover. The system is robust and can withstand at least 1,500 laundry sessions. The solar soaking process involves:

- dissolving the detergent in cold water
- submerging the laundry
- closing the basin with the cover
- leaving it to soak in the full sun

The key benefit is that the sun heats up the wash solution to the point where stains and dirt are removed without further need for hand washing, as the key active ingredients in the detergent work best at around 40°C. This temperature can be achieved in an hour in direct sunlight, but the device heats up effectively without direct sunlight. It uses the physical principles of a greenhouse to capture the heat of the sun.

SWAP participated in qualitative research on the Solar Soaker at 9 health facilities i.e. Ahero, Rabuor, Nyang'ande, Katito, Pap Onditi, Nyang'oma, Muhoroni, Masogo and Boya nursing home. Focus group discussion and laundry practices observations were done together with clinicians and other healthcare workers/casuals supporting laundry work in each facility. Experiments were conducted in the field at the health facilities laundry services area and also at SWAP lab.
SWAP in collaboration with Solar soaker is searching for funding to evaluate this innovation at health care facilities.

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*Figure 10: Solar soaker demonstration at SWAP offices*

## V. Enhanced preparedness and response to communicable diseases in Kenya

SWAP continued with the production, distribution and monitoring of ABHR in all the 47 public Health Care Facilities (HCF) in Nyando and Nyakach Sub Counties. During the intervention period, a total of 5,522 liters of ABHR was produced in the SWAP lab and 2,760 liters was distributed to the health facilities. Through community hotspot mapping, a total of 59 high-traffic locations which included Community-based organizations (CBOs), chief camps, administrative offices, law courts, matatu booking offices, revenue offices for open-air markets, rice processing plants, police stations, and worship areas were identified and continuous supply of WASH supplies maintained throughout the study intervention period. SWAP dispatched supplies of ABHR to Northern Kenya for the Yellow Fever Vaccination campaign.

IEC materials (posters) were developed and distributed to all the High Traffic Locations and Health Care Facilities to enhance messaging and behavior change. SWAP also developed a curriculum of training for community leaders, community health assistants (CHAs) and public health officers (PHOs) on Social Behavioral Change Communication, Hand Hygiene, Roles and Responsibilities, Monitoring and Reporting which was accompanied by trainings and mentorship on WASH and hygiene practices. Dissemination of evaluation results was conducted to stakeholders.

SWAP got approval from the Kenya Bureau of Standards (KEBS) to produce liquid soap and since then the production is going on. So far a total of 380 liters have been produced and 228 liters distributed to HCFs and community high-traffic locations. SWAP is in the process of publishing a paper on ABHR production “title Improving access to locally produced alcohol-based hand rub through public-private partnership during the COVID-19 pandemic in healthcare facilities and community settings in Western Kenya.

## VI. WASH Infection Prevention and Control (IPC) in HCFs

This is a pilot study bringing together epidemiology and ethnographic research on Infection Prevention and Control in Health Care Facilities in Nyando and Nyakach Sub Counties.
This study is done in collaboration with Durham University and Washington States University. Baseline data was collected in 4 health facilities i.e.; Ahero County hospital, Nyakongo health Centre, Katito Sub County hospital and Gari dispensary hospital in Nyando and Nyakach Sub Counties. Two qualitative researchers were hired and supported by SWAP’s research team.

Introduction meetings to Kisumu County and Nyando and Nyakach Sub Counties Health Management meetings were done before the pilot. We conducted a workshop with IPC focal persons, In-charges of 4 health facilities and Public health officers to share experiences and identify and prioritize gaps which needs addressing.

With lessons learned from the pilot. we are submitting a proposal to develop a new research-based approach that will help deliver the five elements for IPC multimodal strategies as defined by the WHO, namely system change, education and training, monitoring and feedback, reminders, communications and safety culture. We hope to approach these issues in new ways by using ethnographic and epidemiological insights and participatory action. This will allow us to identify the most pressing gaps in IPC and develop, deploy and evaluate sustainable interventions appropriate for the local context.

## VII. COVID-19 Waste Water Based Epidemiological Study

This study is in collaboration with the University of Illinois at Chicago and entails the surveillance and prevalence of COVID-19 disease through the monitoring, testing by viral RNA (Ribonucleic Acid) extraction and amplification of the detected SARS-COV-2 (Severe Acute Respiratory Syndrome of Corona Virus Type 2) viral particles by qPCR (Quantitative Polymerase Chain Reaction) followed by subsequent genomic sequencing at the USAMRU/ Walter Reed Medical Institute. The target testing sites include hospitals, market centers, public transport sections, waste water treatment plants and any other highly regarded hotspot area with the major sample type being waste water.

Study Sites Included;

- Jaramogi Oginga Odinga Teaching and Referral Hospital (2 sites).
- Kisumu County Referral Hospital (General)
- Nightingale Hospital; Port florence Community Hospital
- Chulaimbo Hospital and Kisumu Bus station (5 sites)
- KIWASCO – Waste Water Treatment Plants (2 sites)
- Kibuye Open air market (4 sites) and Ahero Open Air Market (4 sites)
- Corona Open air market (3 sites) and KEMRI/CGHR (2 sites)
- Kisumu Railway Station and Kodiaga Maximum Prison (4 sites)
- Kisat River and Obunga sewer line
- Nyawita Sewer line and Nyalenda, River Wigwa (Nanga bridge)
- Manual pit emptier.

*Figure 11: Testing of waste water samples using qPCR and analyzing results*

## VIII. COVID-19 Testing and Risk Stratification Tool for Decentralized Care

SWAP managed the Bill and Melinda Gates Foundation grant to enable piloting of and acceleration of evidence generation and demonstration of antenatal risk stratification and connected Antenatal Care (ANC) diagnostics in driving improved Maternal, Newborn and Child Health (MNCH) outcomes by bringing improved quality and accuracy of care and risk assessment for pregnant women in lower level health facilities in Kisumu County. This project partnered with Kisumu County Department of Health, CHAMPS/ARC project and ILARA Health to pilot a package of innovative tools and services in an agile, iterative fashion to explore whether they can close the gap in provision of ANC during COVID-19, and perhaps even improve the overall resilience of the MNCH health system post-COVID. The differentiated ANC package involved 1. Stratifying pregnant women into high risk and low risk pregnancies, 2. Strengthening primary facilities to offer ANC profile using Point of care diagnostic devices and attend to women with low risk pregnancy, and 3. Ensure women receive four in-person ANC contacts in health facilities with the remaining four contacts conducted through telemedicine or in the community. This project came to an end in August 2022 and final narrative and financial reports were submitted to the Gates Foundation.

## IX. Fertility Preference and Contraceptive use among Mothers of Reproductive Age in an Informal Settlement

SWAP became the fund manager of this study funded by the Internal Union for the Scientific Study of Population (IUSSP). Due to COVID-19 pandemic, the study was delayed and this affected the funding period. The project was aimed to produce policy relevant evidence on the effects of family planning and fertility change on urban welfare. The funds were to be used to present research results at scientific meetings, policy dissemination activities, and any publication costs. In addition, the PI was expected to participate in all fellowship events and workshops organized by the Panel on Fertility, Family Planning and Urban Development in Africa and South Asia. The Principal Investigator was later requested to perform Special Advisory services engagement during AFRICITIES Summit that was hosted in Kisumu City. Unutilized funds were refunded back to IUSSP.

## X. Chlorine Generation at Healthcare Facilities

The STREAM Disinfectant Generator provides a continuous flow of disinfectant solution from common salt and electricity. The chlorine-based solution generated by the STREAM System complies with national and international guidelines for disinfecting surfaces, medical devices, and instruments. In 2021, SWAP received funding from Vox Impuls to train and install the STREAM disinfectant generators at 8 health care facilities namely Ahero, Katito, Nyakach, Lumumba, Chulaimbo, Gita, Muhuroni and Kombewa. The facilities have been producing up to 1,000 litres per month and distribute as well to other facilities. SWAP continued to give technical support and facilitated repairs and troubleshooting where needed. Ongoing research continued in 2022 to determine whether chlorine production in health care facilities using the STREAM disinfectant generator is feasible and practical. We compared shelf life of three types of chorine- STREAM produced chlorine stabilized by alkalinizing to pH between 11-12; STREAM chlorine not stabilized (i.e. not alkalinized) and Commercial Chlorine. This project is a partnership between SWAP, Kisumu County Department of Health and Sanitation and Aqua Research.


*Figure 12: Lab Manager monitoring the performance of STREAM disinfectant generator*

### XI. Household Stored Drinking Water Quality Study in Mugruk

This study addresses bacterial contamination of water intended for drinking in homes in Mugruk, where we established the Sola Maji; Solar Powered Water Disinfection Unit. The Household Stored Drinking Water Quality study is implemented by SWAP in collaboration with University of Illinois at Chicago and Jaramogi Odinga Oginga University of Science and Technology (JOOUST). Protocol approval was done through JOOUST Ethical Review Committee.

The study aims to;

- Characterize changes in levels of *E. coli* bacteria in water from the source, through treatment, household storage and use in Mugruk, Kisumu County in Kenya.
- Compare changes in *E. coli* levels during household storage as a function of water treatment method.

Training of the research team and the first phase of the study ended in December 2022. Phase two did not pick up immediately because of the rains. Continuation of the study will be in January 2023 during the dry season.

## 3. Laboratory Services

Since 2007 when the research water laboratory was established it has proven to be an essential asset with capacity to do water quality testing; bacterial and full chemical analysis. Apart from water quality testing it has supported research partners to test products, technologies and

innovations. The lab has continued to improve and modernize using latest technologies with support from various donors and partners. Lab technicians have been well trained to generate real time data that is accurate and verifiable. It has supported disease surveillance and contributed to various research publications in international peer reviewed journals. In 2022, SWAP was contracted by USAID Boresha Maisha to analyze selected water sources in Kakamega County. 97 samples were brought from diverse water sources for water quality testing. Results were disseminated for action.

Ahero and Mugruk Sola Maji monthly water quality tests were done in the lab to ensure that the water sold is fit for human consumption. Both sites are checked for the *Escherichia coli (E. coli)* and *total coliforms*.

Towards the end of the year SWAP signed a contract with Opero Services to analyze waste water samples in the lab from a biogas digester. Other partners who engaged the lab were NHA hospital, County Foods, Siemens Stiftung, CARE Kenya, Jamilo School and Braeburn School. These partnerships is supporting the lab towards sustainability. The lab teamwith their wealth of experience and skills were approached several times to provide technical support and they mentor and train local and international students. The Lab Manager supported the County of Turkana with training on how establish a production unit of ABHR. Also technical support was given to Jaramogi Odinga Oginga Teaching and Referral Hospital Unit who also have a production unit of ABHR. As such the lab became an important learning hub.

*Figure 13:SWAP Lab technicians working on production and packaging of Liquid soap*

## 4. Partnerships and Networks

In the year under review, SWAP entered into a new partnership with PATH to test a prototype hand washing station.

New fund management was established with The University of North Carolina at Chapel Hill to manage a sub-award for a project titled: Randomized Controlled Trial to Address Unintended Pregnancy Rates in Low Resource Settings.

SWAP renewed partnership with the University of Illinois at Chicago to train our Laboratory Staff on waste water based epidemiological and analysis for SARS 2 COVID-19 and to conduct a study on quality of stored drinking water.

SWAP entered into new partnership with the Solar Soaker team from the Netherlands.

SWAP was officially registered as a member of Global Waste Cleaning Network (GWCN) for the period of three years. SWAP is a strong advocate of partnership and networking. It has remained a vibrant member of various networks and forums at Global, National and Regional levels. Below are partners who collaborated with SWAP;

- Global Waste Cleaning Network
- Global Community of Practice on Decentralized Chlorine Generation
- Global Community of Practice on WASH in Healthcare Facilities
- Global Hand Hygiene Advisory Board
- Innovations in Health Care
- National WASH Sector Coordination
- National Commission for Science Technology and Innovation
- Health NGO Network (HENNET)
- Kenya Water and Sanitation Civil Society Network, (KEWASNET)
- Early Childhood Development Network
- National WASH and Ebola Technical Working Groups
- Lake Region Economic Bloc COVID 19 Advisory Committee of Eminent Persons
- Maseno University Scientific Ethics Review Committee
- Jaramogi Oginga Odinga University of Science and Technology Ethics Review Committee
- Western Kenya Humanitarian Hub
- County and Sub County GOK Departments (Health, Water, Education)

## 5. Major meetings and Forums attended

SWAP was ably represented in major events that happened such as;

- 10th Lake Region Economic Bloc Health Summit
- Grace Onyango Foundation Launch
- MOH stakeholders meeting

- World Water Forum
- Early Childhood Development Network Meeting
- Reproductive, Neonatal, Maternal and Child Health Multi stakeholders Forum.
- Global Handwashing Day
- World Toilet Day
- World Water Day
- NGO week in Kisumu
- Dutch Kenya partnership on Digital Health Forum
- Humanitarian Hub meeting
- WASH TWG workshop Nakuru
- Scientific writing workshop in Naivasha
- COVID-19 vaccination consultative meetings
- National Ebola WASH Technical working group
- Strategic planning workshop
- KEWASNET TOT, Technical working group and exhibition
- PKF training on financial reporting
- USAID Western Kenya sanitation project workshop
- Water quality monitoring training Nairobi
- Stakeholders sensitization meeting in Kisumu County
- Menstrual Hygiene management steering committee
- 3rd generation Kisumu CIDP development in water and health sectors
- Integrated management toolkit for small scale water supply systems
- Kisumu city public sanitation facilities SOP launch
- Energy globe ceremony

*Figure 14:Award ceremony of the Energy Globe Award handed over by the Austrian Ambassador and commercial counselor*

## 6. Human Resources and Administration

- A total of 4 students were on industrial attachment in the Procurement, Water Lab and CDC Schistosomiasis Diagnostic Lab departments.
- Two Interns were in Finance and Front Office departments
- A Water Operator was recruited for Ahero Sola Maji kiosk and a Field Assistant who was a former staff member was recalled to work in the CDC Schistosomiasis Study.
- Consultancy contracts were awarded in various projects such as; DIFFCOV, CDC Schistosomiasis, Solar Soaker, Chronic Kidney Disease, PATH and STEMA.
- SWAP policies were revised and popular versions were also developed.
- The total number of staff at the beginning of the year was 75 i.e. 35 males and 40 females and by December 2022, there were a total of 41 staffs.
- A total of 13 new staff were on board; 5 Data Collectors, 1 Data Assistant, 2 Lab Technicians, 3 Field Assistants and 2 Water Operators, and renewed employment contracts for 72 staff for various periods of time.
- Two Volunteers assisted in Product and water sales at Ahero Model Village.
- The Annual Performance Appraisal for the staff for the period of January to December 2021 was successfully done.
- The prequalification of Suppliers for the financial year 2022/2023 was completed.
- SWAP welfare supported staff who were bereaved and those who had newborns.
- SWAP staff developed a three-year Strategic plan 2023-2025.
- SWAP recognized and appreciated the staff for their long service and loyalty by issuing certificates of long service. Employees who had served for 5 years were 9, 10 years was 1 and 15 years were 2 staffs.

*Figure 15: SWAP Staffs*

## 7. Finance

Finance department was able to navigate the finances and operations by carefully accounting for the Project's funds, efficiently managing organisation resources, plan and provide for adequate funding of services required both within SWAP and in the community. In addition, financial reporting in accordance with the organisation policy, Statutory requirements and Generally Accepted Accounting Principles was done.

Our revenue, both restricted and unrestricted was Kes.94 million, 20% down and our expenditure was Kes.104 million also 20% down compared to prior years. The decrease was primarily as a result of COVID -19 pandemic, completion of major research projects, delay in commencement of new project and the political climate.

The revenue included donor funding, deferred income, SWAP income generating activities and currency gains. For the third year in a row, SWAP was audited by Ronalds LLP and the returns successfully filed to the NGO Coordination Board and Kenya Revenue Authority.

SWAP continued to leverage on long term funding for sustainability; improving donor relations and budget negotiations; fast track all project implementation as per agreed donor timelines and negotiating for better exchange rates with our bank additional increasing our product basket and identifying new markets to boost our IGA.

### Funding Partners for the Year 2022

- CDC - US department of State
- Lake Region Economic Bloc COVID 19 Committee of eminent Persons
- IUSSP
- Harber Charitable Foundation
- DonorSee
- Yellow House Outreach Services
- Gabriele Norado – Well wisher
- ELASCON
- UNC at Chapel Hill
- Global Giving Foundation
- OXFAM
- CARE Kenya
- CDC
- STEMA
- Sunset Golfing Society
- University of Illinois at Chicago
- PharmAccess
- Opero Services Limited
- Bill and Melinda Gates Foundation
- PATH
- Siemens Stiftung
- Washington State University
- Abt Kenya IRS
- University of New England
- Vox Impuls
- Ama Vantastic -Solar Soaker
- USAID Boresha Jamii
- University of Durham
- DevLink

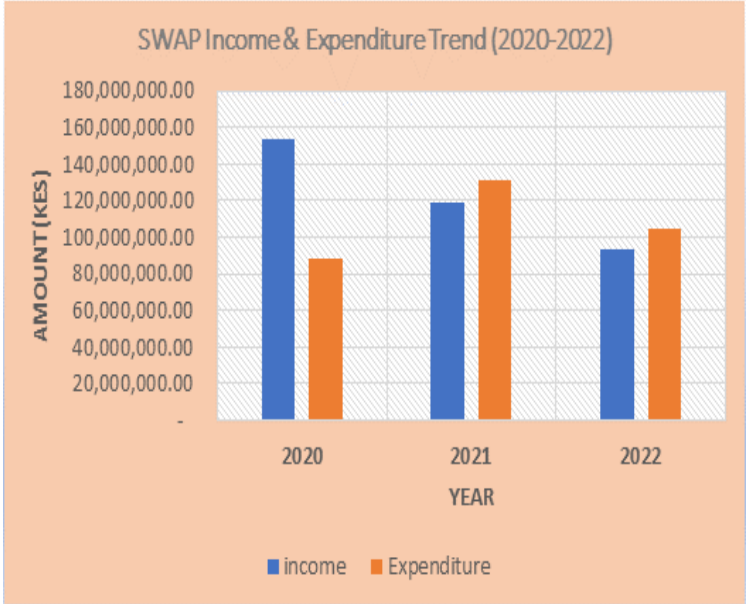


*Figure 16: Income and expenditure trends*

## 8. Challenges

- The impacts of COVID -19 pandemic, rising cost of living, currency fluctuations, soaring food prices poverty and hunger, election and post-election effect in Kenya
- Erratic weather patterns with ever increasing effect of climate change
- High cost of living and increases in prices of rent, fuel and commodities.
- Donors support not covering all personnel and operational costs.
- Donors paying on cost reimbursement
- Relying on old vehicles which are expensive in maintenance and operation.
- Abrupt resignation of Water operator after serving for only one month.
- Delay and postponement of Suqia Global Water Award.
- Some few rejects of proposals submitted due to high competitiveness and eligibility criteria·
- End of staff contracts due to completion of studies and changes in the level of efforts due to reduced funding.
- Death of the Project Coordinator for DIFFCOV Study.

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