Scottish Government International Development Programme
End-Year Report

1. General project information		
1.1	**Project reference Number**	MAL/18/0-UoS
1.2	**Name of organisation**	University of Strathclyde
1.3	**Lead partner(s) organisation**	United Purpose and Community Energy Malawi
1.4	**Project title**	Rural Energy Access through Social Enterprise and Decentralisation (EASE)
1.5	**Reporting period**	**From:** 01/04/2020 **To:** 31/03/2021
1.6	**Reporting year**	Year 3
1.7	**Project start date**	01/10/2018
1.8	**Project end date**	31/03/2023
1.9	**Total project budget***	£1,332,533
1.10	**Total funding from Scottish Government***	£1,332,533
1.11	**Provide a brief description of the project's aims, highlighting which of the Sustainable Development Goals (SDGs) your project is working towards? (200 words)**	The EASE project works to address energy poverty in marginalised communities in Dedza and Balaka through the deployment of appropriate renewable energy infrastructure and service provision, developing sustainable social business models and supporting the delivery of national policy regarding energy access and decentralisation. Specifically, EASE aims to support SDG7 and SE4All targets by: - Deploying 2 solar PV microgrids with linked 'satellite' kiosks - Deploying 3 solar PV energy hubs - Placing Malawi's first District Energy Officers in Dedza and Balaka to undertake a range of capacity building and support activities to improve the enabling environment for energy projects.

2. Project progress and results

Please use this section to give an update on the progress the project has made during this reporting period.

2.1	Provide an update on the progress your project has made over the past 12 months. Use this space to update us on what has gone well and any challenges you have experienced, detailing how you have overcome these. (Max 500 words)

Microgrid Strand

The Mthembanji solar microgrid is now well established and has been delivering reliable energy for over 10 months. Capacity building of the local UP team and site staff has been a focal point as they take increasing responsibility for business operations. Demand remains strong and 25 new customers have requested connection. There are now 60 customers connected. This includes 11 permanent businesses and 7 businesses that have operated seasonally. Of the signing customers representing a household or small business, 12 are female. The Pay As You Go smart metering system has operated successfully allowing smooth power purchase and detailed financial tracking and accountability. Our books balance matches exactly with the amount logged from smart meters. There have been several small technical faults with the system, but these have been addressed promptly via the established maintenance arrangements (local engineer and remote support). UP and UoS have undertaken detailed preparation, planning and community engagement for the second microgrid due to be deployed in Year 4.

District Energy Officer Strand

The DEOs have continued capacity building within district governance structures. 170 frontline extension workers (124 male, 46 female) from Forestry, Community Development, Gender, Agriculture, Health, Education and Water sectors have received initial and refresher training sessions. 20 Technicians (7 female 13 male, drawn from each of the 20 Area Development Committees (ADCs) across the 2 districts) have been through basic and refresher renewable energy systems training. Other development organisations active in the districts have been engaged and 80 participants attended awareness raising workshops (62 male, 18 female). The DEOs continued to support District Executive Council (DEC) meetings and a range of community meetings (8 ADCs in Dedza and 10 in Balaka, 5 irrigation schemes, 4 schools, 1 Village Savings and Loan group, and 3 village development committees). Roundtable and review meetings have been held with the key stakeholders in each district to assess progress. Increased capacity has been noted by DEC and recent Village Action Planning sessions were reported to have discussed energy issues more effectively than previously. All of these activities have been conducted within COVID-19 restrictions and mitigation measures. The main impact of COVID-19 restrictions has been the reduced ability of DEOs to travel widely for energyscaping activities.

Energy Hub Strand

CEM were scheduled to install an Energy Hub in Nakatale community, Balaka. This has not yet been achieved. Significant effort ensured all preparations with community, design, planning and procurement were completed and, despite delays due to COVID-19 in the first half of the year, installation was scheduled before year end. However, the order of the core system from a South African supplier has been delayed due to ongoing forex shortages in Malawi preventing completion of payment for nearly 2 months now. With the commencement of

	tobacco export season, this appears to be resolved and we now forecast installation to be completed in July 2021.
2.2	Has the focus or plans for delivery changed significantly during the last year? Please highlight what issues or challenges prompted this change and how you anticipate any changes in focus will impact on the previously agreed outcomes (Max 500 words)
	The primary focus has not changed significantly but some changes to delivery have been agreed with SG during the course of the year. **Energy Hubs** The original plan for Energy Hub deployment this year centred around two rural communities in Balaka. These communities have active irrigation schemes but suffer problems with water access, relying heavily on diesel pumps. An Energy Hub was planned in each community, supporting water pumping for irrigation and providing an energy resource for small business entrepreneurship. Scoping had indicated a good market for basic energy services – barber shops, grocery, video show and ICT. As our engagement with these communities progressed in the early stages of the project a new challenge was revealed – poor market links for the irrigation scheme produce, relying on farm gate sales to vendors that exercise market power, leading to significant crop wastage and loss of income. In parallel, technology locally available in Malawi has taken a step forward. Combined with learning from our first microgrid deployment we now see an alternative Energy Hub configuration that we believe would have greater impact and good long-term sustainability prospects. Instead of two small-scale Energy Hubs we are now deploying one larger Energy Hub. This Energy Hub will still be accessible by both communities through a short road link, and will provide an innovative cool storage solution for both community irrigation schemes. In addition, a stand-alone solar water pumping solution will be deployed in each community, meeting the original core objective. In effect, this will mean 3 installations of decentralised energy infrastructure serving the communities. CEM have partnered with Challenges Malawi (who have an SG funded project on large scale Value Add Centres) to review the local value chain and market access for cash crops – numerous recommendations have been provided and are being taken forward.
2.3	Taking into consideration what you have achieved during the last 12 months, along with any challenges you have experienced, please highlight to us what lessons you have learned, and how these will be applied in the project in the future. (Max 500 words)
	COVID-19 The most obvious challenge this year has been the restrictions on travel and social distancing due to the covid pandemic. All partners have been able to adapt very well and increase ICT use, numerous face to face activities have been conducted online. UoS staff have been unable to visit Malawi at all for support and monitoring. Again, a good level of communication and transparency has been maintained such that a significant impact has not been felt from this. The key learning is that even in

	the absence of COVID-19 restrictions our project could utilise ICT more effectively to reduce travel costs and emissions, both nationally and internationally. **Productive Use of Energy (PUE)** Analysis of the microgrid energy production and utilisation indicates spare capacity for daytime power consumption that could support a substantial PUE business, which would increase utilisation and reduce overall tariffs. UoS and UP have partnered on several funding bids to support this addition and additional funding for a Rice Milling pilot project has recently been secured in principle from the UNDP/GEF African Minigrids Programme. **Energyscaping** One key aspect of the DEO role is 'energyscaping' where community energy priorities throughout the district are identified and logged. Mapping the location and type of existing or proposed energy projects aims to support local planning and allow coordination and prioritisation of support. This has been significantly hampered by COVID-19 restrictions, highlighting the burden and overhead on DEOs of the extensive travel requirements. It has been proposed that the DEOs utilise the trained network of technicians now established in each district, by training them on the tools and process to collect the basic energyscaping data. Within the context of broad success, this is an area of the DEO programme that has underachieved. Although energyscaping data has been collected, more needs to be done to achieve planned targets. UoS and CEM will be working closely in the first half of Year 4 to establish a more efficient data collection, management and visualisation process to demonstrate the full potential of energyscaping. **DEO trained Technicians in Dedza and Balaka** During roundtable meetings with district stakeholders, the value of the newly trained technicians and initial impact supporting local systems was positively highlighted. However, barriers that hindered their effectiveness were identified. These related to the level of technical qualification and accreditation. At present they can offer a technical voice within the local ADC and help troubleshoot basic issues and engage with accredited engineers and suppliers. It has been suggested that if taken through to full MERA* accreditation they could lead installation and repair work. Furthermore, if formally linked with District Education Managers to supervise and safeguard school engagements, the technicians could begin addressing the huge demand for improved lighting and power in local schools. These points will be taken forward in the coming year of the project. *Malawi Energy Regulatory Authority
3. Partnerships and collaboration *This section allows you to discuss how partnership working is progressing on the project, as well as wider collaboration and sharing of learning.*	
3.1	Provide an update on how partnership working has gone in the past 12 months. Let us know about any highlights, challenges or changes to roles and responsibilities. (Max 350 words)

	Partnerships between UoS and in-country partners are well established and have been functioning well. Communication channels including zoom, emails and WhatsApp are well utilised (on a daily basis) to deal with planning and decision making at different priority levels. In-country visits and associated in-person meetings would have allowed for more detailed project planning and brainstorming of long-term strategies, but remote communications have sufficed for adequate project management and partnership maintenance. UP and UoS have worked closely through a handover of microgrid responsibilities, transitioning to UP staff dealing with day to day technical and business operations relating to microgrid operations. The aims of this framework is to build local capacity to deliver long-term sustainability under the social enterprise business model being developed. CEM and UoS have worked closely on the planning and design of the Energy Hub system, engaging with international suppliers and building towards CEM independently deploying similar energy systems. Strathclyde and WASHTED have collaborated effectively to set up a series of knowledge exchange webinars (1st already delivered, biannual schedule planned), with UoS providing the webinar platform and WASHTED coordinating the local participants. A collaborative approach to the organisation included all EASE partners contributing to the planning of webinar topics and content. WASHTED researchers active on EASE are attending UoS research group meetings. No change to roles and responsibilities.
3.2	Have any Scotland-based staff visited the project in the past 12 months? Give details including key activities and outputs of these visits.
	N/A due to COVID-19 restrictions

Date of visit	**Key achievements / outputs of visit**	**Follow-up actions**

3.3	Please tell us about any dissemination and learning throughout this reporting period. How have you promoted effective learning across the project? Please explain what processes you have used both internally and externally to share

	learning from the project so far, and how this learning is being used. (Max 500 words)
	We have 3 core learning themes: **Techno-Economic Sustainability of Off-Grid Energy Systems** We continue to draw out learning on establishing sustainable renewable energy supply businesses and collect techno-economic data to facilitate analysis and estimation of the model sustainability. A preliminary report on microgrid data collection and insight on data collected has been published, covering system performance, energy utilisation, revenues and costs, and social impact, with recommendations provided on best practice for data capture and utilisation. An online tool for microgrid data visualisation that allows for datasets to be downloaded has been developed and is due to be published when a full year of data is available (July 2021). Adapting plans for in-country workshop/conference style dissemination events, we moved to an online webinar format with the first event now delivered. This event featured learning on the planning and operation of our own microgrid, plus contributions from other prominent minigrid developments in Malawi. Panel members included Malawian academics, Ministry of Energy and MERA. Discussions included the importance of expert support at a district level for minigrid developers (DEO relevant). A wide audience of Malawian and international participants was reached and initial feedback commended the sharing of data on grid utilisation and revenues. **Local Energy Governance** The roundtable discussions and district stakeholder consultations have enabled important learning on the DEO activities so far. This has been taken back into planning for year 4. More widely, the DEOs continue to accumulate data and case studies to help inform national planning for a wider roll out of DEO to all districts. Engagement with Ministry of Energy continues and the Director of Energy has asked CEM country director to accompany him to brief the parliamentary committee on energy. A policy brief detailing DEO process and initial learning has been produced to support this engagement. Once reviewed by the Ministry of Energy this will be published online by CEM and UoS. This area will be the focus of a webinar event in Year 4. One of the DEO activity areas is dissemination of information to the general public regarding the use of renewable energy and how to access reliable (standards compliant) products. This has been conducted through a range of community engagement activities (when COVID-19 restrictions allowed) in partnership with MERA and Malawi Bureau of Standards. In addition, this year a series of TV and Radio features have been produced. These are being prepared for sharing via social media. **Social Impact Learning** In addition to M&E systems for gathering logframe relevant project monitoring data, we have implemented research frameworks around our MEL strategy

	to track customer journeys for all microgrid and energy hub customers. Follow up customer journey data surveying and analysis is underway. Initial results will be disseminated in a dedicated blog post and a webinar event prio to mid Year 4. WASHTED have coordinated review meetings and promoted collaboration on data sharing and associated research. 2 PhD students (1 being a WASHTED staff member) are progressing with research focussing on EASE project interventions and impact. Literature reviews have been completed and at least one will be published as an academic paper in Year 4.
3.4	If the project has been able to complete a mid-term project evaluation in the past 12 months, please provide detail of the outcome of the evaluation. (Max 500 words).
	A mid-term evaluation has not been conducted. An external academic evaluation of the first microgrid has been arranged during May – August in the coming year.
3.5	Please highlight how you are maintaining an awareness of others working in this region, giving details of collaboration, joint working or partnerships with others. (Max 500 words)
	The EASE partners engage in a range of relevant networks and stakeholder groups, both in Malawi and internationally. This engagement ranges from academic conferences to informal WhatsApp groups. Through their work in the sector the partners engage with a range of other NGOs, donors and energy practitioners. This year these have included UNDP, Practical Action, African Minigrids, Turing Trust, Malawi Fruits and Sustain Solar. Collaborative funding bids have been submitted to Innovate UK and UNDP programmes and discussions have been held with potential microgrid funders in the US. Microgrid research has interacted with the Modern Energy Cooking Services programme which is active in Malawi to investigate electric cooking potential on the microgrid. Collaboration with the Turing Trust has resulted in the provision of ICT equipment at the school in Mthembanji. CEM and UP are both members of the Malawi Scotland Partnership Energy Strand and regularly attend MaSP meetings and events. Strathclyde similarly so with SMP. These fora provide EASE partners the opportunity to share knowledge, network and seek collaboration.
4. Safeguarding and fraud *Please ensure you complete questions 4.1 and 4.2 even if you have no incidents to report.*	

4.1	Have there been **any** safeguarding incidents, either relating to staff/volunteers or beneficiaries of the Grant or the Project, in the last 12 months?
	No
4.2	Have these incidents reported at 4.1 been reported to relevant authorities, and if so, to whom?
	N/A
4.3	Describe what action has been taken, and highlight any lessons learned.
	N/A
4.4	Have there been any incidents in the last 12 months of financial mismanagement, theft, fraud etc, either relating to the Grant or the Project or which affects the organisation?
	No
4.5	Have these incidents reported at 4.1 been reported to relevant authorities, and if so, to whom?
	N/A
4.6	Describe what action has been taken, and highlight any lessons learned.
	N/A

5. Risk assessment			
5.1	Have any issues materialised during this reporting period? If so, how were they addressed? *Please refer to risk assessment provided at application stage*.		
Assumption	**Risk**	**Action taken**	**Was this included in the Risk Assessment Table in your application?**
Stable currency and tariff environment (fees for importing RET remain stable)	• Devaluing Kwacha makes imported equipment more expensive	• Working with suppliers to drive efficiencies in the design. Monitoring situation and planning to make	Yes – in summarised form

	• FOREX shortages prevent payments to international suppliers	payments from Scotland in GBP if required. • Escalation with senior Bank Managers	
Partner procurement processes are efficient	• CEM Energy Hub design and procurement delays.	• Additional support from UoS to push through to finalise process and place orders by early Feb 21. • Documenting processes to increase administrative efficiency in the future.	No – but various delays included in specific Energy Hub install risk register.
Travel around country remains practical and safe	• Covid-19 has prevented several aspects of field engagement: community capacity building, energy hub preparations, energyscaping, microgrid monitoring.	• The majority of the project remains on track. Catch up activities on delayed areas are underway through April and May.	The assumption, but not the specific risk.

6. Inclusion & accountability

Thinking specifically about the past 12 months, please use this section to tell us how you are mainstreaming through your project, ensuring that you are aware of and actively working to reach vulnerable and marginalised groups.

6.1	Is the project still relevant for the beneficiaries you are working with? Please highlight how you ensure accountability on the project, ensuring beneficiaries have the opportunity to feedback on the project and influence its development? (max 350 words)
	Microgrid Strand. Beneficiaries: households and small businesses taking an electricity connection to the microgrid. The microgrid is still highly relevant to beneficiaries as there are minimal other opportunities for electricity access. Demand for affordable clean energy remains high, as evidenced by requests for connection. We have put in place a customer feedback channel where customers are able to express their concerns or complaints through a form at the generation hub. Local site agents at the microgrid with regular visits from field managers enable direct communication between customers/beneficiaries to project management, allowing for agency to voice concerns, and inform or influence programme strategy. Focus Group Discussions have been devised to be deployed in Q2 of 2021 offering additional avenues for feedback on microgrid impact to be voiced. A Community Energy Committee and the Village Development Committee at the microgrid site, both in regular contact with field managers, offer further avenues for feedback and bidirectional communication. **DEO Strand.** Beneficiaries: members of Dedza and Balaka decentralised governance structures.

	The DEO strand is still highly relevant as policy commitment for national DEO roll out remains strong. Energy access remains a priority development need in the districts. Reviewing the project together with stakeholders and beneficiaries in both districts created a platform that gave an opportunity to the beneficiaries to feedback on the project (bi-annual review meetings and stakeholder roundtables). All training events include feedback sessions. DEOs also attend numerous community meetings where local issues are raised and feedback is provided. **Energy Hub Strand.** Beneficiaries: members of irrigation schemes. The Energy Hub Strand is also still highly relevant as there are minimal other opportunities for sustainable energy access. Engagement by CEM with irrigation scheme representatives, local VDC and TA allow progress updates to be given and facilitate feedback from the community. Additionally, presenting on progress to DEC meeting and seeking feedback at district level has allowed further mechanisms for feedback to the project.
6.2	Do you have an awareness of particularly vulnerable or marginalised groups within the community in which your project is working? Please give details on how you are disaggregating data to recognise these groups across the project. (Max 350 words)
	Microgrid Strand Community baselining and ongoing Customer Journey MEL disaggregate data based on gender and age. Customer Journey surveys gather data on impact of microgrid access on all household members, seeking to provide a deep understanding of the social impact. Our first detailed MEL social impact report is planned for July 2021. **DEO Strand** Community awareness is indirect as the DEO work focusses on engagement with existing decentralised governance structures. Gender is a focus for the DEO capacity building work. Data on training participants and meeting/workshop attendees is disaggregated by gender. **Energy Hub Strand** Existing baselining data disaggregates the irrigation scheme members by gender. Customer Journey surveying developed for the microgrid is also now to be deployed to monitor impact at a household level, gathering social impact data on all household members, disaggregated by gender and age.
6.3	How is your project working to actively meet the needs of these vulnerable and marginalised groups, ensuring they are benefiting from the project? Please outline any mechanisms you are using. (Max 350 words)
	Microgrid Strand Tariff bundles have been introduced to cater for ultra-poor customers, offering a cross subsidisation for cheaper daily, weekly and monthly service tariffs. Additionally, we have implemented “Free Power Fridays” where customers get a

	day's service of electricity for free. Institutions (school and church) receive a heavily discounted electricity fee. The school (757 male and 731 female students) have also been linked with the Turing Trust and have received support with ICT equipment. **DEO Strand** CEM actively pursue gender mainstreaming throughout their work, encouraging women to actively participate in all project activities. When selecting participants for the trainings, CEM emphasizes those trusted with the role of selecting participants to include women. CEM actively ensures that the contributions of women are valued during meetings, allowing their voice to be heard. Considering different needs based on gender, context and marginalized communities is taken into account when disseminating information - using clear and simple language and tailoring all activities to the context, adjusting for community perceptions, beliefs and practices. **Energy Hub Strand** CEM ensures that community engagement teams are gender balanced and promote women's leadership within the target communities. The irrigation schemes that benefit from the Energy Hubs have an existing positive gender balance. CEM are committed to maintaining this and promoting leadership roles for women as the engagement with the Energy Hub develops.
6.4	Taking into consideration some of the challenges of mainstreaming, please describe any challenges you have faced in reaching vulnerable and marginalised groups, how you have overcome these or plans you have developed to support inclusion on the project. (Max 350 words)
	Microgrid Strand Household gender dynamics mean that the majority of primary customers are male heads of household. As our Customer Journey MEL process reveals more on the wider household social impact, assumptions on the benefits for women and girls will be tested. Additional project funding for PUE add-ons include a gender expert to evaluate the gender impacts of the energy interventions at the microgrid sites and provide detailed recommendations for strategic interventions to increase positive impact on women and girls. **DEO Strand** Existing gender inequality means that the majority of the stakeholders the DEOs interact with (extension workers, committee members, council staff, local leaders) are male. So, despite encouraging female participation the ratios are still well below 50:50. CEM seek to set an example and promote gender mainstreaming as described above. **Energy Hub Strand** The prior formation of irrigation schemes in Balaka has included a focus on gender inclusion, resulting in at least a 50:50 balance (or indeed more women) in many of the schemes, including the Nakatale scheme where the Energy Hub is located. CEM are building on this foundation to maintain good gender balance in the community engagement with the Energy Hub.

Scottish Government International Development Programme
End-Year Report

7. Financial information *This section will be reviewed alongside your budget report, which should be included alongside your narrative and logframe. Please ensure this spreadsheet is completed with both a detailed breakdown of expenditure for this financial year, along with your projected spend for the next financial year.* *Please note carry-over of funds to the next financial year should have been agreed with the Scottish Government by January 31st of the current financial year.*	
7.1	With reference to your budget spreadsheet, please give a detailed explanation of any variances between planned and actual expenditure, including reasons for the variances and whether these are as a result of COVID-19, timing issues, price achieved, quantity etc. If these are temporary variances, please outline plans for expenditure. (Max 500 words)
	The project has a total underspend of £45,872 for Year 3 The majority of this underspend occurred in our capital budget (£30,138) and Implementation (£12041). Timing of fund transfer to partners resulted in small currency losses to UP and WASHTED, absorbed in the spend profile for the year. However, CEM received a fund transfer in early 2021 after currency devaluations passed 1:1000 GBP:MWK. This resulted in a currency gain of £3044. **Staff Costs** In total, staff costs are overspent by £1396.45. The breakdown highlights that: • United Purpose underspent by £1397. This is explained by an overforecast of annual staff cost increases (inflation) • CEM overspent by £914.45. Unlike UP, CEM chose not to reprofile staff costs for Y3 as inflation had been built in to programmed budget. However, the forecast was slightly out. • WASHTED overspent by £1879. This is explained by an error in payroll resulting in overpayment. A process has been agreed to recover this in Y4. **In-Country Running** This budget line has only a small accumulated variance (underspent by £309) **T&S** In total this budget is underspent by £4781. Almost entirely due to unused UoS travel budget. This has been previously agreed to be reallocated to UoS staff costs to support and additional COVID-19 response project. **Implementation** This budget line is underspent by £12,041

	Output 1 has an underspend of £1555.36, mainly due to a delay of training required after the Energy Hub installation. This is still planned to take place after successful Energy Hub delivery. Output 2 has an underspend of £1502.44, due to a reduction in community engagement activities around the microgrid due to COVID-19. MEL has an underspend of £3327.45, mainly due to a cancelled mid-term evaluation. Dissemination has an underspend of £5372 due to cancelled in-person workshops and review meetings that were moved online. Our January underspend forecast of £10,200 comprised of UoS travel costs, cancelled evaluation, and cancelled review meetings. This has been reprofiled as agreed. Capital spend is described below, the underspend is fully committed, so is reported as delayed spend, reprofiled to Year 4. The remaining unforecast underspend has been reprofiled for Y4 to support anticipated impact of ongoing Kwacha devaluations.
7.2	Please give details of any capital expenditure in this reporting period. (Max 350 words)
	Capital expenditure in Year 2 has been £46,278 against an agreed budget of £76,416. This budget has covered our first Energy Hub deployment at Nakatale irrigation scheme. African Mini Grids were contracted to provide the main (containerised) Energy System, including an innovative community cold storage solution (incorporating learning from SG CJIF funded Malawi Fruits project). Additional info on Energy Hub design attached. Contracts were signed and invoices paid (£38,531). However, payment remains blocked in central bank forex queues, hence the delay to delivery. Additional capital expenditure has been: CEM contracting BlueZone to supply solar PV irrigation pumps (£2592) CEM purchasing an additional laptop (£600) as agreed in SG comms. WASTED purchasing monitoring equipment to support the RE installations (£2096) as planned. UP utilising some of the capital contingency budget to deal with technical snagging issues on the microgrid.
7.3	Please explain how you have worked to ensure cost effectiveness on the project in the past 12 months, whilst maintaining the quality of delivery. (Max 350 words)
	Capital expenditure continues to be one of the biggest risks to cost effectiveness for this project. The Energy Hub design and procurement drew on the learning from our first microgrid deployment and also previous SG CJIF funded project with Malawi Fruits. A robust comparison of equipment and system costs from

	local and international options was undertaken and lengthy negotiations with the chosen supplier honed the design to an agreed balance between technical quality (sustainability) and price efficiency. Although the core system is being imported, the CEM technical team are completing all local preparation and installation works, including working with the local community. Keeping elements of the installation in-house supports capacity building and keeps costs fully transparent. The response to the COVID-19 situation has emphasised the use of on-line resources. A reduction of in-person meetings, replaced with virtual meetings and dissemination events has been broadly successful and reduced event costs. Strathclyde bring a variety of resources to allow our contribution to be well in excess of our official budget. These include leveraging additional staff time, overheads not charged, and engaging postgrad and undergrad student projects with EASE project objectives.

8. Any other information

Use this section to tell us any other relevant information regarding your project, including any information relevant to COVID-19 and how that has impacted project activities and/or budget. (Max 500 words)

Discussion on Sustainability

Sustainability of energy infrastructure remains a huge challenge for Malawi. This is the case for all systems, even ESCOM's national grid which is heavily subsidised by the government.
Recent EASE hosted learning events restated the challenges faced by off-grid systems seeking to reach the most vulnerable. Setting tariffs that are socially acceptable but also raise enough revenue to at least cover running costs is a difficult balance to achieve. It is clear that larger minigrids deployed around Malawi are struggling with underutilisation and unsustainable tariffs, resulting in a projects to expand distribution networks to reach more customers, along with seeking to connect large PUE customers.

Initial data from the first EASE microgrid provides a positive outlook for the sustainability of the system, providing a positive example for the sector and justifying the approach. However, the push for sustainability comes at a price and introduces limitations. Firstly, the cost of electricity access creates a barrier to the most vulnerable. The social impact assessment currently underway (to be published July 21) will shed more light on this. More generally, ability and willingness to pay is a dynamic issue.
Despite extensive feasibility work, the reality of people's ability and willingness to pay for electricity is less than forecast. This has resulted in continued negotiations with the community regarding microgrid tariffs. Trying to maintain a balance between affordability and the long term, revenue dependant, sustainability of the microgrid, we have innovated with tariff structures and payment bundles. Feedback remains that people would prefer

cheaper power, but utilisation and requests for connection indicates that the service is of sufficient value at the current price.
This may rapidly change if the fragile local economy deteriorates. COVID-19 increases this risk.

These issues highlight the importance of supporting the local agricultural economy in addition to meeting household electricity demand. The Energy Hub aspect of EASE aims to address this, but the provision of energy access needs to be within a supportive enabling environment where increased crop yield, decreased wastage, and value addition are linked to good market opportunities. We have received expert advice on linking to local value chains and intend to engage further expert input. We recognise that the energy-agri nexus is a strong focus of international innovation - emphasising the importance and difficulty of the challenge and the lack of proven solutions. We hope to make a strong contribution through our Energy Hub work.

With COVID-19 placing a renewed focus on the importance of reliable energy in hospitals, renewable energy systems are being deployed in response. Securing revenue streams for these systems has historically been difficult, leading to poor sustainability outcomes.

For renewable energy systems to reach the most vulnerable with long term sustainability, subsidy mechanisms may be vital. The EASE DEO programme continues to engage in discussions to this effect, seeking new revenue streams at a district level and advocating for access to the national Rural Electrification Fund.