2024 Newsletter

A message from the Board of Directors:

In 2007, when the SAM Project first started working in the rural communities of Southern Zambia, the country was still reeling from the decimation caused by the AIDS epidemic. Since then, our smallholder farmer clients have been challenged by an increasingly volatile weather pattern, chiefly characterized by a sustained dry period (with zero rainfall) April through November. **Zambia is now in the midst of the worst agricultural drought in 40 years, with an estimated 5.8 million people, or 33% of the population, currently facing acute food insecurity.** This will only be made worse with climate change, which is likely to result in more intense rainfall in the wet season, and longer and drier dry seasons.

In response, the SAM Project has shifted most of our program focus to improve access to reliable water sources. We are encouraged by some concrete successes in this effort:

- Increased drilling success by using superior siting methods
- Enhanced water volumes and security by improving dug well construction
- Deploying appropriate technologies and local mapping to access sub-surface water in dry river beds

Accordingly, we are gearing up to expand these efforts in 2025 across a broader geographical range **so that more communities can meet this severe and acute challenge: access to adequate water to sustain life.**

Colin Eves
On behalf of the Board of Directors

2024 Governance

Our efforts continue to be led by our SAM Project Country Director, Mr. Henry Lungu.

Henry Lungu - Livingstone, Zambia
Henry has 15 years of experience working in water development in Zambia, both in the private and public sectors. He has a degree in Civil Engineering from Copperbelt University and a Diploma in Water Engineering from the Natural Resources Development College, Zambia. In addition to serving as Country Director, Henry is the lead implementer of SAM's water programs, with a special interest in bringing water to communities through innovative solutions such as sand dams.

We are also happy to report that our long-time colleagues, Dan Blankenau, Rachel Siachaya, and Taylor Josephy have agreed to serve on the SAM Project Board of Directors.

Dan Blankenau - Lincoln, Nebraska
Dan serves on the Board of Directors and as geologic advisor to the SAM Project. Dan has forty years of experience in hydrogeologic and geologic investigations in the Central USA. He is a professional geologist and licensed water well contractor in Nebraska and Kansas. He is experienced in sub-surface geologic mapping, electronic logging and interpretation, and geophysical investigations. Dan first visited Zambia in 2012 and has returned a half-dozen times since then to help guide and inform our water program.

Rachel Siachaya - Livingstone, Zambia
Rachel is a programs, governance and strategic management specialist who has been living and working in Zambia since 2017. Rachel first came to Zambia as an intern with The SAM Project while completing her MA in Economics at the University of Victoria. Rachel's experience and expertise have made her a great addition to the SAM Project Board of Directors, which she supports by strengthening our financial systems and policies, and advising the in-country management team.

Taylor Josephy - Vancouver, Canada
Taylor first volunteered for The SAM Project in 2014. In between university semesters studying Water Security, Earth Science, and Ecological Restoration, he spent over three and a half years in Zambia supporting the establishment of SAM's water projects. Today, he continues to support SAM remotely, focusing on drought resilience-building and the mapping of water resources. Based in Vancouver, Canada, Taylor works in the public sector, specializing in watershed management and GIS.












Who we are, and what we do:

The SAM Project is a Canadian-registered charity implementing rural development programs in Southern Africa since 2007. We are focused on three fundamentals of human life: access to water, food security, and childhood nutrition.

Our priority is to develop local capacity: empowering communities through training, education and technologies to design and implement solutions to the challenges they have identified as most critical to their survival and future prosperity.

A Year of Severe Drought

and it's impacts on Zambians, our programs, and our approach

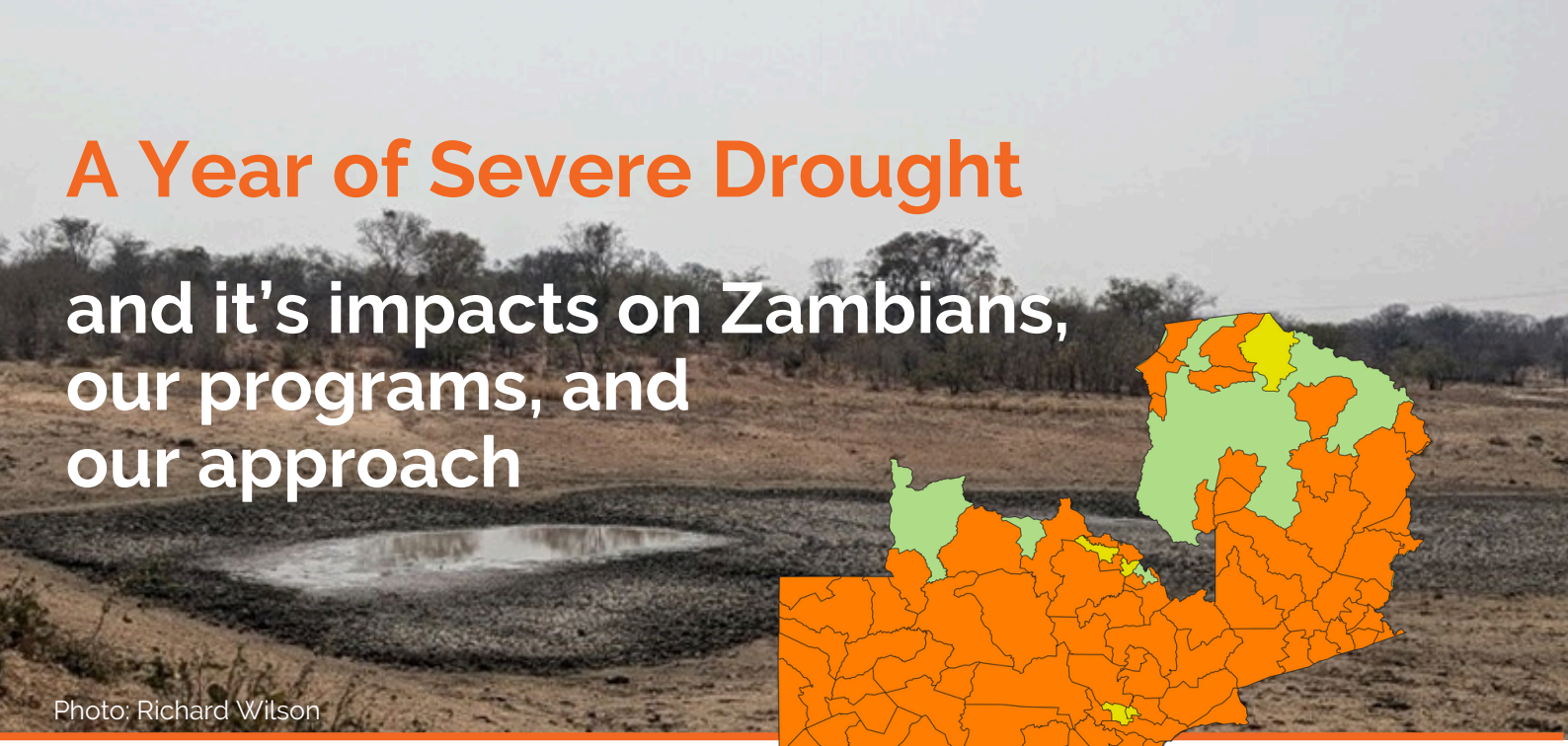


Photo: Richard Wilson

Phase	Population	%
Phase 1	4,411,790	25
Phase 2	7,522,146	42
Phase 3	5,596,655	32
Phase 4	235,687	1
Phase 5	0	0

The area in Zambia projected to be in crisis level acute food security (orange) prior to next harvest (IPC,2024).

Starting in early 2024, Zambia began experiencing an ongoing drought, considered to be the worst in four decades, leading to severe food shortages, water scarcity, and a National Emergency Declaration. Even during years of "normal" rainfall, smallholder farmers living in rural settlements are subject to high levels of poverty and food insecurity. In drought years, like this one, farmers can experience 100% loss of their maize crops. Still, these rural households are reliant on maize for over half of the calories that they consume, and any surplus maize is sold or exchanged to purchase other foodstuffs. Most of the families we work with have little or no off-farm income.

In short, this year has been a disaster for the vast majority of Zambians. To add to their misery, the entire region of Southern Africa has suffered from rolling brownouts, due to reduced reservoir levels. Electricity is (randomly) available for 5 hours a day at most, which is wreaking further havoc on the nation's already devastated economy.

This national emergency has forced us to make some radical adjustments to our delivered programs this year. For the past 17 years, we have promoted diversity in agricultural production, by encouraging the use of irrigation systems to reduce reliance on rain-fed cropping, and the planting of more drought-tolerant crops as alternatives to maize. **However, these programs are patently redundant when people are struggling to access adequate water for their families, crops, and livestock.** So, for the time being, we have shifted the main focus of our work to providing reliable, year-round access to water. Basically, our approach now is to combine modern satellite GIS mapping to locate population centres (like villages, schools, and clinics), using the same technology to target likely sources of groundwater, and then applying human-powered technologies (shovels, picks, cement mixing troughs, and wheelbarrows) to establish wells and other improved water points within a reasonable walking distance.

What SAM did this year in Numbers

50 **Waterpoint Committee members trained** in waterpoint maintenance, user-fee establishment, and committee governance

11 **Water entrepreneurs trained** in how to construct hand pumps and manually drill for groundwater using locally available materials

2 **New manual drilling rigs constructed** allowing for the cost-effective installation of wells in soft geological formations

8 **New waterpoints installed** using manual drilling and protected well methods

3 **New waterpoints deepened** for improved drought resilience

48 **Dams surveyed through Engineers Without Broders partnership** to assess structural integrity and promote maintenance practices

1 **Drip irrigation demo plot and tree nursery established through Response Network partnership** to promote drought-resilient agricultural diversification

Photo: Paul Bauman

Photo: Kate Chadwick

Partnering with Engineers Without Borders to protect critical dam infrastructure

The SAM Project was pleased to continue our long association with Engineers Without Borders (EWB) by hosting a team from the Nebraska Professional Chapter EWB in August 2024. In a very ambitious and exhausting ten-day period, the team inspected 48 dams across the District of Zimba. The dams, which are a critical source of water for people, livestock, and crop irrigation, were evaluated for condition, damage, and capacity. Concurrent with the inspections, village meetings were held to convey to the residents why the dams were being inspected and to seek their input and assistance.

Observed damages to the dams included structural deficiencies, scour/erosion, seepage, reservoir sedimentation, termites, and woody vegetation growing on the structures. Once the inspection findings are analyzed, the results will be communicated to the Zambian and tribal governments, villagers and headsmen, NGOs, and other interested parties. The dams will then be ranked on various elements, including severity of damage, location, cost to repair, and strategic importance. Over the next three years, EWB will conduct detailed engineering studies on the three top-ranked dams, with the ultimate objective of restoring them to design capacity.

Project Partners:

ENGINEERS WITHOUT BORDERS USA

ONE ZAMBIA ONE NATION


Photo: Paul Bauman

Project Goals:

- Improve well drilling success rates through geophysical surveys
- Build the capacity of Zambian geology professionals/students
- Improve access to clean water through the installation and repair of borehole wells at schools and clinics experiencing severe water scarcity

GWB Grant "Kujana": Complete!

A water development project is only complete once the community has the skills, financial systems, tools, and parts needed to keep the water flowing in the long term. That is why 2024 Kujana activities focused on establishing and training maintenance committees for the waterpoints installed in 2023. To encourage independent functioning of the maintenance system, these trainings were delivered through local stakeholders including the local mechanics and government body that is responsible for supporting the communities to conduct maintenance. SAM contributes by providing curriculum development, mentorship, and training costs to maximize the likelihood of continued operation.

A solar system, drip irrigation demo plot, and greenhouse were installed at a Kujana well through partnership with Response Network, Rotary, and the First Plymouth Church of Lincoln, Nebraska. Response Network continues to use the site as an education center to promote drought-resilient agricultural practices.

Project Outcomes:

- Improved drilling success rates 4x
- 13 Zambian undergraduates and recent graduates were included in 3 field schools teaching the entirety of the rural water development project cycle
- 11,675 people benefitted from access to clean water through 7 new waterpoints and 4 repaired waterpoints

Project Partners:

GEOSCIENTISTS without BORDERS® · BGC · AARHUS UNIVERSITY · ON CALL AFRICA Rural Health Partners · ROTARY INTERNATIONAL · RESPONSE NETWORK "SELF-HELP FACILITATION"

Diversifying Water Supply

using easily maintainable technologies constructed from locally available materials

This year SAM was fortunate enough to partner with world-renowned organization EMAS Technologies to deliver training on how to construct wells and hand pumps using only locally available materials. With only a few pieces of pipe, two marbles, and some tire rubber, local water entrepreneurs learned how to make a high-pressure hand pump. Similarly, with only some rope, rebar, pipe, and welded drill bits, EMAS supported SAM to construct two manual drilling rigs and teach participants in their operation. In combination, these two technologies are so affordable they enable "self supply" – water development driven by the beneficiaries themselves. The manual drilling approach is suitable in softer geologic formations present in the area, and so far two successful wells have been drilled and equipped.

This year's severe drought informed SAM on how best to install drought-resilient water points. While affordable and effective in typical years, multiple protected dug wells dried up, so SAM took advantage of the exceptionally low water table to deepen three wells and mitigate risks of future drying. The water stocks below sandy river beds persisted well beyond expectations, so SAM explored how best to abstract the water for community benefit, surveying rivers and installing 3 pilot waterpoints.

Project Partners:

Our Plans for 2025

Continue supporting government and other water developers to improve the impact of their investments through additional waterpoint mapping, facilitating formal cooperative commitments towards universal water access, and developing geospatial decision-making tools.

Bring affordable sand-based waterpoints to Zambia by learning from experienced organizations in Zimbabwe and finessing technologies to our local contexts.

Continue implementing affordable and proven water solutions such as repairing waterpoints, protected dug wells, and manually drilled wells.

Photo: Paul Bauman

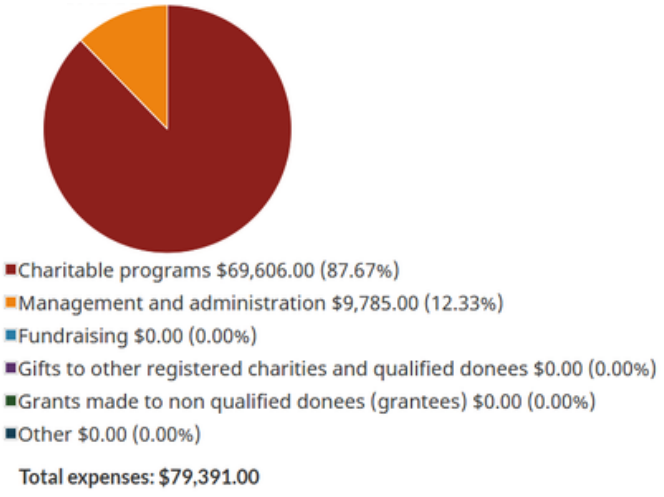
We're a small organization, and we could use your support

Some reasons you might consider donating to The SAM Project

1. We are painstakingly effective with your money. Check out our financial statements on the Canada Revenue Agency Charities Directorate website. We are a lean and efficient organization: we pay our in-country staff well, the rest of us are all volunteers, and we are very strategic in forming partnerships with like-minded organizations and individuals.
2. Whatever the cause, climate change is an observed, empirically-documented reality. If the most vulnerable populations are not assisted to withstand the dire effects of global warming, at best they will become climate change refugees, uprooted from their homes and way of life, and no longer in control of their own destinies. SAM's programs provide a direct means of supporting communities to prevent this from happening.
3. Your donation is tax-deductible. And when it is within their means, many folks often include a charitable gift in their annual household budget. A donation to The SAM Project charity produces tangible, life-altering results.

Photo: Paul Bauman

The SAM Project's last year expenses (CRA, 2023)



Every donation, no matter how small, helps us bolster and expand our partnerships with Zambians.

Click Here to Donate

All donations over $20 are eligible for tax receipts.

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

Twalumba Kapati!

Lastly, we would like to thank and recognize our incredible team, partners, funders, and communities, without whom this work would not be possible. These achievements are a reflection of the ideas, contributions, research, and dedication of a large network of community, government, university, private, and NGO partners, all with a shared commitment to improving the health and well-being of rural communities via improved access to clean water.

Thank you for your interest and support!