

Newsletter No.106

November 2017

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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. The Board appoints a Secretary and a Treasurer. 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. Membership requires an act of commitment and usually an annual subscription. 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. An application to be a Member should be supported by an existing Member or Pastor.

Newsletter

The Newsletter is published twice annually. We'd be delighted to provide additional copies for friends, colleagues, church book stands, etc. Please contact chair@ced.org.uk and let us know how many you'd like.

The editor would be happy to receive contributions for the next Newsletter . Please send to 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 ian@ced.org.uk or by writing to the Secretary.



Letter from the Chair

Welcome to the latest edition of CED's newsletter. The time that has passed since our April edition has been mixed. We have had some real encouragements. Our AGM was well attended and we enjoyed a great time of fellowship. We interacted well with each other, a remarkable thing for engineers! We asked questions about projects, challenged each other over the way we operate and engaged enthusiastically in different workshops. We have also received a very large legacy which will help enable **CED's projects, allowing small or partly-funded larger projects to proceed to implementation phase.** In addition, the Rwentamu project in Uganda has now received sufficient funding for us to start the construction phase.

But CED has also experienced sorrow, **difficulty and setbacks.** **Ian Rankin's wife** Jeni very sadly passed away early in June. Please continue to uphold Ian and his family in your prayers. On a less personal note, we were very disappointed that both of the applications for funding to the DFID

supported UK Aid Direct Community Partnership Fund were rejected. The two projects (Mayange Refugee Community in Rwanda and Improving Health through Sanitation in Tharparkar, Pakistan) were amongst 122 projects which were shortlisted from 591 eligible concept notes. However, of these full applications only 40 projects received funding. The failure to secure funding for the project in Pakistan has had major implications for our partner PVDP. They have been struggling to obtain funding for any of their projects and have been forced to cut their office costs. They only have one project continuing into 2018 **and have written that it is "quite difficult for PVDP to serve its community and also retain its experienced staff". One final challenge** relates to the Kisy-Kagaana project. Whilst the project has been successfully completed, insufficient spring flows mean that some of the tapstands in the busiest parts of the village run dry during the day. We hope and pray that the problem can be resolved easily and cheaply, avoiding the need for complex and **less sustainable** pumping equipment. **Newsflash P7**

When facing challenges it can be hard for us to keep our noses pressed firmly to the grindstone. Yet as Christians we are frequently reminded of the need to persevere. Our work is often not easy. But *"let us consider how we may spur one another on towards love and good deeds"* (Hebrews 10:24). **CED's vision is to increase our effectiveness in changing lives. Surely this is a worthy goal. Let's encourage one another. Let's be active. Let's get stuck in. Let's persevere.**

A big thank you to everyone who is involved in CED in whatever way. May God richly bless you.

Mike Beresford



Open Day 2017

After attending CED's 31st annual general meeting in Reading on the 24th of June, I sent a short note of thanks to our current Chair, Mike Beresford thanking the Board for a 'friendly, informative, thoughtful (and thought provoking) get together in Reading'. Adding 'I always come away from these events encouraged!'

◇ Friendly; over the years, friendships with other members have grown, so it was great to catch up with news and views during the day. 'Hats off' to the board and our host church Greyfriars (and church members including CED member Jeremy Rawlings) on the venue and programme that facilitated the friendly atmosphere.

◇ Thoughtful; the main speaker James Fallah-Williams of 'Practical Tools Initiative' who captivated us with the work of this charity in Sierra Leone which "collects, refurbishes, and sends used tools to deprived post-war communities for social and economic rehabilitation". The provision, maintenance and repair of wheel chairs (for which is there is high demand), was noteworthy. Is there a an opportunity for CED to collaborate with Practical Tools Initiative in this part of Africa in the future?

◇ Informative: the review of [CED] projects, the afternoon workshops, AGM and 'Open Forum' / prayer time were all very interesting. I particularly enjoyed learning about developments in hand pumps in one workshop. The other workshops covered sanitation and the Grifaid water filter. In all, it was a great day to enjoy the company of like-minded engineers seeing what the Lord is doing through development projects and the part that CED is playing in them!

Jonathan Cox



CED AGM - Open Forum

CED members and supporters participated in an Open Forum. This gave everyone an opportunity to offer comment and encouragement or raise concerns about CED. The points raised are listed below. In many cases it wasn't possible to give a considered answer at the Open Day but where a response was given it is included in **bold text**

Communicating what we do

- Those not directly involved want to know more about the impact on people's lives and understand how effective we are at benefitting others.
- To accurately measure benefits we need to carry out baseline surveys and an evaluation; but these are not cost-effective for small projects.
- Our supporters want personal stories rather than statistics.

Other comments:

- A large portfolio of small projects may suit CED better than a small number of large projects.
- It is wonderful to be part of the worldwide church and to worship and work as a group of engineers.

Funding

- Could crowd funding be used for raising funds for projects?

Membership

- How do we tell people about CED? Perhaps via Christian agencies rather than engineering ones; also open the membership up to those who are not engineers?
- Ideally we would like some younger members; is this realistic?
- **Although those who aren't Christians can't become members, could they possibly go on an overseas visit?**
- Many companies have budgets for such visits. Taking young people overseas has great value.
- CED could advertise through Christian Unions at Universities that offer appropriate courses.
- CED could take a stall at Greenbelt or similar; and/or advertise in Premier magazine.
Chair's response: CED is considering attending the Big Church Day Out next year.
- Do we work with EMI or are they competitors? **Chair's response: We wouldn't compete with any organisation! We have discussed how we might work with them.**
- What prevents us doing more as an organisation? Is it funding or member resources?
Chair's response: Unfortunately it can be both – the two are inter-connected

Water Point Sustainability

Many of us have experience of engineering in industry in this country. When an issue crops up funds and resources are available to fix the problem. When we lack the technical knowledge we have a wide range of resources to call upon. Likewise, when the boiler in our house breaks down we get it repaired. When there is a failure of a water main it gets fixed.

When I studied for a Master's Degree in Water and Sanitation I assumed I just needed to build up my knowledge of water supply systems and then apply that technical understanding to projects overseas. I had a vision of me travelling to Africa, taking some measurements and having a few nice chats with the community. I would return to the drawing board, do some sketches and make some phone calls to some big charities who would give me the necessary finance. The project would quickly get completed; I would return humbly to the village to join with the happy community celebrating joyfully at an opening ceremony, thinking quietly "job done"!

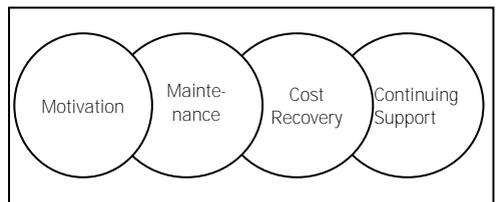
Handpumps are simple and affordable. Surely there can be no reason why a broken down **handpump shouldn't be repaired rapidly?** So why is it that in Sub Saharan Africa, up to half the handpumps are not working at any one time (IRC, 1988)? A recent study from Tanzania indicated that nearly half (46%) were not working. The study also found that a quarter of new handpumps were not



functioning within two years of commissioning (WaterAid, 2009).

Sustainability isn't just about engineering.

Keeping handpumps operational in the long term requires attention to several factors. I like the model of sustainability conceived by Carter et al. (1999) which consists of four interlinked factors. If any one is neglected the link will break leading to poor sustainability of the handpump in the long term.



The sustainability chain envisaged by Carter et al. (1999)

The upshot of this is that, as engineers, we **need to consider some vitally important "soft"** issues concerning the community and its supporting infrastructure. For example, it is essential that the community takes full ownership of any project. Without this they will lack the motivation they need to look after their water supply. Furthermore, if there are



no local arrangements for maintenance (usually a self-employed handpump mechanic), then there will be no one capable of carrying out repairs. Similarly, if a non-standard type of handpump is installed, the **mechanic won't be able to buy spares at the local village hardware store**. When something serious goes wrong with the handpump, does the mechanic have someone in the District Water Office who is knowledgeable to provide advice? Last but certainly not least – will the community collect water user fees regularly? A small amount per family per month, kept by the treasurer (women are more reliable than men) enables repairs to be carried out when something goes wrong. Fellow engineers, it sounds harsh, but if we fail to acknowledge the factors affecting sustainability we are



simply wasting money. Our project may be the one that stops working a few months after completion – and worse still, it may never work again.

Mike Beresford

This article was based on a workshop held at CED's AGM on 24th June at Greyfriars Church in Reading

Newsflash

Since Mike wrote his “From the Chair” article we've had some really good news from Uganda. Philip Tibenderama, our engineer there, recently checked the pipeline again.

John Holloway reports: “On Wednesday (01/11) afternoon Philip telephoned me to tell me that they had found a leak from the upper source intake and on investigation they found that a tree root had penetrated into the intake chamber and had blocked the intake to delivery main. On removing the tree root and unblocking the delivery main the flow from the upper source returned almost to the flow of the time of the original design, that is 0.4 l/s. Tank B filled overnight and was overflowing the next morning. Hallelujah PRAISE God!! So the problem of the

diminished flow from the upper source was not caused by an exceptionally long dry season in 2016/2017 but inadequate **maintenance by the Water User's Association** maintenance team and inadequate supervision locally and from ourselves. An important lesson for us all to learn. This result seems to mean that no further construction work is required on the water supply. Tank B is now receiving 34,560 l/day, sufficient to supply 1,380 people with water, significantly more than required. I have asked Philip to monitor the flow from the upper source regularly for another month to be sure.”



Area of spring that blocked



Karamoja/Teso Reconciliation Project, Uganda, 1992. Community earth dam reconstruction using ox drawn dam scoop designed by CED and locally constructed in Soroti. Revival of animal action.

A Perspective on CED's Attitudes and Methods

The Times newspaper carried a short article in April 2017 describing the pioneering work carried out by a visionary engineer, John Bateman, who in 1856, concerned for the cholera ravaged people of Glasgow, conceived the idea of transporting clear Highland water from Loch Katrine by gravity through unmapped rugged country 50 miles to Glasgow. He had few resources, there was no access road, no heavy equipment, only the simplest of survey equipment. All he had was a large number of willing Irish labourers, a nod from Isambard Kingdom Brunel and his self belief to encourage him. 3 years later Queen Victoria opened the pipeline, the result of extremely difficult work involving a mass

excavation, tunneling through mountains, bridge building across deep ravines, 50 million gallons of crystal clear pure clear water were delivered daily to the city of **Glasgow**. That same “it can be done” spirit is what has enabled CED to achieve much of the **work it has been able, with God’s help, to carry out in the developing world.**

There have of course been many advances in engineering technology since 1856 and a great many of these can be taken advantage of in development work overseas today. Survey in rough terrain is much easier with modern equipment. Construction equipment is much more versatile and effective and new materials make for easier construction. However lack of access and difficult terrain may mean that construction materials cannot be transported to worksites and raw materials may have to be transported long distances by headload. Construction equipment may not be available at the work site, improvisation becomes necessary.

A few examples to illustrate the sort of problems that are frequently encountered.



J.F. Bateman, 1810—1889.



Mountain spring, alt. 6000 feet for Kisya Kagaana gravity water supply, Rukungiri, 2017.

Pawaga Gravity Pipe Line, Iringa District, Tanzania. The intake, on a sometimes violent river among large granite boulders, with steep falls and very limited road access, requires sometimes primitive methods over the first 7 km. Total pipe length 27 km serving 25,000 people.

Kisya-Kagaana Gravity Piped Water Supply. Rukungiri District, Uganda. A high altitude scheme in rugged terrain involving three separate spring intakes with large static pressure variations and 17 Km of pipeline, serving 5,000 people, presented many difficulties. Not least of these being a lack of road access which limited the type of equipment which otherwise could be used and involved transporting all the materials by headload.

Granite boulders may need to be cleared from water supply intake sites on rivers but there may be no access for an air compressor required for drilling holes for explosives. Although holes could be drilled with a hammer in the pithead, financial constraints may prevent the employment of a licensed blaster and the provision of secure facilities for the safe storage of explosives. In such situations it may be necessary to use the Stone Age method of fire and rapid cooling to break up rocks.

In many situations designs have to be modified to accommodate materials locally available, for example pipeline routes may have to be extended to avoid pressures for which locally manufactured uPVC or HDPE pipe might not be available. There are many other situations where innovative alternatives have to be found

Some of the projects undertaken by CED in the last 25 years are:

Karamojo water supplies, northeast Uganda. 1992/94. In collaboration with Christian International Peace Service (CHIPS).

Christians who feel called to undertake seemingly impossibly difficult tasks for God **should always remember Jesus's statement** recorded in the Gospels: *Jesus looked at them and said; "with man this is impossible but not with God, all things are possible with God"*. (Mark 10:27. Matthew 19:26). Many of the pupils living in the rural areas of Africa and Asia lack access to clean water because the environmental and topographical conditions pose seemingly insurmountable difficulties. However, given determination, courage, ingenuity, faith and perseverance, ways of solving such problems can very often be found. Praise God that He does not give up.

John Holloway



Intake on Little Ruaha River for Pawaga gravity water supply, Iringa.



Zanzibar: stainless steel ties stabilise roof

Among Bible texts relevant to CED, one of the earliest must be the first part of Genesis 11, warning us not to let pride (*making ourselves a name*) displace God in our ambitions. The context is construction of a tower reaching “to the heavens”. That warning has not prevented the building of tall cathedrals worldwide and even in Zanzibar. CED’s involvement in stabilising and improving Zanzibar Cathedral has led some of my local friends to ask if that was an appropriate use of our resources or even a true reflection of CED’s name – should we not have concentrated on the poor rather than on the main asset of a congregation which appeared to be well off in local terms?

The correct response is that there certainly are poor people in Zanzibar’s churches and CED’s work has helped the local Christian community, hard-pressed as it is, to regain some confidence and be better prepared to serve the marginalised. The project has also led to invitations to help some rural Zanzibari communities with water-supply problems – that is very much something for the poor and demonstrates how one CED project can lead to others.

An interesting parallel with a different world of tall structures related to worship is illustrated

Cathedrals and Pagodas

by a paper* in the ICE Proceedings about the Yingxian Pagoda in China. The pagoda was built to over 60 metres, well above Zanzibar Cathedral, in the eleventh century, in a zone much more seismically active than Zanzibar and with very different natural resources. Its stability depends on quite elaborate timber components which help the structure to “ride out” earthquake disturbance with limited damage. In brief, the storeys alternate in their stiffness, the “odds” being largely hollow and the “evens” internally braced. Each pair of storeys rests on the storey below through a system of interlocking timber components with restraint against unwanted relative movement provided by dowels and nibs – no conventional fastenings. The whole pagoda rests on a smooth, level platform with no sideways restraint whatever beyond the resistance provided by friction. The timber components are highly repetitive through the entire height, the sets being manufactured



Yingxian Pagoda



Zanzibar steeple scaffolded for repairs

carpenters and scaffolders. The pattern of dowels, nibs and faying surfaces has stood the test of nine centuries with only minor damage. There was always a risk that in some seismic event a dowel will shear or a nib will be knocked off; but there was considerable redundancy in the design and those early builders probably learned from experience, perfecting their technique at the safer lower levels – I imagine that inspection would reveal precision increasing with height.

The parallels between the cathedral and the pagoda include these last two points – CED has left a “legacy” of local craftsmen able to practise old skills with the local materials, in this case mostly sand and coral rather than timber – and the stability of the structure as a whole has been enhanced.

As a Christian I naturally cannot get excited about propagating Buddhism, but I don't think that needs to stop us learning from what Buddhist builders of the past can teach us, just as much of the chemistry we know has come from early Muslim scientists. We are all God's children in God's world.

**"Solving the Mystery of China's thousand-year-old Wooden Pagoda", Zhong et al, Proc. Inst. Civil Engineers, 170, November 2017, Issue CE4, 169 – 173.*

Dick Waller

and arranged in only three or four standard patterns. Once the fashioning of the different component sets had been mastered and the results installed, the community must have been left with a useful workforce of expert



Flexible timber connections, pagoda, China



Zanzibar: outer end of stainless steel rod in concrete padstone

Rubabo Community Hydropower Scheme

CED have signed a Memorandum of Understanding with Rubabo Hydro Ltd – a company set up by two Ugandans from the Rubabo area, who hope to build a community hydropower scheme on the Rubabo river. The aim of the scheme is to generate electricity – much of which will be sold to the Ugandan electricity board, although some will be available for community use. The profits from the scheme would be reinvested in the local community, for the benefit of the community.

Things are still at an early stage in the scheme and it may prove to be non-viable as a project – for instance if the capital costs are so great that it would take too long to repay the cost of the bank loan which will be needed for construction. However, that is the way things are with hydropower schemes - you have to put in some work just to discover whether the scheme is viable! And so CED are providing technical assistance at this **stage, and a small amount of “seed-funding”**, to help Rubabo Hydro to gather the data they



Broad crested weir under construction on Rubabo River.

need in order to put together a sound business case for the scheme.

A broad-crested weir was constructed across the Rubabo River in September, and this is currently being commissioned and calibrated (see photos). Data collection should commence this month and will continue for at least 12 months, so that we have a good set of flow data for the river, which can be compared to rainfall data to give an estimate of the likely yield of the scheme.

Jonathan Appleby and Edward Rhodes hope to visit Uganda in early December to assist with surveying work for the project and it is hoped that Paul Darrall will also be visiting at that time to provide some input to the feasibility-stage process. Prayers would be appreciated for Paul, Edward and Jonathan as they travel and also for Victor Twesigye and Gideon Habomugisha of Rubabo Hydro Ltd as they seek to develop this project for the benefit of their community

Jonathan Appleby



Location of weir (and future intake) on Rubabo River.



Rwentamu, Uganda

Following completion of the Rushere project, staff from the North Ankole Diocese of the Church of Uganda were tasked with identifying the most water-stressed places in their region. The diocese is in Kiruhura District where only 36% of the population have access to safe water, far below the average for rural Uganda (65%). The diocese **prepared a shortlist of two locations.** CED's part-time Ugandan engineer Philip Tibenderana visited the area in February 2015 and highlighted that 2,000 people draw their water from open ponds in the village of Rwentamu. Since then CED has been working on a project to alleviate this problem and provide a year round improved water supply. Groundwater is not an option because of the local geology, so a form of surface water reservoir is needed. CED has a **proven design called a "charco-cum-valley" tank** which captures rainwater flowing down through the valley. The design incorporates a settlement pond where larger particulates and sediment settle out from the surface water, before it passes into a larger storage area. From here the water flows by gravity through a gravel filled channel into a shallow well. The community is able to pump water using a hand pump from the well into jerry cans for domestic purposes.

The concern for Rwentamu has been that it has a very large catchment area (c. 20km²), more than twice the size of any charco-cum-valley tank previously installed by CED.



The level grassy area where the tank would be situated

However, having now visited the site a few times, we have satisfied ourselves that the risk of severe flooding in the valley is low. Nevertheless, we have agreed a design with a very wide spillway, which should allow any possible flood water to overflow safely past, without damaging the water storage reservoir.

Despite a number of funding setbacks over the past 18 months, we have recently received a confirmed offer of £20,000 from Wilmslow Wells for Africa. LIFE Trust have also just donated a further £15,000 on top of the £5,000 that they had previously given.

This has allowed CED's directors to approve the project for construction, with CED funding the shortfall in the overall £48,900 project budget. As we go to print, Philip Tibenderana is organising the final drawings and paperwork for us to be able to obtain quotations and then start the construction phase in the next few months. Hopefully in our next newsletter we will be able to report significant progress on the project.

Mike Beresford.



Valley tank would be at the centre of the picture at the foot of the valley



Travels in Tanzania

As I recorded my diary on Zanzibar my laptop screen saver was a picture taken in February of the Cullin mountains of Skye, taken from the frozen wastes above Glen Affric at sun down - and here I am sitting in a lovely wee café overlooking the Indian Ocean sipping fine African coffee in the shade of a day of mixed rain and sunshine. Diversity, contrasts, beauty.

CED were invited to send a representative to Zanzibar Cathedral to join in the celebrations for the completion of the restoration works. I was lucky to go back, like people say – Africa gets under your skin! I was joined by Robert and Natalie Stone of Friends of Zanzibar and Stephen Bourne of Ely Cathedral along with some 500 Zanzibaris, two large choirs and the national TV crews. The 3½ hours passed quickly and was a tremendous celebration.

Whilst in Tanzania I visited a number of potential projects. On Zanzibar a church **under construction, historic St John's** at Mbweni and two potential water projects. Later I travelled with our friend Father Nuhu (of Zanzibar Cathedral) to Mtwara in the South of Tanzania to inspect and comment on plans for a substantial church extension in which I had to point out several deficiencies,

hopefully saving a costly disaster! Return to Dar es Saalam and visit a potential water project at Kigezi, West of Dar es Saalam, with **our friend Pastor Reuben Ng'wala** – who some of you may know from his days studying in Glasgow and attending Adelaide Place Baptist Church.

There! In two paragraphs I've covered a couple of thousand kilometres and a riot of experience and emotion. From the joy and excitement of the Cathedral and the beauty and finery in Mtwara to the poverty of and hard-won living of rural Christian communities in Zanzibar and Kigezi with inadequate water and other facilities, growing meagre crops out of small fields that are half coral rock.

Well that was fun wasn't it? Now I go home and get on with things... in comfort, in security, in health. But it's not that easy is it? My trip was worthless, or worse than that, if I **cannot make something of it. I've stuck my nose in people's lives, I've given them some** hope that something may be done to help ease their way of life. Now I feel a burden to make something happen and it is not easy. It needs more than simply throwing a wad of money at them; CED is about so much more than that. We have to try to help people bring their aspirations to fruition in a healthy and





sustainable way and manage this in amongst the demands of a working life here in the UK.

We do not travel alone, or work alone. We do it with and because of Christ, He travels with us and we must seek Him in our work and

living too, then allow things to come to fruition in His good time and His good way.

Angus Armstrong

(There is a much fuller version of this story. If anyone would like to read it, contact me.)

Alan in Rwanda... again!

On Sunday 22nd October I was privileged to be asked to preach at the Anglican Cathedral of Kamembe at their English service. I spoke on Gideon and how God taught him to trust in God and not his own capabilities or resources.

The attached photo is of me with Reverend Alfonse and Bony Lakony one of the Diocese of Cyangugu workers. It was a joyful and Blessed time of worship.

Alan Michell



CED's Roy Lemberger on soils and boreholes

Soil Acidity

As well as enabling overseas partners to achieve engineering success CED supports our own members in various ministries as they seek to live out their faith. Here CED member Roy Lemberger gives us a little of his **background and talks about work that he's** involved with in Kenya. Members are encouraged to offer their stories to our Newsletter if at all relevant to our mission. Please contact ian@ced.org.uk. Back to Roy:

“After graduating from Harper Adams Agricultural College in 1969 with a Diploma in Agriculture I worked for 30 years with the Ministry of Agriculture, Fisheries and Food (MAFF) as a Soil and Water Engineer and then later widening my sphere of activity to encompass environmental land management, and land use planning.

After taking early retirement in 1999 I spent seven years as a full time carer for my father who died at the grand age of 101 and then was able to turn my interest back to the land. Having been invited by very good friends who were working in pastoral training I visited Kenya in 2010 and I have resumed my interest in practical soil management and have spent some time investigating some of the problems found within the area of Trans-Nzoia West relating to soils and water management. A widespread problem I encountered in England soon after starting work was the lack of adequate crop growth, despite normal good husbandry practices, on many farms in the area in which I was working.

A national report produced in England in **1970 entitled ‘Farming and the Soil’** by the late Sir Nigel Strutt, highlighted, amongst other problems prevalent at that time, and to a somewhat lesser extent today, the acidification of soils due to the lack of use of appropriate calcifying materials.

This problem is widespread not only in England and many other countries but is also widespread in many part of the agricultural landscape of Africa, including the area of Western Kenya where I was visiting.

Normal chemical soils analysis is time consuming and expensive and beyond the scope of most smallholder farmers and I was concerned to try to find a way to resolve this and my research eventually led me to find a simple tool, a pH meter, for determining soil acidity.

This is mainly used in the UK by gardeners but has the potential for being of use in smallholder situations too as in Kenya.

Generous sponsorship came willingly from various sources and we have been able to send, along with instructions specifically for use in the sub-Saharan Africa situations, almost 300 soil testers, including latterly a combined soil pH and soil moisture meter (at no more than £5 each) for use mainly by Agricultural Advisers or community leaders as **part of their work ‘armoury’**

This work is ongoing and as funds become available we hope to continue sending them to wherever the need is identified. Here is a picture of some such testers.





Borehole with the Waitaluk (Oasis) Water Trust, Kenya

In 2010 I visited friends who were working in Kitale, Kenya. During this visit I met a number of local farmers. In discussions with them it became apparent they faced severe problems because of the lack of water and poor crop yields.

During my next visit in 2011 I investigated possible water supply improvements.

I visited again in 2012 and after receiving a positive hydrogeological assessment report decided to initiate fundraising for a deep borehole.

In 2012 fundraising started and by the end of 2016 we had reached our target of £14,000.

In 2016 Nehemiah construction Ministries (UK) a registered charity, based at Elim Peterborough, had also raised sufficient funds of over £100,000 to construct and export to Kenya a rotary drilling rig specifically for work in the semi-arid North West Turkana

region.

In late 2016 drilling took place at Waitaluk, and, at a depth of over 50m, found plenty of fresh water and we installed a hand operated pump.

During this time we also set up a Trust for the running and operation of the supply and at present legal issues are being finalised.

In 2017 Beryl, my wife of over 50 years and I went to visit our friends and were pleased to be able to attend the commissioning ceremony which included much noisy celebration with a silver band and more than 150 people. The borehole is now being used by over 50 families in the community.

Above are photos of the final touches and **Beryl having cut the 'tape' to open the borehole.**

Roy Lemberger

News from other members:

John Knight is currently finishing up in Juba from **where he's looked after** projects supporting displaced people in Maban and Aweil, South Sudan with Medair.



Simon Ewing and family are settling into life in Mwanza with trips to Kome Island where Victoria is involved with medical work through Emmanuel International.



Rob and Mary Wakeling are shortly heading South to be nearer family; watch for new address for Membership Secretary.

Kisiizi Hospital Friends' Day

Over 70 people came to the Kisiizi Friends Day at Brookside Church in Reading on 7th October to share stories of their work at Kisiizi, to pray and to show solidarity with the hospital staff following the recent floods. Many of the participants were clinicians and most had been to Kisiizi or have plans to go.

Dr Philip Haynes, a GP in Reading, who has previously worked at Kisiizi, challenged us to **'stop and pray'**. **Often our focus is on collecting information.** Each day at Kisiizi begins with a service in the chapel.

Guest speaker, Moses Mugume, the Senior Hospital Administrator at Kisiizi, thanked us for standing with them at this difficult time. **'It reminds us we are part of a bigger family'**, he said. On 10th September heavy rain flooded the road to Kisiizi, blocked drains and flooded the Kisiizi generator house. This cut off the electricity supply, cut off the drinking water supply and led to some patients having to be moved. [See: www.kisiizihospital.org.ug for photos and updates]. [See ref 1.]

Kisiizi Hospital receives very little financial support from the Ugandan Government. On this occasion a motion expressing support was debated in parliament and practical aid was despatched. Mechanical diggers were sent by the Ugandan National Roads Authority to dig out a channel for the water and to install a new culvert under a road. Mattresses and bedding sent by the **Prime Minister's Office** have just arrived and will help to replace losses. Work by volunteers and conscripted prisoners helped to make the site fully functional again. The water supply pipes had to be repaired. The main generator is running again and Charles Swainson, who was passing through soon after the floods, is working on the generator.

Further work will be required to improve the drainage near the hospital, repair the foundation of the generator house and minimize the risk of future flooding. Deforestation above the hospital is understood to have made the situation worse [2]. This is a much greater challenge.

Tom and Anna Sibbald described their work to promote a locally made improved stove. This will help to reduce deforestation and limit indoor air pollution. The cleaner burning stove is being used by households around the hospital. A Ugandan project volunteer is promoting the stove to local people. At the local primary school a community-based company has recently built improved stoves for the school kitchen. According to a doctor present, children often suffer with pneumonia in this rural area, so improving air quality from cooking is key.



Prisoners clearing debris at the lower medical department

An IT programme at Kisiizi called 'Stre@mline' is delivering improved patient care. Mr Mugisha Samuel told us about this programme which has been running for one and a half years. Over 60,000 patient visits have been recorded in Stre@mline, which makes it easier for medical staff to see patient history, including allergy information. In a country where very few hospitals use software, this news was reported in 'The Monitor' Newspaper [15th September 2017]. The cost of the treatment is recorded and prescription errors are audited. The numbers of patients being treated in the hospital is monitored and data reports and the software enables easier reporting to the national health ministry. Challenges in implementation include the lack of computers in the hospital and the lack of staff with IT skills. For patients, in the short-term, the IT system appears to slow down treatment because of the need to enter data. The hospital plan to roll out Stre@mline to all wards and add further modules for finance.

The Friends Day was a great opportunity to network and tell a wider group about CED.

Readers will recall that CED received an enquiry regarding renewable energy for their visitor centre a couple of years ago. This was opened in June by the Minister for Tourism. Income from visitors goes into the 'Good Samaritan' fund which helps to pay the medical costs of poorer patients.

Jeremy Rawlings

References:

- [1] <http://www.monitor.co.ug/News/National/Three-babies-die-floods-Kisiizi-Hospital-Church-of-Uganda/688334-4091944-iufq3t/index.html> [7th October 2017]
- [2] <http://www.monitor.co.ug/OpEd/columnists/MuniiniMulera/Kisiizi-Hospital-Landslides--Mother-Earth-Rukiga/878676-4101214-m9cfr/index.html> [7th October 2017]



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Front Cover: with no road access, components were carried up to the filter house at Kisyá Kagaana

This picture: Tools of the trade..