



## **the SAM project** 2021 Newsletter

### **A message from the Board of Directors:**

There are probably few people on this planet Earth who were not touched in some way by the uncertain, chaotic, and genuinely scary circumstances and events of the past year. Of course, the hardships and losses of Covid, climate change, economic turmoil, and the disruption of normal life have not been evenly endured, and some families, communities, and countries have suffered more than others. Our hearts go out to people everywhere who have experienced first-hand the negative impacts that this year 2021 has wrought.

Remarkably, Zambia somehow evaded the very worst of the COVID outbreaks, although the lack of vaccines in Southern Africa and much of the Global South should continue to be of concern to all of us. And the Southern Province of Zambia, where The SAM Project operates, remains on the front lines of climate change. The SAM Project believes that our work in the region will continue to be critically important in the years to come.

On the positive side, in 2021, COVID travel restrictions caused The SAM Project to fast-track our plans to "localize" our programs, and the results have been very gratifying. Despite the formidable challenges of distance and travel restrictions, several skilled and energetic Zambian professionals volunteered to take over the implementation of our ongoing programs in water, sanitation, and agriculture. We salute these individuals who expend such great effort on behalf of their friends and neighbors.

In this annual report, you will read about our realistic and ambitious plans for 2022. As ever, we offer our heartfelt gratitude to our supporters and partners who give so much to make this work possible.

Colin Eves  
Director

## In loving memory of Teddy Ncube:

In 2021, our National Director, Teddy Ncube succumbed after a very brave and somewhat miraculous battle against advanced prostate cancer.

Since our first days in Zambia in 2007, Mr. Teddy was our guide and mentor in all we did in Africa. Despite our naivety and inexperience, Teddy took us under his wing and gently coaxed us along in our well-meaning, if initially clumsy, efforts in his adopted country. Teddy had moved across the Zambezi River from Rhodesia into the newly independent country of Zambia when he was a child, and over his sixty-plus years in the village of Nsongwe, proved himself an integral and highly-respected leader of his community. Teddy was a school teacher, skilled farmer, senior headman, and the patriarch of an extended family numbering in the scores, especially when you include the many SAM Project volunteers and partners whom he proudly referred to as his "Canadian children".

A man of uncommon wisdom and dignity, anchored by his strong faith and his positive outlook on life, Teddy will be sorely missed by his family, his community, and all of us at The SAM Project. We are truly lucky to have called him our colleague and our friend.







SUSTAINABILITY THROUGH  
AGRICULTURE AND  
MICRO-ENTERPRISES

## Who We Are

The Sustainability through Agriculture and Microenterprise (SAM) Project, is a volunteer-run Canadian-registered charity working in the dry lands of rural Zambia. We're a handful of Canadians and Americans who have partnered with a growing network of professionals and communities in Zambia.

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## What We Do

We work alongside Zambians in a community-driven approach towards a dignified and sustainable livelihood. Our collaborative programs focus on three fundamental needs: access to clean water, drought-resilient agriculture, and income diversification.

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## How We Do It

SAM utilizes a holistic approach to take on the social, economic, and environmental challenges facing rural Zambians. We concentrate our limited resources on building a variety of programs in one community, rather than diluting our impact over a larger area. Applying extensive research and creative problem-solving, while leaning on proven methods and technologies from other jurisdictions, provides a much bigger "bang for the buck".



## Adapting to COVID-19



**From producing robes for tourism, to producing masks for public health:** When the pandemic started, Zambia only had one ventilator per million people and was drastically under-resourced in terms of Personal Protective Equipment. SAM's women's group, IMINA, stepped up to the task as a member of the "Mask up Campaign" and ceased producing robes in order to produce masks for front-line workers who would otherwise be unprotected.



**From being reliant on Canadian volunteers, to being designed, managed, and fully implemented by Zambian professionals.** The pandemic and the associated travel restrictions exposed how dependent our programs were on non-Zambian staff. We chose to pause operations in 2020 and restructure our programs around 100% Zambian management.

**The SAM Project would like to thank Henry Lungu, Rabecca Tembo, Josephine Chiila, Maambo Lilando, and Mainza Chavwanga for their hard work, creativity, and time, to which we owe credit for all achievements in 2021.**

Funded by:



## DiWaSSAA: Diversifying Water Supply in Semi-Arid Africa

After pausing operations in 2020 due to COVID-19, the DiWaSSAA program was revived this year under Zambian leadership. This year we saw these professionals:

- continue to perform action research into alternative water supply technologies;
- attend trainings on water harvesting and watershed management;
- train the Masanzya communities in waterpoint maintenance, watershed management, sanitation and hygiene, and household water treatment and storage; and
- construct 5 new waterpoints in the community.

### What alternative technologies have seen success elsewhere in Semi-Arid Africa?



Check Dams



Sand Dams



ROWA Pumps



Sub-surface Dams



Protected Wells



Roofwater Harvesting



Household Filters

**What does "access to clean water" actually mean?** Clean water supply in Zambia currently relies on the installation of centralized borehole wells. Due to low-density settlement patterns and the costs/challenges of installing these wells in southern Zambia, families continue to walk long distances to collect water, even after they're considered "serviced".

**Through the installation of decentralized and diversified water points, DiWaSSAA has decreased the average distance to an improved water source in Masanzya from 7.4km to 3.9 km.** Our goal by 2023 is for 90% of Masanzys to have an improved water source within 1km of their homestead.

Schematic/image sources: CAWST, Dabane Trust, UNEP, BGS, and Hailu Addis

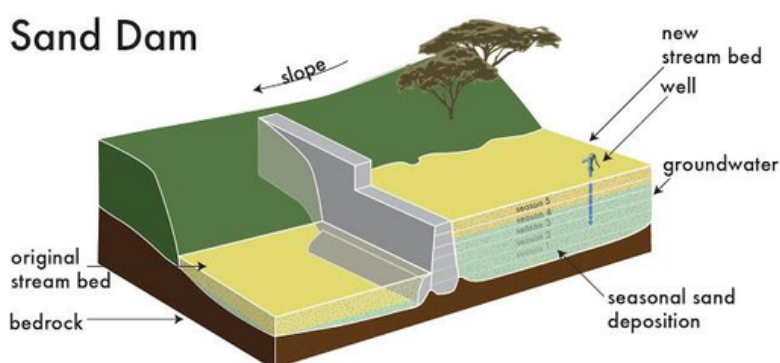


## Launching Sand Dams in Zambia:



**Sands dams are strategically constructed so that their reservoirs fill with coarse sand which forms an artificial aquifer.** The dam retains rainy season runoff that typically drains out of reach from the community. The sand filters the water while protecting it from evaporation, and surrounding water tables are recharged in the process. A hand pump can then be added in the sand to allow for easy abstraction of clean water.

**Sand dams are gaining traction as a promising drought-resilient water supply technology across Africa, and SAM has launched the technology in Zambia.** In 2019, SAM sponsored Engineer Henry Lungu to travel to Kenya to learn how to site, design, and construct sand dams at a training hosted by Excellent Development, a UK expert in the technology. Later that year, SAM supported Henry to construct a first pilot dam. In 2021, SAM constructed a second dam in Masanzya under the DiWaSSAA program as well as a sub-surface dam.



## Reimagining Hand Dug Wells:

There is a spectrum of hand dug wells, ranging from open pits shared with livestock to wells that are cement-lined, fully protected, and equipped with pumps. Zambians have faced barriers climbing this "water ladder", partially due to the cost of pumps locally available. SAM has partnered with pump supplier Ajay Ltd. to pilot in Zambia the Tara direct action shallow water pump which has drastically lowered the installation and maintenance costs of high quality protected wells. While no technology is a panacea for water scarcity, this local innovation provides Zambians with one more tool to obtain clean water in a semi-arid environment.



## Advantages of Improving Hand Dug Wells:

- **Affordable:** For the same cost of one borehole well, we can install 9 pump-equipped protected wells.
- **Traditional:** Communities have traditionally used shallow groundwater via hand dug pits, and this technology only increases the quality, quantity, safety, and convenience of this same water.
- **High success rates:** Traditional knowledge of shallow groundwater distribution allows for fewer dry holes compared to borehole wells.
- **Well-loved:** So far, this technology has been a hit. Communities like the increased control in waterpoint siting and the ease-of-use of the Tara pump.
- **Locally constructed:** Protected wells can be installed using local masons and labour, rather than relying on external drilling contractors.

## Disadvantages and Mitigation:


- **Shallow groundwater:** The shallow nature of protected wells makes them more vulnerable than borehole wells to contamination. We protect against contamination by using clay surface seals, installing sand filtration around the well lining, and managing the upstream watershed. Watershed management techniques upstream can also increase the well's water quantity and protect against drought impacts.





# Our Ambitions for 2022

- **Continue to grow DiWaSSAA:**
  - Construct more alternative water supply technologies such as sand dams and protected wells in Masanzya, striving to bring an improved water source within 1km of 90% of households
  - Conduct further capacity-building and training in waterpoint maintenance and household water treatment
  - Initiate a Community-Led Total Sanitation program in Masanzya, which will strive to make it open defecation free
- **Revive the Repair Program and explore for new groundwater targets:**
  - Expand our previous repair program to new communities with broken down waterpoints, helping them make repairs and gain the skills, community-based finance systems, and supply-chains required to keep the waterpoints functioning
  - Explore new groundwater targets to help us reach new communities currently without improved water sources
- **Support Zambian professionals:**
  - Explore opportunities to support Zambian professionals to design their own programs and further their professional development

A group of people, including men and women, are gathered around a hand pump in a rural, arid setting. They are focused on the task, with some holding tools and others observing. The background shows dry trees and a clear sky, suggesting a hot, dry climate. The overall scene conveys a sense of community effort and practical work.

# We're a small organization, and we could use your help

Being a small organization has many advantages: a direct connection to communities, an absence of bureaucratic bottlenecks, and an ability to pivot and adapt to changing needs. The disadvantage of being small is that, due to financial constraints, we constantly have to turn down communities looking to partner.

**In 2022, our primary fundraising focus is to expand another hand pump repair program. For \$1000, we can help an additional community repair their broken-down hand pump using corrosion-resistant parts and deliver a capacity-building program so that they have the skills, knowledge, tools, and community-based financing systems required to ensure the waterpoint continues to function.**

As always, we ensure that your money will be spent responsibly, effectively, and efficiently.

**Every donation, no matter how small, helps us bolster and expand our partnerships with Zambians. To donate, [click here](#).**  
All donations over \$20 are eligible for tax receipts.

# the SAM project

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**From all of us here at SAM,  
on behalf of the communities  
and individuals we partner  
with, thank you for your  
interest and support.**

**None of this could occur  
without you.**

**Twalumba Kapati!**