



SHARING SKILLS
CHANGING LIVES

CHRISTIAN ENGINEERS IN DEVELOPMENT
Annual Review 2022/2023

Christian Engineers in Development

CED is a Christian professional consultancy service dedicated to development work in partnership with overseas communities.

Executive Committee:

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Above: clearing silt from the dam at Kuluva, Uganda

Front cover: children help with pipe laying, Manowa, Sierra Leone

From the Chair of the Executive Committee

CED is a small organisation. We only have one part-time “employee”, Philip Tibenderana, who lives in south-west Uganda. The rest of us are fitting our CED work into odd corners of our days, whilst frequently feeling guilty that we aren’t doing more! And I suspect that basic *modus operandi* isn’t going to change in the foreseeable future.

So we are small, and our impact is small because of our emphasis on volunteering. We could try to become bigger, and have a bigger impact. But that would almost certainly require us to start employing people here in the UK, with a consequent hike in our overheads - which until now have been very small indeed.

So we are small, and likely to remain that way. And we live in a world which doesn’t really value small things. Bigger is better, or so we are told. CED’s contribution to eradicating poverty is just a drop in a bucket – but does that mean we’re wasting our time? I don’t think so.

And here’s another challenge: Apparently engineering isn’t so cool any more. We’ve noticed in recent years that it has become much more difficult to raise funds for a good old-fashioned no-nonsense water supply scheme in a far-flung corner of the planet. Well of course, in an ideal world all water supply schemes would be constructed by regional or local authorities, properly funded and resourced for the job. But in many countries we’re not at that stage – not yet - and in the meantime people die of water-borne diseases. Do we sit on the sidelines and shake our heads? We don’t think so.

In the UK we are immersed in a cost of living crisis. But whereas the average UK citizen is perhaps now more appreciative of the daily struggle for survival experienced by billions, it seems that many of our politicians are less



receptive to their plight: “Raise the drawbridge, batten down the hatches, don’t let those migrants across the Channel, we can’t afford to help others.”

It all sounds a bit gloomy, doesn’t it? But wait a minute, we aren’t called Christian Engineers in Development for nothing! What would Jesus do if he were a CED member in 2023? Look at the Gospels: Jesus invested much of his time in just a few disciples. Jesus made time for people and wouldn’t be rushed. Jesus saw through prejudice and crossed barriers. Jesus made time for prayer, even though time was in short supply. Jesus exchanged a comfortable life for the way of the cross. Above all, his love led him to action, and in three years he sowed the seeds which would later become the church. What an inspiration! As followers of Jesus, you and I need to ask ourselves how we can emulate him. We need to pray for hearts of love which will propel us into action.

The danger for an organisation like CED is not that we’ll run out of money; the danger is that we’ll run out of steam. It takes effort to identify partner organisations and potential projects. It takes even more effort to apply for and succeed in getting funding. And it takes effort to design and supervise – although for us engineers that is the bit that we find easiest to get enthused about! Did Jesus shy away from doing the difficult stuff? No, of course not. Neither should we.

Jonathan Appleby

From the Chair of the Trustees

But God demonstrates his own love for us in this: while we were still sinners, Christ died for us. (Romans 5 v 8)

We worship a God whose love for us is both sacrificial and unconditional.

May I take this opportunity to thank all those within CED who, following this model, give their time both sacrificially and unconditionally to improve the lives of many who live in difficult circumstances; whether this is through bringing access to safe water and sanitation, bringing sustainable power to hospitals or in other ways.

Earlier this year, in March 2023, I had the privilege of visiting our project in Manowa (in eastern Sierra Leone) where, in partnership with Practical Tools Initiative, we are seeking to bring clean potable water to a community of around 6,000 people. It was humbling to meet so many people whose lives have been so greatly impacted by the long-term effects, and after effects, of a long and bitter civil war and to meet individuals in that country who are seeking to improve the lives of those affected. It was also particularly encouraging that an individual, with no previous CED links, volunteered, and was able, to spend 2 weeks on site to help oversee the start of the works.

Also, throughout the year it has been my privilege to continue serve alongside Jonathan Appleby, Richard Franceys, Colin Gibson, David Beak and Barbara in my role as the Chair of the Trustees. I would like to acknowledge, firstly, their individual and combined wisdom over the past year in overseeing the work of CED and, secondly, the many hours of hard work which they put in to ensure that the charity is governed in a highly professional manner.

And, finally, may I express my thanks to all members and supporters who have contributed to the work of the many and varied CED projects, in any way, and those who faithfully



work in the background supporting the overall work of CED, throughout the past year.

Truly I tell you, whatever you did for one of the least of these brothers and sisters of mine, you did for me. (Matthew 25 v 40)

It is good that we are able to meet in person (it's been a long time!) at our AGM on 9th September 2023 at City Hope Church, Bermondsey and many thanks to Alan Chadbourn and members of the church for kindly hosting us all once again.

Rob Brighouse



CED Chair of Trustees trying to get to grips with modern surveying equipment.

Membership

CED now has 83 members with one new member joining since the last AGM.

Our new member is Lokuchelela Sibanda, pictured here, and we asked her to introduce herself....

“My name is Lokuchelela Sibanda, I live with my family in Bulawayo, Zimbabwe. I studied civil engineering with the University of South Africa and have interned and volunteered with Engineering Ministries International on projects in Uganda and Zimbabwe. I have previously worked for Roadlab in the construction materials lab in Bulawayo and am currently working part time for Ultra Construction in Bulawayo.”



We welcome Lokuchelela and pray that she, and all our members, will be encouraged and fulfilled by membership involvement with CED.

PrayerPoints

Praying for CED projects makes a big difference. Why not email pray@ced.org.uk

and ask for our monthly bulletin? We value your fellowship and support.

Ian Rankin

Tech Talks

During this past year we have continued our series of TechTalks, an initiative spawned out of the confines of the Covid pandemic. This has been the third year of the initiative and has been continued to be supported by speakers and participants and my grateful thanks to all.

This years subjects included:

- ◆ high voltage transmission;
- ◆ bagged earth construction;
- ◆ comparing different water pumps;
- ◆ SODIS water disinfection;
- ◆ travel and health in developing countries;
- ◆ solar power for remote locations.

All of these are available to view on our website and YouTube channel <https://ced.org.uk/resources> .

We do not propose to run a full program over the coming season, but look out for one-off presentations which may come along and will be publicised in the usual manner. If anyone has some specialism or particularly interesting story relevant to the work of CED then please do get in touch and we may be able to put on a TechTalk to share your knowledge or story.

Angus Armstrong



Stephen Burgess discusses solar water disinfection on Zoom

Project Roundup

What did CED do in the 2022-23 financial year? Here are some highlights:

Sierra Leone:



Laying pipework, Manowa

Design work and further fundrasing activity continued for the new water supply scheme in the town of Manowa. A design review process was completed, and contract documentation prepared. A visit to Manowa by Rob and Barbara Brighthouse in April 2023 allowed borehole testing to be carried out and a topographical survey of the proposed scheme to be completed.

Update on activity since April 2023: A contractor has been working since June to construct the new 10m high reinforced concrete water tower (designed by CED member Colin Gibson), and has almost finished the columns. Once the top platform is complete, we can place the five plastic tanks, and construct the steel roof, handrails and ladder, and install the pipework. We were struggling to find a CED member who could visit Sierra Leone to supervise the early stages of construction, and so we are grateful to Colin Gilmour from Culbokie, Scotland, who volunteered to make a two-week visit in June on our behalf – his input was invaluable at that stage in the project. Pipeline and tapstand installation continues through Manowa in anticipation of the water tower completion.

DR Congo



Newly built turbine house, Lwamba

The pico-hydro equipment for Lwamba Hospital was tested and then packed up for shipping from the UK to DR Congo – a long and complicated process involving a lot of red tape. The equipment is now safely in the CAM International office in Lubumbashi, after being successfully processed through customs at the airport.

Update: Four members of CAM International are travelling to Lwamba in late August, and it is hoped that the equipment can successfully be installed and commissioned during September 2022. Meanwhile, back in the UK, the various drawings and documents are being finalised and translated into French for use by the team at Lwamba.

Uganda



Installing the Clariwash filter, Kagando Hospital



Lost in the woods, Rwembya, Kagando



Measuring the Kuluva intake

Nigel Heeler, Jonny Burns and Jonathan Appleby visited Uganda in July 2022. Whilst at Kagando Hospital with Philip Tibenderana we finished the installation of the first Clariwash filter for the hospital water supply. Since then, Nigel has been working to procure a second filter assembly, which is now ready for delivery to site. The second filter will provide much-needed flexibility in the operation of the treatment system. It is hoped that Philip and Edwin Wasingya will be able to supervise the installation of this so that a further visit from the UK may not be needed.

Also at Kagando, we continued to design the components of the Rwembya Hydro Scheme, including finalising the route of the pipeline from the intake on the Rwembya River to the power house location at Nsenyi.

Update: We have to report the sad demise of the Rwembya Hydro Scheme. Having done much of the design work, we are naturally disappointed that it will not be proceeding; but that is what happens. The problem was funding – or lack of it – and in June this year, after much discussion, the hospital's financial supporters in the UK came to the conclusion that a hydro scheme could not be afforded. However, there are sufficient funds to provide a Solar PV system which will be capable of supplying enough electricity for the hospital's daytime needs. Graham Miller and David Bookham have recently begun assisting with the design for the Solar PV system. This is the first time CED have been involved in the design of Solar PV – maybe this is a sign of things to come?

Also in Uganda, we are involved with Kuluva Hospital in Arua. Kuluva have an ageing hydro scheme which is in need of refurbishment, and a new Ossberger turbine has been ordered from Germany, due to be delivered in 2024. In the meantime, we're helping the team at Kuluva to carry out some refurbishment work on the existing pipeline, intake and power house.

Kuluva Hospital also face challenges with their water supply, which comes from a mix of several boreholes in various stages of disrepair. Jonny Burns has been helping the team at Kuluva to try to rationalise their setup and explore options for stabilising the system.

Tanzania



New tank in Biharamulo Diocese

Ian Rankin organised training in Biharamulo in July 2022 that trained two masons from each of 5 villages of the Anglican church's development programme. They are now completing a 5000 litre ferrocement pumpkin tank at each church and four 1000 litre tanks at widows' houses, all subsidised by CED.

In the course of the year 6 pumpkin tanks were subsidised for schools and churches and 50 small tanks donated between Kagera and Biharamulo.

Looking to the future, we plan to set up a WhatsApp group of interested people from both UK and Tanzania to discuss how we might make tank building sustainable. This might be built around a sustainable subsidy for the poorest if we can find a way to assure a continuous funding stream.

India:



New borewell, Kerala.

Graham Miller and Steven Harris have been working on a small project to install a borehole at Sathya Veda Bible College, Kerala. Steven visited Sathya Veda in July 2022 to supervise the drilling. Unfortunately the yield from the borehole is not as good as had been hoped, but sometimes this happens – hydrogeological desk studies are not a guarantee of success every time. However, it is hoped that the limited yield from the borehole will still be of use to the Bible College.

We look forward to this next year, in anticipation of God's provision and leading, as we seek to serve the poor in His name.

Jonathan Appleby

Fresh Hope for Manowa, Sierra Leone

After 6 years of research, planning and fund raising, the last 12 months have at last seen significant progress towards achieving a clean water supply to the people of Manowa in Eastern Sierra Leone.



Existing spring, inadequate and often contaminated

When completed, the system will consist of groundwater from a borehole being pumped, using solar power, to 5 interconnected plastic tanks on a 10m high reinforced concrete platform. From here water will flow by gravity to 31 tapstands around the town, and the aim is to supply sufficient water for 6,000 people.

Two boreholes were drilled in April 2022, one of which looked to be very promising. There was then a long delay whilst we searched for a drilling contractor able to supply a suitably large pump to establish the expected yield. This search proved fruitless and so the decision was taken to use the size of pump available and rely on the expertise of Malcolm Anderson, CED member and experienced hydrogeologist, to extrapolate from the data generated.

In March this year Rob and Barbara Brighouse visited Sierra Leone to supervise the pump tests and also carry out topographical survey work. As expected, one borehole proved to have a poor yield but the other, located near the secondary school in Manowa, should be sufficient to supply the whole town.



Since then, much progress has been made on constructing a water tank platform and on pipelaying. The local community have been involved in providing voluntary labour to dig the trenches for the pipework.

Our partner for this work is Practical Tools Initiative (PTI). As part of this project, their team in Sierra Leone oversaw the construction of 30 latrines around the town in November 2022. Hygiene education has also been delivered and seminars will be repeated once water starts flowing to the taps.

This project has highlighted many of the problems associated with working in Sierra Leone. For example, CED would usually opt for reinforced concrete tanks, but local contractors are not familiar with constructing these, and so it was considered safer to purchase plastic tanks.

We give thanks to God for providing the support needed through a variety of donors who have provided the funding for this project and the CED engineers who have been, and continue to be, involved in the detailed design. There is still much to be done before the project is completed. Please continue to pray for the CED and PTI teams as they continue working towards a successful completion of this project.

Alan Michell, Barbara Brighouse



Water tower under construction

Project Highlights April 22 - March 23

Democratic Republic of Congo:

- ▶ Advice and assistance with the refurbishment of a pico-hydro scheme at Lwamba Hospital.

India:

- ▶ Design, specification and construction of borehole and pump for Sathya Veda College.

Pakistan:

- ▶ Post completion audit of Tharparkar health and sanitation project completed last year.

Rwanda:

- ▶ Post completion audit of Mayange village water supply project completed last year.

Sierra Leone:

- ▶ Building of latrines and pump testing of borehole in Manowa prior to installation of water supply scheme.
- ▶ Installation of borehole and pump at Rotifunk.

Tanzania:

- ▶ Continued Kagera, Biharamulo and Musoma rainwater harvesting tank building and training.
- ▶ Training and development of rainwater harvesting tank programme including funding support for further tank building by local communities.

Uganda:

- ▶ Continued engineering advice given for hydro schemes at Rwembya and Kuluva.
- ▶ Funding obtained and material sourced for second phase of Kagando Hospital Clariwash water filtration scheme.

		B/F	Income	Expend	Transfer	C/F
CN02	Lwamba Hospital electrical systems advice			-293	293	
IN01	Sathya Veda Bible College borehole and pump		625	-7,575	6,950	
PA08	Tharparkar health and sanitation	470	1,700	-2,988	818	
RW08	Mayange water and rainwater harvesting			-3,967	3,967	
SL01	Manowa water supply		67,415	-19,747	3,650	51,318
SL03	Rotifunk borehole and pump		700	-5,150	4,450	
TZ16	Kagera rainwater harvesting tank building			-823	823	
TZ19	Musoma rainwater harvesting tank building			-2,185	2,185	
TZ20	Tanzania rainwater harvesting programme		12,984	-8,698		4,286
UG00	Uganda general costs	64		-3,182	3,150	32
UG40	Rwembya hydro scheme	3,388		-1,288	342	2,442
UG42	Kagando Hospital water treatment scheme		15,372	-11,295	8,086	12,163
UG43	Kuluva hydro scheme			-2,522	2,522	
		3,922	98,796	-69,713	37,236	70,241



Financial Summary

The CED financial position continues to be healthy largely as a result of a legacy received in 2017 and grants received in 2022/23 to be used to meet specific future project costs.

The level of donation from supporters and other individual donors remained at an encouragingly high level. The generosity of many individuals, churches and charities who regularly support us is greatly valued.

Significant donations were received from members and supporters towards the Rainwater Harvesting Tanks programme in Tanzania and Kagando Hospital second phase of Clariwash water filtration system in Uganda.

In addition the Board were grateful to receive grants from A & N Ferguson Trust, Laing Trust, Souter Trust, Wilmslow Wells for Africa and SMB Trust for the Manowa water supply scheme in Sierra Leone.

Other income benefitted from rising interest rates.

Generally the costs of managing the charity are kept low as most activity is undertaken on a voluntary basis.

David Beak, Treasurer

	Unrestr'd Funds £	Design'd Funds £	Restricted Funds £	Total 2023 £	Total 2022 £
Income and endowments from :					
Donations and legacies	20,578	-	35,796	56,374	27,154
Charitable activities	-	-	63,000	63,000	28,581
Other	74	2,793	-	2,867	168
Total	20,652	2,793	98,796	122,241	55,903
Expenditure on:					
Raising funds	956	-	-	956	533
Charitable activities	2,755	130	69,713	72,598	101,143
Governance costs	1,795	-	-	1,795	1,680
Total	5,506	130	69,713	75,349	103,356
Net Income / (expenditure)	15,146	2,663	29,083	46,892	(47,453)
Transfers between funds	(15,200)	(22,036)	37,236		
Net movement in funds	(54)	(19,373)	66,319	46,892	(47,453)
Total funds brought forward at 1 April 2022	10,044	114,774	3,922	128,740	176,193
Total funds carried forward at 31 Mar 2023	9,990	95,401	70,241	175,632	128,740

CED exists to demonstrate the love of Christ by enabling Christians with engineering and allied skills to help the poorest communities overseas.

We invite supporters to become involved through:

- *Praying regularly for CED*
- *Raising the profile of CED*
- *Making donations*
- *Fundraising for specific projects*

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Digging trenches for new borewell water supply, Manowa, Sierra Leone

