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**November 2020**

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## ***ABOUT CED***

Christian Engineers in Development (CED) is a Christian professional consultancy service dedicated to development work with overseas communities, and through service, to witness to the Christian faith. Operations usually comprise a tri-partite arrangement between a developing country organisation, a funding agency and CED providing technical assistance. CED responds to requests for assistance, improved water supply being the most frequent request but by no means the only one. CED promotes self-help with the maximum use of local resources.

CED's services include site visits, feasibility studies, assistance with project proposals, design, contract documents, procurement, tender evaluation, project supervision, direct labour employment, on-the-job training of local staff, project monitoring and evaluation, assistance with fund-raising and the management of project funding.

CED's income comes primarily from grants for projects together with donations from churches, trusts, members and supporters, and membership subscriptions. Most of the expenditure goes to operations; management costs are kept as low as possible. CED is not a funding agency and therefore cannot directly fund major projects but it can, and often does, fund preliminary investigations for potential projects.

The Association is registered as a Company Limited by Guarantee (without shares) and being a non-profit organisation, it is registered as a charity. It is managed by a Board of Directors/Trustees, elected from the membership, giving their services voluntarily. CED Members participate in the work of the Association either voluntarily or if they depend on earnings for their livelihood on negotiated payment for their services.

Membership of CED is open to any person who is professionally qualified, supports the Aims, accepts the Statement of Faith, supports the activities of CED in any way, or serves as an employee or volunteer, both in the UK and overseas. Becoming a Supporter of CED is open to any person or group that supports the Aims, and wishes to be kept informed of CED matters. Anyone wishing to become a Member or Supporter should contact the Secretary.

## ***Newsletter***

The Newsletter is published twice annually. We'd be delighted to provide additional copies for friends, colleagues, church book stands etc. Please contact [ian@ced.org.uk](mailto:ian@ced.org.uk) and let us know how many you'd like. The newsletter can also be downloaded from the CED website.

The editor would be happy to receive contributions for the next Newsletter. Please send to [ian@ced.org.uk](mailto:ian@ced.org.uk)

## ***PrayerPoints***

Copies of our monthly prayer bulletin are available by e-mail or post. Please request a copy by email to [pray@ced.org.uk](mailto:pray@ced.org.uk) or by writing to the Secretary.

## ***Privacy Statement***

For administrative and mailing purposes we hold your name and contact details in our records. They will not be given to any other person or organisation. If you prefer not to receive publicity and information literature, then please inform the CED Secretary ([admin@ced.org.uk](mailto:admin@ced.org.uk)).



**SHARING SKILLS  
CHANGING LIVES**

# Chair's Thoughts

The CED Board is in the process of revising and updating several of our policies – documents which, amongst other things, set out expected standards of behaviour whilst engaged on CED work. Here is part of the wording of the CED Code of Conduct:

## CED volunteers and Trustees will:

1. Seek to be Christ-like in attitude and action towards all persons.
2. Be honest in all areas of handling money and finance.
3. Be honest in speech and seek to avoid all speech which could be regarded as blasphemous or profane.
4. Be supportive of colleagues and partners in their endeavours regarding sharing skills and changing lives.
5. Maintain a working environment free from harassment, bullying and victimisation by anyone.
6. Avoid drunkenness and other forms of substance misuse.
7. Avoid sexual impropriety.
8. Give proper regard to the laws of the land in which you are operating.
9. Adhere to the following CED policies that support the above standards:
  - ◆ Conflict of Interests Policy
  - ◆ Whistleblowing Policy
  - ◆ Safeguarding Policy
  - ◆ Policy on Bribery, Gifts and Hospitality

Now one of the reasons for having statements like these is that most funding agencies now require us to have policies and procedures in place – this coming in the wake of several high-profile scandals in the aid world.

But actually the primary reason we have such policies is to flesh out the principles embodied in James 1:26-27: *"If anyone thinks he is religious and does not bridle his tongue but*



*deceives his heart, this person's religion is worthless. Religion that is pure and undefiled before God the Father is this: to visit orphans and widows in their affliction, and to keep oneself unstained from the world".*

Most of the book of James is about the three marks of a child of God: a controlled tongue, practical acts of compassion, and personal holiness. James 1:26-27 is simply a summary of the rest of the letter. If you want to know how you should live your life as a child of God, read James! And James tells us that we need to work on all three areas – speech, actions and personal morality – not just one or two of them. It's not enough to be good at helping people in ..... (insert name of country) – we also must have lifestyles and language which are "unstained", and "pure and undefiled".

Here endeth the sermon for this newsletter! But as James himself says in James 1:22: *"be doers of the word, and not hearers only."*

We are planning to have a training session before the end of 2020, aimed at members who are (or would like to be) working on CED projects, to go through the various policies and procedures. If you would like to attend this Zoom training event, please get in touch with Barbara Brighthouse or myself.

*Jonathan Appleby, Chair*

# Welcome

First, a welcome to our new Chair, Jonathan Appleby. Jonathan joined CED in 2008, worked on a WatSan project in Madagascar in 2009 then was involved in the CED project in Tharparkar Pakistan from 2010 to 2014. He joined the CED Board in 2014. Jonathan has built up significant experience in bridge design and water supply / treatment but in recent years has concentrated on the design and construction of hydropower schemes in Scotland. Jonathan is married to Susan and they have four grown-up children and a grand daughter. He has been a Reader in the Church of Scotland since 2014 and enjoys hillwalking when he gets a free day. Please pray for him as he settles into the role and for all members as we explore together how to continually make CED the organisation God wants us to be.

This edition of the newsletter focuses on work that several of our members are doing out-with CED. One of our strengths is in networking with Christian engineers in other organisations. At present, exacerbated by restrictions on travel, our own work is quite limited. We do need the Lord to show us where to become more involved!

Projects are moving forward all the same. The front cover shows a group of trainees in Rwanda learning about ferrocement from a group that CED trained early in 2019. This is all happening without hands-on CED input. Project partner Charles Semwaga has, with financial support from project funds and CED member Rob Hoy, invited 12 students to learn from his local team to build the last tanks at Mayange. Several of us in CED are working away at encouraging people to adapt ferrocement technology.

As the newsletter goes to print another ferrocement rainwater tank course is taking place in Pande in Northern Tanzania. The course is being delivered by the group trained by CED in Kagera. Their leader, Leonard, has the added benefit of a degree in community development



*Africa is full of architectural surprises: here is the part complete Bikira Maria Mama wa Rozari Catholic Church, Dar Es Salaam, a feat of engineering in concrete .*

and is on the CCMP staff with the Kagera Diocese, an initiative instigated by this year's (Virtual) Open Day guest speaker, Richard Lister.

Elsewhere in CED the work on hydro schemes in Uganda is moving forward as reported regularly in PrayerPoints. Here in UK, with support from PVDP in Pakistan, we continue working through due diligence with the Foreign, Commonwealth and Development Office (FCDO, replacing DFID) in the hope of being granted £49,500 for work in Pakistan. This is keeping several of us busy and is driving the development of a raft of new policies to bring us into the modern era.

Enjoy the newsletter!

*Ian Rankin, Editor*



*Driving along outside the Serengeti park in July we chanced upon some elephants... really felt blessed to see those wonderful creatures so close to the road.*

# Knowledge and Skills

At our last directors' retreat we agreed to focus on four new 'Directions' in the coming years. These were: Communications, Funding, Climate Change and Knowledge and Skills.

The Knowledge and Skills aspect has two strands: firstly, we want to increase our own level of understanding of development technology; and secondly we wish to share the knowledge that we have with others in our areas of work. As a way of addressing both these strands we will be holding CED Tech Talks over the winter. The talks will be held at 7.30pm UK time on the second Monday evening of every month. Each one will focus on a different topic. They will be similar to our

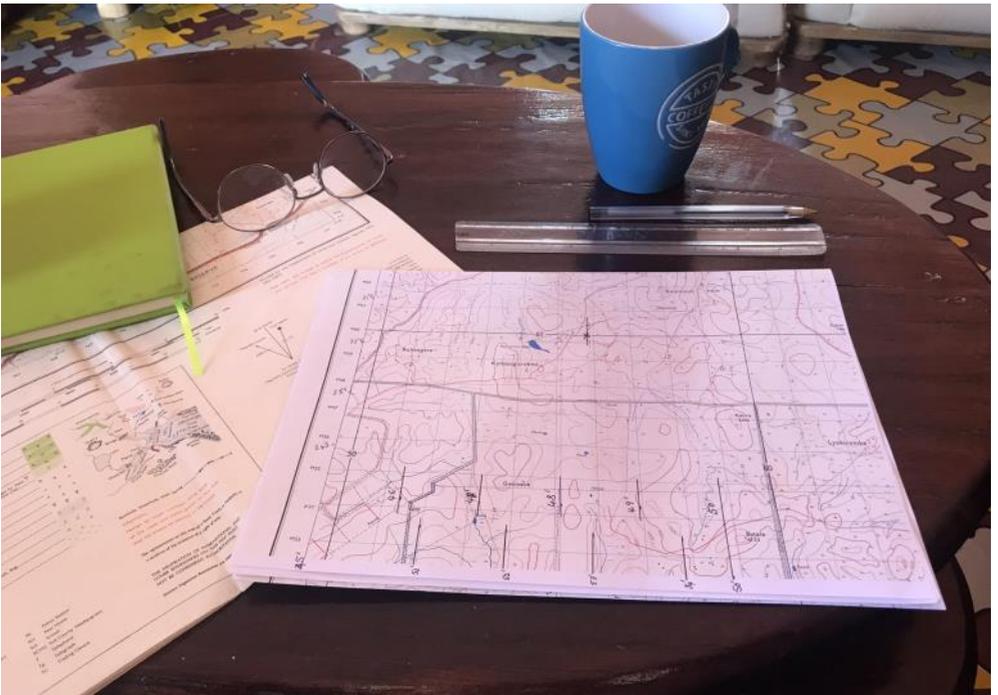
AGM workshops, but slightly less interactive. Each will consist of a 45 minute talk, followed by about 30 minutes of questions and answers and subsequent discussion. Each talk will be recorded and made available on demand online afterwards.

All CED members will receive further details by email, but if you know of anyone who would like to join one or more CED Tech Talks please contact me on [mberesford.ced@gmail.com](mailto:mberesford.ced@gmail.com) and we'll make sure that they get the joining instructions.

*Mike Beresford*

## Tech Talks, Mondays 7:30pm on the cloud

Monday 9 <sup>th</sup> November	Ian Rankin	Pumpkin Tanks for Rainwater Harvesting
Monday 14 <sup>th</sup> December	Steve Morris	Rammed Earth Construction
Monday 11 <sup>th</sup> January	Jonathan Cox	Microhydro Technology and Opportunities
Monday 9 <sup>th</sup> February	Philip Tibenderana	A Ugandan Perspective on Development
Monday 8 <sup>th</sup> March	Jonathan Appleby	Engineering in Disasters





# Report on (Virtual) Open Day and Annual General Meeting of CED, 13<sup>th</sup> June 2020

*"The best laid schemes o' mice an' men,  
Gang aft a'gley,  
An' lea'e us nought but grief an' pain,  
For promis'd joy!"*

So said Robert Burns in "To a Mouse"! Well, that has certainly been the case for many folk this year, as we have lurched our collective way through a prolonged crisis. And it is a crisis which seems to be returning as we approach the winter months.

However, not all has been doom and gloom, and our AGM in June was an example of an unexpected beneficiary from the pandemic. We had originally planned to have our AGM in Bermondsey, but we made the pragmatic decision to hold the meeting by Zoom instead. Zoom is not perfect of course, and we missed out on the opportunities to chat over tea or coffee which are so important at these events.

But the unexpected benefit was that significantly more folk were able to attend via Zoom (47 people) than would likely have been the case if we had been meeting in Bermondsey. Furthermore, the cost was significantly lower in terms of time and money and with a reduced carbon footprint!

We were grateful to have Alan Chadborn leading us in an act of worship at the start of our meeting, with readings and prayers from

several other people, setting a tone of thankfulness to God for his goodness and provision.

Mike Beresford gave us his final report as outgoing Chair of CED, and as part of that he summarised the outcomes of the Directors' retreat at High Leigh in February 2020. The main areas of focus which emerged from that retreat were Communications, Funding, Climate Change and Knowledge & Skills – areas which we recognise pose challenges for all NGOs engaged in international development work. One of the challenges which Mike hinted at in his report is the increasing difficulty of obtaining funding for larger projects, as donors impose ever more stringent requirements on recipient NGOs. This is causing us to gradually shift our emphasis away from larger projects, and back towards smaller projects – picking up the theme of "Small is Beautiful" which was championed by E.F. Schumacher in the 1980s.

We were privileged to have with us Richard Lister, Tearfund's Church and Community Transformation Specialist. Richard gave us a very clear and informative presentation about Church and Community Transformation (CCT), based on the question: "What do you want to leave behind?"

Richard shared three case studies about CCT, and then drew out from those case studies the underlying principles which made that transformation happen. The most important principle was that it is Jesus himself who has the power to bring about the transformation of lives and communities – bringing his super-





adequacy to help us in our inadequacy. Following on from that Richard showed how Tearfund are working with local faith communities to encourage change which is broad, deep and long-lasting. No quick-fixes – CCT requires patience and long-term partnerships. But ultimately the transformation is driven by the communities themselves, under God’s guidance, and with assistance from Tearfund when that would be helpful.

Richard’s challenge to us in CED is for us to see how the principles of CCT can be made to underpin our work with our partners. Perhaps we can provide engineering advice to CCT initiatives? Are our partner organisations embracing CCT principles? Richard also pointed out that there may be an opportunity for CED to assist in Tearfund’s humanitarian work, providing engineering advice and assistance. Richard’s talk (and indeed the whole AGM) can be found on YouTube at the following link: <https://youtu.be/hGCMlzyPeIE>

Following on from Richard Lister’s talk, we held

the formal AGM – in record time! In ten minutes we received apologies, approved the Minutes of the 33rd AGM, Received the Annual Report and Accounts and re-elected three directors whose terms had ended (Jonathan Appleby, Angus Armstrong and Alan Michell).

That was followed by a time for questions and discussion, chaired by Mike Beresford and with input from Richard Lister. On the subject of training, it was noted that with the advent of Zoom we now have the capability to deliver in-house training without the need to travel. We see this as a way of disseminating the knowledge and skills of CED members more widely, both to other members and to partner organisations overseas – hence the emergence of the CED Tech Talks. If anyone has more ideas on this subject, please do get in touch with one of the directors.

On behalf of the Directors, I would like to thank all who took part and all who joined in on the day, with particular thanks to Rob and Barbara Brighouse and Mike Beresford for wrestling with the technology and keeping us all in order!

*Jonathan Appleby, Chair*



# Self-Washing Filtration Plant in Uganda

*CED's Nigel Heeler reports on his backwash filter system:*

Mpanga Gorge formed by the Mpanga River with its cascading waterfalls contains a unique ecosystem providing home to the last remaining 8,000 critically endangered *Encephalartos Whitelokii* cycad plant species in the world.

The gorge is at risk from slash and burn agricultural techniques and there is much damage by cattle descending the gorge to find water.

To solve this problem a hydraulic ram pump has been installed at the foot of the gorge to pump river water to the top (some 135m elevation) where community beneficiaries homes and cattle troughs are located. This allows cattle to be watered without the need to enter the gorge and the community no longer have an arduous journey to collect water.

The project was developed and installed by Protos Join For Water, a Belgian NGO supported by the International Union for Conservation of Nature (IUCN), Save our Species (SOS) initiative and DGD – Belgian Directorate-General for Development Cooperation.

To ensure the water quality delivered to the top of the gorge was suitable for the community to use, PROTOS installed our new self-washing filtration system designed to treat water for remote communities. The system needs no operational intervention to backwash. It is constructed of locally available materials built to an exact geometrical arrangement to ensure correct functioning of the self-washing function. It is ideal for remote areas without access to power or spare parts.



*Mpanga Gorge*

The process comprises aeration, tube clarification, filtration and disinfection. Activated filter media (AFM) by Dryden Aqua is used in the filter obtained from a supplier in Nairobi.

The self-washing cycle initiates hydraulically when the filter has clogged. The first phase of the wash cycle primes the siphon used to power the filter backwash and in so doing also flushes out the tube clarifier. After the siphon is primed, it reverses flow through the filter drawing on a clean backwash tank to wash the filter. Two process units are cleaned in the cycle.

The ClariWash system has been developed by WaterReach Ltd (a UK not for profit company) and installed at Mpanga by GAIND-Uganda.

Currently six other ClariWash filters are in operation elsewhere in Uganda, one at Kisyga Kagaana installed with CED which has been operating satisfactorily for 5 years. The system at Mpanga does not utilise a coagulant due to the difficulty in supply of chemicals and dose control in a remote location.

Initial indications of performance at Mpanga are promising. When a high turbidity event occurred in the river at the end of the dry season (February 2019), it caused the filter to block temporarily. However the system self-corrected after a period to allow air entrainment and the siphon to reprime. As far as is known, there was no interruption of supply to the community. As a precaution a coarse granular activated carbon media layer approximately 200mm deep was added to the top of the fine media to help prevent surface blinding of the filter under heavy loading.

River turbidity varies significantly between the wet and dry seasons. In July 2018 (dry season) turbidity in the river water supplied via the ram pump was 7.54 NTU. By contrast, in October 2019 a raw turbidity of 83 NTU was measured.

Treated water turbidity on this occasion was <math>< 5\text{NTU}</math>.

Further improvement in water quality could be achieved by reducing the filtration rate.

From the appearance of the backwash water the majority of turbidity is removed by the tube clarifier with the filter performing a finishing function.

Limited test results showed good removal of E.coli and faecal coliforms with zero counts downstream of disinfection. The calcium hypochlorite chlorine cartridge needs to be replaced occasionally from a supplier in Kampala. The chlorine residual at the tapstand needs to be checked regularly and controlled by adjustment of the Klorman unit to achieve just under  $2\text{mg/l}$  free chlorine residual to maintain adequate disinfection whilst avoiding taste complaints.

Colour is present in the raw water, possibly originating from organic material causing humic acids to be entrained in upstream forested areas. Addition of the carbon layer has

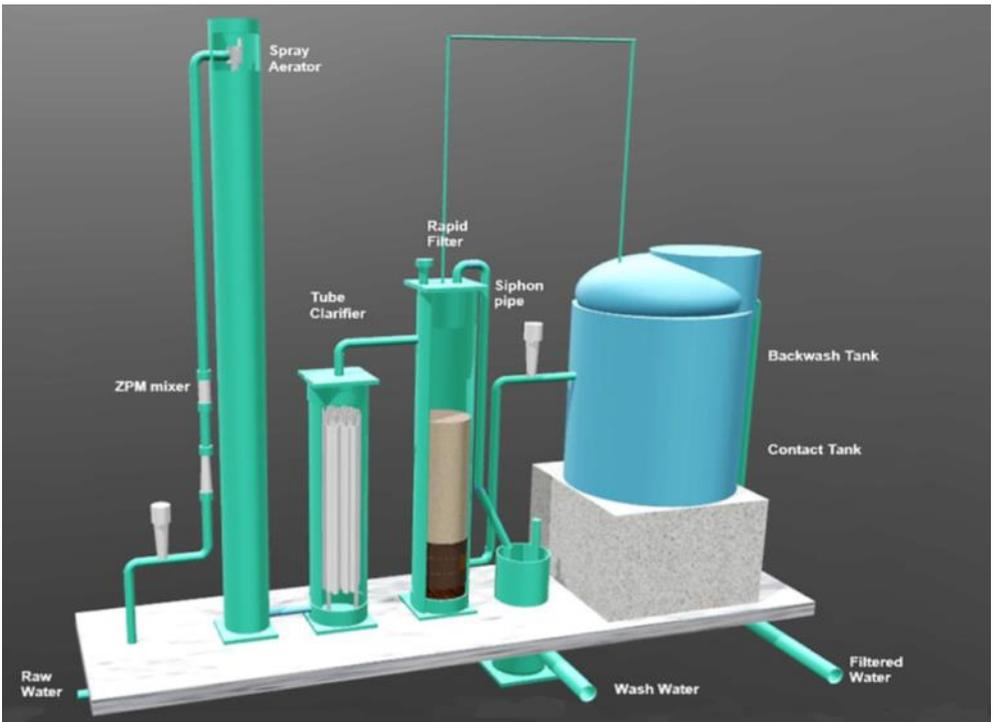
improved this slightly and slowing the flow should provide further improvement.

For larger communities a higher output self washing clarifier-filter combination is at design stage and soon to be tested. Daily output approximately  $85,000$  litres/day—sufficient to supply over  $4,000$  persons with  $20$  litres.

The advantages are as follows:

- 🌐 No need for power supply and no moving parts.
- 🌐 No control system or operator intervention to backwash.
- 🌐 Backwash cycle cleans both clarifier and filter.
- 🌐 Multiple treatment barrier comprising clarification, filtration and disinfection.
- 🌐 Preassembled modules suitable for manual transport off-road.
- 🌐 Rapid setup in disaster response situations.

*Nigel Heeler*



# Ian and Ruth Bell Return to Zambia

CED's Ian Bell visited Zambia in March this year.

"We had planned to be in Zambia for three weeks. The first few days were to make arrangements for the rest of the time, which we planned would be a week at "Kumbaya Ministries" in Chaisa followed by a week at "Crown of Life" in Gnombe. Both centres are in extremely poor areas on the outskirts of Lusaka. The final few days we would use to summarize what we had done and say our farewells. As most of you know this plan was scuppered! Our booked return flight was cancelled because of the coronavirus effect when we had only been there for a week. We had to make alternative arrangements to leave the country. Options were reducing daily as airlines withdrew their services. Flights were booked for us on 19<sup>th</sup> for Sunday, 22<sup>nd</sup>, but within a day of booking they were cancelled. We managed to secure bookings for Monday 23<sup>rd</sup> but were wary that they might also be cancelled. However, they were not. We left Lusaka, very dejected at not being able to carry

out our plans, on Monday afternoon, 23<sup>rd</sup>, and arrived at Heathrow the following morning. Thankfully, our eldest son was waiting for us and brought us home. We are now settling into life as not known before!

Now, for the good news!

It was a great privilege to be able to visit our friends in Zambia, particularly at Kumbaya Ministries, who have to work under — even in normal times — very difficult and restricted conditions with limited resources. The schools were just gaining momentum again after some mysterious malicious attacks on homes and schools that were thought to have involved some sort of gas. These had affected some people's health and many had been too frightened to leave their homes to attend schools etc. The teachers consequently lost pay because of the shortfall in income. However, they continued to work, working long hours in double shifts. The school premises are not large enough to accommodate all grades simultaneously, so there is a morning and an





afternoon session. The schools have again been ordered to shut so teachers will again be without pay. They live with very narrow margins at the best of times. Despite the difficulties the school has been able to produce exemplary results, so much so that rival schools have been poaching their best pupils when the national exam results were published. This has further depleted the school's income. The women's tailoring classes were going strong providing women with skills to be able to start up and run their own businesses to support themselves and their families. Since last year a cookery class has been started. Have you ever seen a Victoria sponge being cooked to perfection in a saucepan or dough-balls in a frying pan over braziers? There were, also, adult literacy and maths classes, including tuition for Grade 12 Maths, because another

school had fallen behind with its syllabus!

There were several activities which we were unable to complete or even start at "Kumbaya". However, we were warned that they had not been cancelled but just postponed until next year!!

We were extremely disappointed that we were not able to encourage "Crown of Life" but hope that too is just postponed. We were encouraged to see the establishment of the Home Economics teaching kitchen. We expect that this facility will be well utilised when the schools are open again and power is available.

Now we are safely home and in the comfort of our own home we remember with gratitude the hospitality and friendship which we received in Lusaka. We pray that this terrible pan-epidemic will soon be eradicated particularly so that the vulnerable people of the poor areas are not disproportionately affected.

Thank you all for your interest and prayers".

*Ian & Ruth*



# Simple Sanitation Solutions with SaTo Slabs

*CED's Simon Ewing reports from Tanzania:*

We are missionaries with Emmanuel International and work with churches in the Mwanza region of North Tanzania. For three years we have engaged with communities on Kome Island on Lake Victoria, giving group-based training to women on breastfeeding and nutrition, and on household water and sanitation issues. This year, with the help of funds from CED we have been able to expand this sanitation work to many more communities. Emmanuel, our community engagement officer, spends most of his time living on the island travelling around villages and attending group meetings sharing appropriate WASH ideas.

When we started working in these communities we discovered some of the biggest environmental issues were with the household toilets. People complained about the flies which cause a nuisance, and the smell of the local pit latrines. Therefore, we target our training at providing appropriate methods to reduce these environmental issues. One product which has becoming increasingly more important globally over the last 5 years is the SaTo toilet. This is a very simple plastic moulded toilet pan with a self-closing mechanism, and it solves the problem of flies and smells.

SaTo pans are very versatile and hardwearing. They are manufactured in Tanzania under licence from Lixil and were promoted in the government's "Nyumba ni Choo" household sanitation scheme (funded by UK Aid). However, many of the rural areas and islands were missed out of the promotion events. We saw the potential of the product and have attempted to add value by finding ways to fit them to existing pit latrines. This gives any homeowner a super-low-cost upgrade option with an immediate solution to reduce the flies and smells. Modifying the concept of the Sanplat, we have trained pastors and other tradespeople to integrate the SaTo into a lightweight slab which can be retrofitted over an existing pit latrine. These slabs provide a hygienic area to stand on whilst being used and are also portable so can be relocated once the pit fills up.

The RRP is £4 for the SaTo moulding on its own, but for this promotional period we have waived any overheads or profit to simply get the products out into the community. Through our church and community network we sell the SaTo at the wholesale price of £3. Even this price feels high for many of the community (a typical day's salary for a domestic worker in the city is about £2.50). To overcome this, we saw the need to work with local community





banking groups. Many families subscribe to one of these groups, and Emmanuel regularly visits many of them to help them understand the benefit of allocating a portion of their savings to the improvement of their sanitary environment.

Emmanuel has taken the initiative to gain the trust of the key community decision makers and works alongside the local government, schools and clinics to seize every opportunity to promote these basic sanitation methods.

Tanzania has experienced a very different COVID-19 crisis compared with the UK. The government did not enforce a lockdown or stop churches meeting. It did close schools for two months and promoted handwashing, facemasks and most importantly prayer as a means to prevent the spread of the virus. This has meant we have been able to continue working in the communities (taking extra precautions) and has been a good opportunity to reinforce the last three years of sanitation training regarding handwashing and good hygiene. We managed to distribute over 100 handwashing buckets and 10,000 information leaflets and posters to our partner churches in Mwanza.

Please pray for these rural churches, the island communities, and our local staff like Emmanuel as they engage with those facing everyday hardships.

*Simon Ewing.*

Simon and Victoria Ewing live in Mwanza, Tanzania and have been working with Emmanuel International since 2017.

Simon is a mechanical engineer with training in renewable energies.

Victoria has a PhD in International Public Health.

Emmanuel Boaz is a social scientist from Mwanza.



# Film: The Plastic Nile

*"Saying Yes to Life"* was the Archbishop of Canterbury's Lent Book for 2020. In it the author Ruth Valerio says: "we have become frighteningly aware that we are pumping plastic into the seas in terrible quantities". Similarly, Pope Francis, in his encyclical letter *"Laudato Si – On Care for our Common Home"*, highlights the throwaway culture that made our earth look "more and more like an immense pile of filth". Are they overreacting?

Sky News's documentary *"The Plastic Nile"* issues a stark warning about the impact of plastic pollution. In 1 hour 40 minutes, reporter Alex Crawford travels over 4,000 miles from the river's source to the Mediterranean Sea. She investigates the disturbing impact of plastic waste in each of the countries that the Nile flows through. The programme examines not just the unsightly impact of the pollution, but more importantly its detrimental impact on the water course's all-important eco-system. The presence of micro-plastics is seriously affecting the size and health of fish stocks, which has a knock-on impact on the communities who rely on the river and its lakes for their livelihoods. The plastic waste also affects grazing livestock. In a gruesome section a veterinary officer is shown struggling to remove a vast mass of tangled plastic from a calf's stomach. The squeamish may choose to look away.

The film conveys the horror and the urgency of the problem. I would recommend that you

watch it. It has spurred me on in three areas:

- firstly, to try to follow the waste hierarchy: AVOID, REDUCE, REUSE and as a last resort RECYCLE;
- secondly, to become a plastic nerd and a plastic activist: what type of plastic is an item contained in? Can it be reused or recycled? If it has no labelling, I now get in touch with the manufacturer. I ask them politely to label it correctly and avoid items such as polystyrene that are very hard to recycle.
- Finally, the programme has helped me to think about the way that I represent CED overseas. Can I be a champion for change, like the brave few African individuals that you meet in the programme?

You can watch *The Plastic Nile* at <https://news.sky.com/video/the-plastic-nile-11999381>, or by going to youtube.com and searching for *The Plastic Nile*.

*Mike Beresford.*



# Book: The White Nile

**Alan Moorehead. (Published by Hamish Hamilton Ltd. 1973).**

This book has much that will be of historical and geographical interest to CED members involved with projects in East and North-East Africa. It also provides some context for Victorian era exploration, Christian mission

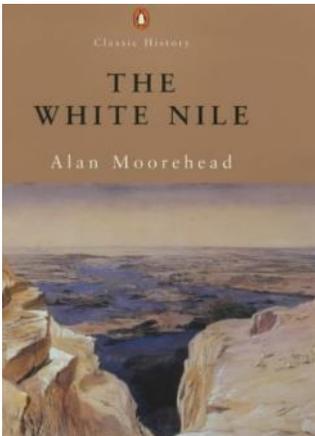
work, the effects of and attempts to abolish slavery and 19<sup>th</sup> century imperialism. The context of the latter may be helpful to readers engaged in the 'Black Lives Matter' debate. The early chapters cover exploration from the 1850s and find their geographical starting base to be Zanzibar, one of the main centres for slave

distribution at that time. The building of the Anglican cathedral in Zanzibar (which CED has been instrumental in repair and refurbishment) is described together with some of the background to its construction. The discovery that Lake Victoria is the main source of the White Nile occupies the central chapters of the book together with the early encounters of explorers in Buganda that went with it. Much of the latter part of the book concerns 'Equatoria' (South Sudan), Sudan and Egypt and the exploits of General Gordon.

The book is thoroughly researched and mainly based on the published memoirs, accounts and letters of the cast of explorers that make up the narrative. Amongst the explorers Burton, Speke, Grant, Baker, Livingstone, Stanley, Thomson are added a host of other intriguing characters; missionaries, politicians and local chiefs. At the time of writing (this review), moves are afoot in Wales to remove from public view two statues of the journalist and explorer Stanley (who was originally from Wales).

The book explores the characters of a number of individuals and their different stories have been moulded together into the narrative. In passing, there is a description about the opening of the Suez canal. The historical and geographical facts of the book are one thing, the opinion and interpretations that the author places on – for example – the work of the early missionaries will be open to wider debate.

*Jonathan Cox*



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*Front cover: Learning to build rainwater tanks, Mayange, Rwanda.*

*This picture: Emmanuel demonstrates the SaTo toilet, Tanzania.*