

# MALAWI ENERGY ACCESS WORKSHOP

4-5<sup>TH</sup> JULY 2018, UFULU GARDENS, LILONGWE



Workshop Proceedings

## Workshop Summary:

With funding from Scottish government and the Department for International Development (DFID), the University of Strathclyde, Practical Action, Community Energy Malawi (CEM) and Business Innovation Facility (BIF), jointly organized a workshop held in Lilongwe with the intention to foster collaboration specifically within the pico-solar and mini-grid sector, through sharing experiences and ideas. In addition, information was shared in the subjects of key market constraints, opportunities and lessons learnt.

54 participants attended, with 23 presentations given on a variety of subjects relating to energy access in Malawi under the two workshop themes of pico-solar and mini-grids. The proceedings were transcribed including summaries of the presentation content, comments and question and answers, which has informed the recommendations below for the future of the sector, specifically regarding mini-grids and pico-solar products. A full summary of each presentation is included in Appendix A, a condensed table of findings from the workshop is in Appendix B and a schedule of activities in Appendix C.

The workshop was followed by a final discussion to try to record some outcomes from the activities, this is presented below (Box 1) as an indication of progress which was made:

*Box 1: Outcomes final discussion during conclusion of the workshop*

### **Key message:**

Malawi's energy ecosystem is unique, and as such, bespoke and robust business models are needed ensure project sustainability and improve energy access.

### **Demand**

The energy sector must will progress faster with better understanding of energy demand. This requires market research, data acquisition and dissemination to help understand the energy needs of rural communities.

### **Business models**

Hybrid business models combining community and private elements is deemed to be most effective for Malawi, as such elements will maximize system sustainability.

### **Key requirements for sustainability**

- Communities need to be sensitized to energy systems considerations and usage costs
- Roles and responsibilities must be clearly defined
- Tariffs must be sustainable and cost reflective, with maintenance costs covered by revenue
- Investment in training and capacity building are key to operational efficiency
- Transparent and clear regulatory and legal frameworks aid effective business planning

### **Development**

Malawi needs to develop a demand driven energy access action plan which unlocks the buying power of individuals. Products must conform to standards which requires well-coordinated efforts by companies, consumers, policy makers and authorities.

## Key Lessons on Mini-grids

### **A non-subsidized business model has yet to be found**

The mini-grid sector is missing an active private sector as the enabling environment is not currently conducive for participation in development and application of the technology. Lack of financing mechanisms are currently a key barrier to minigrid deployment, with high interest rates. Donors focus on capital costs and up-front funding, while it is recognized that costs are spread throughout the project lifetime. Especially with solar mini-grids, battery replacement costs are a key challenge.

### **Restrictive and outdated policies are hindering market growth**

A clear and robust rural electrification master plan is essential to reduce risk of national grid encroaching on potential minigrid sites. MERA is developing a tariff setting tool, but without it there is a risk that tariffs will be unsustainable and not cost reflective. Current licensing costs and process for minigrids is high and long. Proposed changes by MERA are needed asap to streamline new installations.

### **More coordination is needed between all stakeholders, private and public**

More coordination is needed between non-governmental players, especially in the private sector. Organisations like REIAMA and CONREMA can support sharing knowledge and best practice but require commitment to support from private sector actors. It is necessary to consider plans which allow for reduced fee or free membership for small and medium sized enterprises.

## Key Lessons on Pico Solar Products

### **Poor quality products make people lose trust in solar**

The bodies responsible for checking the conditions of the PSPs are not doing a good job because there are a lot of fake products on the market which hinder the sale of the original ones. Government bodies need to be more proactive in producing standards regulations and then enforcing them which could come in the form of MERA certifying reputable importers. Increasing consumer awareness of quality products and other identifiers such as warranties could also help improve overall product quality across the sector.

### **A more enabling environment for businesses is needed**

Through reducing or removing import duties and VAT on renewable technologies, the cost to businesses and consumers will reduce. This will make entrepreneurs and investors more likely to see the solar PV industry as a viable business proposition which can be further enhanced by providing support to banks and other financial institutions to allow reductions in loan interest rates. With local banks providing financial support, the shortfalls of national and international donor funding can be avoided as the all stakeholders have a vested interest in the long-term sustainability of the business and sector as a whole.

### **A better understanding of energy access can provide a strong foundation for the future**

There is still only patchy knowledge of the energy access situation in Malawi as a whole, and data collection which does exist fails to sub-categorize the type of energy access. With a better knowledge of the scale of the problem and the characteristics of communities, feasibility studies can be conducted which will not only improve the chances of projects succeeding, but also provide assurances for financial institutions when offering loans. Such a task requires the cooperation of industry players at all levels, starting with workshops like this one which has demonstrated the will of actors across the solar PV sector towards growing the market in Malawi.

## Appendix A: Summaries of presentations, comments and Q&A

### Day 1: Increasing energy access in off-grid areas in Malawi

#### Session 1: Mapping the Enabling Environment

##### Energy Access situation in Malawi: Edgar Bayani (CEM)

Energy in Malawi is still largely dependent on biomass for household energy. While 10% of the population are said to be connected to the grid there are 15 million people in need of power in Malawi, which indicates a large market potential for energy investors. Debate exists on energy access figures for rural areas (either 5% or 2% rural access), some quarters do not consider micro-grids like the ones being run by MEGA, Practical Action in Nsanje and many initiatives. There is a need for closer coordination and harmonization between Malawi Bureau of Standards (MBS), Malawi Revenue Authority and Malawi Energy Regulatory Authority (MERA) to ensure we get the best quality products at a reasonable price. In addition, Malawi need not seek for new technologies on renewable energy; the best solution is to find one which addresses the issues for the market, affordability and durability.

Figures reflect alternative energy use besides electricity, Malawians are highly dependent on biomass and that will be the reality for the next few years with energy efficient stoves another important initiative to bridge the gap in the interim. The National Cook stove steering committee coordinated by Energizing Development (EnDev) and chaired by United Purpose is diligent in tracking the national target to reach 2 million cook stoves by 2020. 750,000 improved cook stoves have been disseminated to date. The most common stove being promoted on a large scale in Malawi is the Chitetezo Mbaula.

#### Comments

- Attendees felt that pico solar access is important in energy access. Access data must be collected including all energy sources: pico, solar home systems, mini-grids hydro, mini-grid solar etc.
- Solar home systems are also doing great especially pay as you go services

#### Questions and answers

*Q: There is a challenge on how to calculate energy access percentage, any ideas on this?*

A: Malawi generates data from different sources, what needs to be done is an exercise in consolidation of this data and in general, other projects in Africa, especially eastern and southern Africa, the problem is knowing where to get that data.

*Q: Data collection has been a problem; how do we go about solving it?*

A: Malawi is not well coordinated which is affecting us in data collection. That is why we have distortion in data about energy access in Malawi.

*Q: What is REIAMA doing to improve coordination in the energy sector?*

A: REIAMA had support from Government through BARREN project in the past and didn't rely much on membership and most companies were very small. Now we lack paid up membership and most companies are not willing to subscribe to REIAMA regardless of incentives we are bringing into the plate. The bottom line is that REIAMA need support in terms of paid up membership because it cannot work without finance.

## Day 1: Increasing energy access in off-grid areas in Malawi

### Session 1: Mapping the Enabling Environment

#### District Energy Officers: Estrida Nyirenda (CEM)

Community Energy Malawi came up with the idea of having District Energy Officers after realizing that there was a gap in this regard especially on community energy planning. The idea was borrowed from the principle of having extension workers because while these existed in other government departments, this was not the case with the energy sector. The Department of Energy has taken on the suggestion and included it in the draft energy policy.

The presentation was based on findings of a pilot conducted in Balaka. CEM and University of Strathclyde formulated a blueprint on District Energy Officers. The following are the roles that were identified:

- DEO will disseminate policy documents and translate them at district level.
- DEO will conduct energy audits.
- DEO will facilitate energy projects

CEM and the University of Strathclyde asked the District Commissioner for DEOs; however, this didn't come to fruition as there was lack of human resources as well as financial resources. As such CEM used one of their staff as a District Energy Officer and set them up in Balaka. With funding from Scottish Government, the pilot was conducted. District energy projects like school lights have shown positive results in student performance. In addition, productive use of solar for agro-processing and small businesses has proven successful. The impact of this introduction of District Energy Officers on renewables projects showed positive results regarding, women empowerment, and increased access to information on energy issues.

Some of the challenges faced by the pilot project included that increased awareness of solar products meant and increased demand, and as a result more substandard products were coming in to the district. In addition, they observed that there is need for a lot of technical support for renewable energy projects in the districts

#### Questions and Answers

*Q: How have you been able to support the energy gaps in your project?*

A: The issue of district energy officers has been going on a long time but nothing has come of it. How willing is the government to implement the district energy officers? The model used extension officers but the government is now reducing this in agriculture. The country is experiencing power challenges, how do we interface the two?

The model was supposed to involve the energy department to ensure a national voice because it is a very important initiative. However, the biggest challenge so far is financial as they do not have the personnel or funds to roll it out.

*Q: How were the schools where you conducted the pilots supported and how sustainable is this?*

A: Piloting showed that it can be beneficial, but sustainability is a challenge due to the time frame within which components need to be replaced. Therefore, the model will need to deal with all these technical challenges.

## Day 1: Increasing energy access in off-grid areas in Malawi

### Session 1: Mapping the Enabling Environment

#### Standard Compliance and Quality Assessment of Renewable Energy Equipment and Systems: Kondwani Gondwe (Mzuzu University)

TCRET was set up to train practitioners in renewable energy technologies and to test the renewable energy products in country. With funding from UNDP they managed to buy some of the equipment required to carry out their job. However, there is no tangible progress on certification of Renewable Energy Technologies (RETs) in Malawi.

There are quality standards by MERA on solar equipment but little awareness to the general public. MERA is trying to make companies compliant and the response is positive. Unfortunately, there is a shortage in equipment for testing.

TCRET and MERA did an assessment of standards compliance through spot checks on some warehouses across Malawi and found that most inventories are wrongly labeled. For example, there were some products that are incorrectly “labeled made in Germany” when this was not where they were made.

TCRET recommends that there be a list of suppliers and installers and a deliberate awareness effort to sensitize the general public. They should also share standards and quality issues to all concerned. There is a need for closer collaboration between all concerned, MERA, MBS, MRA and TCRET.

#### Questions and answers

*Q: How best can we make standards be followed by installers and the beneficiaries?*

A: The process must be self-checking, why is that it difficult for MERA, MBS and MRA to work together on standards?

*Q: Have we adopted on global standards so that we can control in our country easily? Do we have the same standards from pico solar, SHS, Min-grids and Grids systems?*

A: Standards are under MERA but the first thing is how we can make standards locally available to consumers, the answer is we can buy them from MBS. Each installer must get them and abide by them. Malawi has adopted British and South African standards for renewable energy technologies. Standards are different in solar industry.

*Q: What are we doing when advertising so that the customers get the rights information and is there any regulation on that? What have we done to ensure that consumers are aware on the standards so that is able to check the quality of the products?*

A: MERA has a challenge on how to get information on standards to both urban and rural communities. MERA is thinking of putting libraries to ensure standards are easily accessed.

#### Comment

MERA has memorandum of understanding with MRA, TCRET and MBS to ensure service delivery. It stipulates that MRA should only accept the products that meet the standards after being checked by MBS. However, some products come through airports where MBS is not present MERA is also working on that.

## Day 1: Increasing energy access in off-grid areas in Malawi

### Session 1: Mapping the Enabling Environment

#### Women and Economic Empowerment and Energy Access: Barbara Banda (NABW)

While the National Association of Business Women (NABW)'s mandate is not on energy, its involvement in the energy sector comes in due to the fact that women's businesses are also affected by energy issues in the country, and this has a bearing on how they succeed in their businesses. The failure of these businesses because of energy or rather lack of it means there is loss of revenue and this affects payments of loans and keeps them in the cycle of poverty.

They recently conducted a study in Mchinji and Rumphi and it was discovered that 30% of households targeted use candles, 9% use paraffin and only 3% were using solar. Using RE can help women a lot in becoming more productive.

The gender aspect in energy planning is often overlooked however it is vital as it considers welfare, productivity, equality and project efficiency at policy level. Not enough information is available on women at policy level hence members of parliament are unable to make informed decisions.

NABW wants to set up a knowledge hub so that it can represent the aspirations of women and understand who is doing what in the renewable energy sector so that the general public can be informed on what needs to be done.

#### Questions and answers

*Q: What is NABW doing to ensure that women are economically empowered to be able access solar systems?*

*A: Women should be participating in energy investment so that they can be players in running businesses in renewable energy.*

#### Comment

MERA has to note take and make use of women initiatives to ensure the spread of messages because women have the ability to take the messages further faster.

## Day 1: Increasing energy access in off-grid areas in Malawi

### Session 2: Facilitation through Funding and Finance

#### Donor Insight: Andrew Spahn (USAID Power Africa)

Power Africa is a US coordinated body that has members from governments and other donor communities. Power Africa provides assistance in capacity building, off-grid and grid-connected electricity, project financing, leveraging donor projects and technical assistance.

In Malawi 16 million people need access to electricity. However, the main challenge is the fact that resources are not coordinated rather than a lack of money as one would assume.

Between 2015 and 2018, 45 million dollars has made available by the donor community to increase access to electricity. The money could bring energy to 1.5million Malawians and can also make 562 micro-grids if coordinated properly.

There is a need to maximize the next 45 million USD. It is anticipated that 375,000 solar home systems will have been disseminated and be targeted (the beneficiaries will be market driven) in 2018-2019. Donors will agree on key projects with the government of Malawi and stack donor grants, identify best concessional loans and leverage donor guarantees.

#### Questions and Answers

*Q: On solar home systems in your project do you have special gender allocations?*

A: We know women are empowered through access to such and the chances are that women are involved in these solar projects.

*Q: Has the recent policy shift by the US on renewable energy been revised?*

A: Personal answer not by US government. The projects on power access in Africa have financing available.

*Q: How were 385 solar beneficiaries selected?*

A: Market driven as opposed to just handing things out, but it's for locals, and the ability to replace the battery system after three years is a major factor.

## Day 1: Increasing energy access in off-grid areas in Malawi

### Session 2: Facilitation through Funding and Finance

#### Finance for Energy Access: William Kihara (REACT)

REACT are a non-profit multi-donor consortium whose aim is to fund innovative business ideas in agriculture and renewable energy. It has raised \$310 million, and supported 266 businesses. Of the \$310million, \$131million has gone towards renewable energy.

The challenges facing companies in Malawi for energy financing include the following:

- Interest rates in Malawi are very high from the banking sector
- Currency fluctuations. Companies will be incurring some forex losses.
- Fiscal barriers such as high VAT and import tax for solar products.
- Limited access to foreign financing
- Challenge of attracting new investors especially for startups.
- Long sales cycle as Malawi is a landlocked country it takes time to receive the ordered products.

In addition to these problems on the consumer side there are also challenges such as low income levels of consumers, high interest rates on loans to purchase solar products, the mobile money market is also still at a very early stage and low irregular income for households.

In response to such problems which aren't particularly unique to Malawi, REACT provide patient capital by making available the following, grants, Loans with zero interest rates for the first 2 years, Policy negotiations through advocacy, innovative end user financing for high investment projects through pay as you go. In addition, they offer matching funding in which companies can make investments in kind which includes time put in to the project, maybe automobiles etc. Two Malawian companies received grants in the last competition namely Fincoop and Dzuwa energy.

#### Questions and answers

*Q: Malawi companies applied but some missed the competition. Can you tell us any other steps to take?*

A: Those who did not apply or succeed may look out for more opportunities on the website to participate. There are also opportunities that REACT may consider two more from Malawi to make four from the previous applications and the discussions are underway.

*Q: Apart from solar are there any other options.*

A: Yes. REACT also funds biomass, briquettes, biogas, cleaner cooking projects etc.

## Day 1: Increasing energy access in off-grid areas in Malawi

### Session 2: Facilitation through Funding and Finance

#### Update from the Banking Sector in Malawi: Faith Lemani (NBS)

Malawian Banks do not have a large appetite for the Energy sector. This is due to lack of knowledge on issues to do with Renewable energy and the perceived risk involved. NBS Bank has broken out and since February this year, started offering end user financing for solar products with an initiative called Kuwala Energy Finance that aims at bridging the energy gap and supporting SME's working in the energy sector. There is no limit to the loans as long as the beneficiary fulfils the set requirements. Since the start 25 loans have been processed. The requirements for one to access the loan are as follows; they see the capacity of the borrower and finance history and as well as collateral. These loans are currently only available to salaried employees.

For Solar companies that wish to partner with NBS Bank the process is as follows; they have to write an application letter stating the amount and purpose of the project. Secondly the project must be for at least one year and a bank official must visit the site to assess the organization's capacity as the project is nationwide. The project must also produce copies of audited accounts among other things. The challenges being faced by the bank in relation to the loans are:

- Time of repayment, it takes a short time for the loans to be repaid
- Internal credit, liquidity, and capital adequacy issues
- Ever changing international lending regulations

Governments are not doing enough to sensitize the general public so they are financially literate and have a good knowledge of how banks work. As such the bank is not willing to fund long term projects.

#### Questions and answers

*Q: Size of the loan? What about if one wants to supply products?*

A: There is no limit on the size of the loan. If the loan has been assessed based on the aforementioned criteria and pass, then it's okay. Any project will go through same criteria of assessment and if they are deemed to obtain the necessary capacity then it all good.

*Q: What is the process of taking a loan in your bank? And do consider a one-page application form for the consumers where there are no issues like collateral?*

An ideal situation is where we assess the facility and then we go to check the applicant with the credit bureau so that we do the required steps of assessment. Collateral depends on the size of the loan and the type of the project. The application is a one paged form. This works on the emergencies. But this depends on the income. We are still working on that to improve the performance.

*A: You have Kuwala projects what about Kutentha projects for solar thermal projects?*

The same procedures on Kuwala will apply in thermal energy products

*Q: Interest rates are high because the risk of the project is high due to working conditions and one can stop working at any time. Am I looking at energy project where one is reducing the risk?*

A: The damage is not considered in the loan because the customer will still be required to pay back the loan regardless of quality.

*Q: On the standards have you been able to approach MERA to assist in quality and standards checking?*

A: Before I answer, what is it that MERA is doing on non-conforming products? NBS did not go to MERA, but our experience is that customer buying power depends on customer income which we cannot enforce regardless.

*Q: How can you handle a person with no collateral but needs the loan?*

From SMEs is a bit tricky to be financed by the Bank; only the employed NBS are able to finance them. But if there is anything we should be able to pay back the loan so it's a challenge to SMEs. That why an assessment is very important. You can have collateral but if you don't have capacity and cash flow you cannot get the loan. If one thing is not okay is hard to get the loan.

**Comment:** Partnering with NBS – NBS invite solar companies to make presentation and conducted due diligence. The successful company/suppliers are responsible for carrying out all installations and the customer has to be happy with the product then NBS will pay to the supplier. However, we have not closed to whoever has an interest in us but we are only using the certified solar installers. There is a need for MBS and MERA to do something including energy associations on issue of quality and standards compliance.

## Day 1: Increasing energy access in off-grid areas in Malawi

### Session 3: Tier 1 Access: Lessons from the Field

Business Innovation Facility; support to the development of the PSP market in Malawi: Lesson learned and way forward. (Samuel Martin)

Business Innovation Facility (BIF) is running a five-year program funded by DFID, looking in Pigeons Peas, Rice and Pico solar products. In Malawi only 9% have access to electricity grid and low-income earners are the ones who need Pico solar products (PSP). The players in the industry are social enterprises, these include Sunny Money, Total, etc. whose main constraints include low income on the part of the buyers and few distribution channels

BIF started to provide support to small local businesses in an effort to increase this uptake. They took the following steps:

- Developed sales channels by linking the PSP companies to microfinance institutions
- Supported companies to develop and implement pay as you go models
- Supported small companies in working with wider distribution outlets which already existed

Next BIF sought out some Market intelligence and Policy influence where they facilitated the discussion on VAT and standards for the PSPs and the signing of the Energy Compact Africa

**Lessons:** Phase 1 sales were not as high as expected. FMOs do not have the skills to promote and sell PSPs, and they need to provide sufficient funds to pay attention to PSP. A company with large capacity must have right products available and be able to deliver the products as quick as possible. A large company must have country-wide distribution outlets and must have senior management and operation staff on board with the project. The PAYAG model is capital intensive and therefore expensive for small PSP business. There is also a need for PSP businesses to take a role in policy advocacy.

**Experience:** Total Malawi sold the first consignment which went well, and the company has ordered another set of products which looks to be promising. Sunny money on the other had works in supplying small solar companies at district level. The challenges that remain are that there is lack of support for PSP from the government. The agreed technical standards are not enforced causing an influx of poor-quality products which taints the image of PSPs in the long run. Another major problem is the VAT charged on PSP pulls down the development of the market as the cost remains high and relatively unobtainable for the people at the base of the pyramid.

There is limited availability of finance for most PSP companies and there is little or no market research, hence they have limited understanding of the consumers' needs. There is a limited product range in the country and hence people are forced to buy something that may not satisfy all their needs. There are also limited skills in marketing among the PSP businesses. Finally, as illustrated in earlier presentations by the banks and investors, there is limited access to finance - existing financing schemes are too small for real business or impact.

The solutions rest in the following:

- There is need for more collaboration of different companies
- Government must create an enabling environment by either significantly reducing or waiving import taxes
- Development partners need to facilitate the linkages between local companies to international manufactures.

### Questions and answers

*Q: Why are small company's interventions are not working?*

A: It's great that it's working with some and it's good to share information on the data which is available. Malawi need to look at the existing manufactures before starting local assembling process. Involving local banks is great but interest rates are just too high to ensure its effectiveness. As part of that we put a guarantee fund to reduce interest rates.

*Q: You said that you have not made market demand for pay as you go, but you mention that there is no buying demand in the country how do you think that your suggested big business can have a great impact in the country without empowering them first?*

A: Associations need to be empowered to enable coordination of private sector. We worked with associations, but the results were not successful. But gig companies had interest in joining and that was what was successful; it was a viable model for us.

### Group work on policy, regulation and marketing

A group discussion followed, focused on Policy and Regulation and Marketing (products, Price, Place, Promotion). Each group was asked to list challenges, provide recommendations on how the factors identified could work together to address the identified challenges, and identify actions that group members could take.

#### Group 1

*What are the main Policy and regulatory barriers to the development of the PSP market in Malawi?*

- VAT – if there was no VAT on PSP the prices will be more affordable to the end user
- Lack of clear coordination between MERA, MRA, MBS negatively impacts the development of the sector as the lines are blurred as to where they can reach a comfortable balance. For example, MRA only seek to reach their monetary targets each year so may be tempted to let in substandard products as long as they have been paid for, whereas MBS would like to keep the same out of the country.
- Lack of capacity of these organizations to enforce the standards. The standards should be published for all to refer to even before importation.
- Lack of sensitization on the use and benefits of the renewable energy products to the end users
- Lack of access, affordability and availability

*What are the government bodies that can influence of change these policies and regulations?*

- Department of Energy can influence the change in policies
- Parliamentary Committee should be engaged by REIAMA and board of engineers

- MERA need to enforce the regulations together with MBS

*Do they need support to do what needs to be done? Who could provide the support?*

- There is a need for more lobbying with the organizations in the various committees and with government.
- Competition and fair-trading commission can also take some of the organizations to task who are bringing in substandard products.

*Can private sector play a role to support the development of an enabling environment?*

- Yes they can, and so can investors and the donors such as DFID, AECF, USAID, and BANKS

## Group 2

*Looking at products, prices, places and promotions how could PSP marketing be improved in Malawi?*

- Product challenges
- Substandard
- Not appropriate products
- All products are imported therefore we have no choice on products.
- Price challenges
- Not affordable

## *Solutions*

- VAT has to be removed or has to be claimed back by the consumers.
- Subsidize Pico Solar Products
- Product Place
- Most places where there is demand the products are not accessible.
- Promotion of PSP
- Focus and skills on promotion are not effective

*What can private sector do to improve what needs to be improved?*

- Awareness campaign on standards
- Get PSP standards from MBS

## Day 1: Increasing energy access in off-grid areas in Malawi

### Session 3: Tier 1 Access: Lessons from the Field

#### Market Activation: Chiedza Mazaiwana (Practical Action Zimbabwe)

Power for All is a global campaign targeting 85% of more than 1 billion who lack energy access; many of which are in rural. Rural electrification has to deal with sparse population which is not economical for grid connections so the sensible solution would be mini-grids or indeed PSPs. Energy needs to be tailored towards addressing the challenges for the community.

Power for All highlights the energy access ecosystem that comprises of NGOs, consumers, companies, policy makers and investors and shows that these need well-coordinated efforts if an impact is to be made. As such they used the following approach: Engage – Enable – Activation. The key was private sector coordination, NGOs collaboration through a stakeholder workshop, organization design and support, accelerated practices and policies, collaborative action, marketing building and decision-making intervention. Several activities took place: support to government, private organizations and civil society; coordination and collaboration; and community awareness.

By reaching out using different media, the association influenced renewable energy friendly policy in Zimbabwe which had no energy compact but had call to action for energy access.

#### Questions and answers

*How did you manage to organize and have that influence?*

Banks were engaged, at initial stages. The engagement with local banks varied; we met some one on one, some with development partners and governments. Also, ICIDA answered our call and financed companies in renewable energy. It's not only one institution engaging because renewable energy association of Zimbabwe also played a critical role.

*How old is the association and what are the membership numbers?*

Zimbabwe has more than 100 players registered with the association of Zimbabwe but only 25 players have formally registered with the association. The association carried out outreach programs to engage with potential members. There are other leading companies who are not members of the association, but they assist in the events and make contributions.

*How the was the focus group chosen because I would love if it could be replicated in Malawi?*

The work in Zimbabwe was funded by development partner and we had tried to focus and distribute renewable energy in Malawi. There is a need to identify the key players to champion the initiative. Practical Action is doing fundraising for 25 countries and Malawi is one other beneficiary.

*Role of academia in Zimbabwe and women role as SMEs, are they part of it?*

University of Zimbabwe is developing a Masters of Renewable Energy and there is another, Maranatha who are developing initiatives in solar products. This shows that research institutions are playing a leading role in renewable energy. SMEs are well engaged in the energy sector but women have to also come out not as consumers but as practitioners.

## Day 1: Increasing energy access in off-grid areas in Malawi

### Session 4: Break out sessions

#### Group 1 - Capacity

*Q: What are the capacity gaps that are within the market and in the energy access ecosystem?*

- Government – Lack of political will, policy enforcement and implementation, personnel DEO for example
- Private sector – lack of buying power, capacity to meet demand because of a long sales cycle, does not have full knowledge of the consumer needs, hence they focus on other things, lack of a real model to sell the solar, real businesses are wary to get into the market, lack of coordination with the government to use the policies to their benefit,
- Consumers – lack of buying power, lack of awareness, lack of availability
- Investors – do not have full knowledge of the consumer needs, hence they focus on other things that are not a priority to the customers and hence miss the desired results

*Q: What can be done?*

- Advocacy, government should create an enabling environment, awareness for end users

#### Group 2 - Coordination

*Q: Challenges*

- Government does not have political will
- Mapping out of the needed areas where donors can be directed to.
- Renewable Associations in Malawi with Malawi government collaboration
- Donor comes in the country without government knowing
- There is no a team of Technocrats in the industry
- Lack of information sharing
- Lack of focus by government-implementation instead of coordination and policy roles

*Q: Solutions*

- Setting up a team of technocrats for renewable energy in Malawi not policy makers as it is currently
- Information sharing
- Government should be on policy and coordination of renewable energy actions
- Setup of a separate task force on coordinating Renewable Energy Activities
- NASREP must be active again on the sector

## Day 2: Addressing Barriers in the Malawian mini-grid sector

### Session 1: Mini-grids: Support for Reaching Scale

#### Mini-grids Legal and Regulatory Framework: Tufwane Mwangomba, MERA, Tariff Framework for Mini-Grids: Mathews Kadondo

Mini-grids are a power generation tool of up to 5 Megawatts (MW) and not grid connected, anything above qualifies to be connected to the grid. Some mini-grids have not operated even a quarter of their life span. Mini-grids struggle with high costs of implementation and badly set up tariff structures. Other points to consider are: security for investors and compensation; tariff approaches to ensure customer payment; revenue from the operators; and maintenance of the system. Mini-grids can also charge above tariffs for the grid. A system compliance check is offered at free cost but in the future will have a cost involved. There are functional regulators and regulation tools available.

#### Questions and answers

*Q: Are the Regulations by-laws publicly available?*

A: Acts and regulations, By-laws are available on the MERA Website [www.meramalawi.mw](http://www.meramalawi.mw)

*Q: Can you justify ESCOM buying power from generator?*

A: We have just abandoned ESCOM so we are moving slowly to ensure that we are able to monitor each stage so that government has control and does not lose control to private companies. In the future transmission will also be independent, generation and distribution are already independent. ESCOM needs to procure power from big entities so that it can cover the big deficit in the system, thereafter small systems can be considered in future. We want a power that can bring big impact in the grid.

*Q: Can you tell us the Timeframe for the approval of tariffs?*

A: On the time frame for tariff approval it depends on the constraints that will make the project viable and sustainable in case of lower tariffs.

*Q: Mini-grid operators can charge above limit tariffs for the grid, can they allow to charge below the grid?*

A: Yes. Segmentation of mini-grid into micro, mini and mega are the set up systems in this area. 5MW is the upper limit for mini-grids.

*Q: How do you define private use and if the solar home system has surplus how can it be possible to sell to the grid because the limit is 5 MW?*

A: This is a private use definition, as a regulator we are interested for public interest so if it is for private use we are only interested with security and compliance.

#### Comments

Mapping of the areas of concentration for mini-grids is in the hands of department of energy affairs but we do share with the stakeholders. The government has an integrated resource plan to ensure coordination of mini-grids and within electrification plans. Government will also be able to call for mini-grid developers in the future from the solicited sites where some studies have already been done.

## Day 2: Addressing Barriers in the Malawian mini-grid sector

### Session 1: Mini-grids: Support for Reaching Scale

#### UNDP GEF Program: Emmanuel Mjimapemba (UNDP)

The problem that the UNDP is trying to address is that Malawi has not got enough electricity to satisfy the demand. As such through GEF, UNDP have awarded grants to:

- Community energy to install 80Kw in Mchinji
- Practical Action to install 300 WK in Usingini.
- Expansion of the MEGA project to ensure sustainability in Mulanje

In addition, there is a development of an electrification master plan where un-electrified areas will be indicated on a GIS map and will be targeted.

#### Questions and answers

*Q: What is the component of the organization which is dealing with legal licensing of the companies?*

*Q: On rural power generation, who will give a mandate to allow others to generate power?*

*Q: 80KW is very small, are you considering efficiency or issues around water heating i.e. solar geysers?*

*Q: Regarding the GIS interactive map is there a way for other stakeholders to work on it?*

*A: The map we want is not only a GIS map but will also contain informative documents.*

#### Comments

REIMA is one of the stakeholders which is supposed to be publishing information. The time to launch has been a challenge because the government wants the master plan to be ready before launching. This is because there is a need to avoid political conflict. The process is expected to be complete by end of July 2018 with everything in order by October in order to be ready to be launched in December 2018.

The Malawi Renewable Energy strategy is ready and waiting to launch together with the policy and it was approved last year. The mini-grid framework was approved by the board and a number activities are underway to ensure its dissemination.

## Day 2: Addressing Barriers in the Malawian mini-grid sector

### Session 2: Mini-grids: Hydro Projects

#### MEGA update: Arnold Kadziponye, (MEGA)

Mulanje Electricity Generation Authority (MEGA) is Malawi's only licensed mini-grid. Set up on the Lichenya River, T /A Bondo, it produces over 148Kwh of electricity and services over 613 households, 3 schools, 2 maize mills, 56 businesses, 3 churches and over 1000 customers. The project has been growing and ambitiously plans to connect more people to enable them to improve their livelihoods especially with regards to health and education.

There is potential in many areas for mini-grids in Malawi and if explored this may just be the answer to end energy poverty.

#### Questions and answers

*Q: Is it MEGA who is recording data or you are using other data sources?*

A: Yes, we do regular data collection which helps us to inform our future decisions. At different times of the year the data is collected as usage varies with seasons. We have a website where we publish our data.

Average consumption per household is 1000MK, which gives 17 units which takes them a months or six weeks. We engaged DHO to consider Bondo Clinic in their budget for the hospital and to be able to use some machines like water geysers, fridges and autoclave machines which we supported through this project. MK 60,000 is working for them for four months.

*Q: What are the challenges in the project?*

A: Malawi Rural Electrification Program (MAREP) has gone to area where we planned to power so we need to go back to the drawing board. However, we had already put up poles for this and as such have forfeited those funds. Considering that MAREP continues even though generation capacity has not increased means that such areas are experiencing blackouts as opposed to the rest of the MEGA serviced clients who never have blackouts.

If only we could access the rural electrification fund, then we could reach many areas to complement their efforts.

Another challenge is each maize mill requires 25KW of power. Our load profile shows that between 10 pm to 5 am there is a lot of power not being consumed and that is the time Maize mills are encouraged to operate. And during the day from 2 PM and to 4 pm maize mills are also able to operate.

*Q: If I want to take more KW from the system is it negotiable? How are the tariffs?*

A: On tariff negotiations we engaged MERA because we think we are on the lower side of the revenue needed for us to be able to run the systems profitably and keep MEGA sustainable.

## Day 2: Addressing Barriers in the Malawian mini-grid sector

### Session 2: Mini-grids: Hydro Projects

Kavuzi Micro Hydro, Nkhatabay: John Taulo, Malawi University of Science and Technology

The Micro-Hydro power scheme was a youth led initiative by the youth in Kavuzi whose initial capital injection was Mk3 million. It generated up to 10 Kwh of electricity powering a youth centre and 30 households and was owned by the local community as a social enterprise with a fixed charge system.

There were no proper monitoring works and as such the system is currently facing operational challenges. It is no longer working but with a little assistance it could be up and running again. The recommendation is that government must come up with micro-hydro programs for pro-rural poor and there should be specific standards for micro hydro.

#### Questions and answers

*Q: How far are you taking that mini-hydro?*

A: The guys running the system are frustrated the funder. We cannot talk about Kavuzi again because the components cannot be found. If UNDP and other funders can consider it then we can set up a completely new system

The system not functioning at Kavuzi takes away the opportunity for students to learn compared to the system in Mulanje.

## Day 2: Addressing Barriers in the Malawian mini-grid sector

### Session 2: Mini-grids: Hydro Projects

Usinigini Hydro: Edward Philips, (Practical Action Consulting)

Usingini micro-hydro power system in Nkhatabay, it was set up with funding from UNDP and is owned by the community, it is a good example of how mini-grid projects are changing lives in Malawi.

They use the same model as MEG; Anchor, Business and Consumer (ABC). The anchor customer who is able to use up the bulk of the electricity ensures most of the running costs are covered, in this case a coffee estate. The small businesses also rely on it in addition to the ordinary households.

#### Questions and answers

*Q: How many staff does the Usingini have?*

A: It has around 6 employees

*Q: Does it have management structure?*

A: Has used the model of MEGA's management structure.

## Day 2: Addressing Barriers in the Malawian mini-grid sector

### Session 3: Mini-grids: Solar PV Projects

#### Sitolo PV mini-grid: Morton Kaunda, CEM

Community Energy Malawi (CEM) acquired funding from UNDP GEF to setup and run a solar mini-grid dubbed TIWALE project. The site is in Mchinji at T/A Sitolo. At the end of the project, CEM anticipates it will generate 80Kw of power that will service 150 out of 300 households.

CEM will build the mini-grid and hand it over to CEM Trading, the social enterprise spin-off from CEM, who will run the system to ensure sustainability.

#### Questions and answers

*Q: What are the current tariffs you are charging?*

A: During designs we came up with 16 cents for tariff but it's on the lower side

## Day 2: Addressing Barriers in the Malawian mini-grid sector

### Session 3: Mini-grids: Solar PV Projects

#### Sitolo: Capacity building: Memory Suwedi, CEM

The Justice Innovation Fund (JIF) on capacity building has given 10,000 pounds for capacity building to CEM partnered with TEVETA to train and certify 20 (11 women and 9 men) entrepreneurs who will be selling and servicing PSPs in the area.

The fund's purpose was to set up and build the capacity of a local management structure to run an innovative and sustainable solar powered mini-grid with a commercial model to ensure the long term sustainability of the grid for supplying electricity to homes, schools and local businesses. Secondly, to train local technicians in a variety of areas including: solar PV installation and in maintenance skills; electrical connections and safety; and IT skills. It was also set up to ensure local knowledge and basic maintenance and repair capacity as well as providing new opportunities for local and wider employment. Lastly it was set up to build local enterprise capacity, skills and knowledge to enable the use of this electricity to stimulate local economic development and build community resilience, particularly among disadvantaged women, young people and among farmers (both men and women). The business support will enable new business startups (including maize grinding mills, extra irrigation facilities, a milk cooling center, solar water pump and barber shops) both through technical support on linking to the grid and linking them with government business support agencies locally.

#### Questions and answers

*Q: If one trained person fails to work in the project how are you going to handle that?*

A: It's a continuous training process so we will require each person to come back regularly for training as such we will be able to monitor who is working and what challenges they are facing

## Day 2: Addressing Barriers in the Malawian mini-grid sector

### Session 3: Mini-grids: Solar PV Projects

**Sustainable Off-Grid Electrification of Rural Villages (SOGERV): Lloyd Archer, United Purpose**  
United Purpose (UP) piloted the decentralized energy systems in 4 villages in the lower shire to address the ever-pressing need for energy. The interventions are more like rural energy kiosks where people can rent solar lamps, do phone charging and run small businesses adjacent to them to tap into the solar supply.

There are two business models, namely Community Based Energy, and Individual Business. For community based, the community through the chiefs and local structures are responsible for the running of the kiosks.

The challenges are as follows

- How to support meaningful productive uses?
- There is a mismatch between expectations & ability to pay for that level of service
- Electricity is only one side of the equation, what about appliances? (e.g fridges)
- Getting reliable data on Ability & Willingness to Pay is difficult
- Local governments do not have the means to support institutions
- Lack of effective PAYG model
- Grid extension – Thendo site

Lessons learnt were

- Community engagement and site assessments are critical
- Standalone PV systems are not viable for most businesses and institutions
- The community owned model is most difficult
- A franchise model is most promising
- Businesses need constant oversight and mentoring
- Consumer financing is essential
- Institutions need to be heavily subsidised

Questions and answers

None

## Day 2: Addressing Barriers in the Malawian mini-grid sector

### Session 3: Mini-grids: Solar PV Projects

Malawi Rural Energy Acceleration Program (MREAP) & Sustainable Off-Grid Electrification of Rural Villages (SOGERV) Remote Monitoring and Control Learning: Kelvin Tembo, (WASHTED)

A follow up of the presentation by UP which illustrated how WASHTED monitored all the four solar off-grid projects by installing a remote sensor, to ensure the effectiveness and alert them if maintenance is needed or if they are tampered with. The alerts were received via SMS.

This project was piloted with an aim to address the need for technical data on the operation of PV systems. In addition, there is no data on why and when the system failed and which part failed. It is difficult to predict when the PV system requires preventive and corrective maintenance and normally user behavior usually not monitored – but is critical to the health of the PV systems.

#### Questions and answers

*Q: Are there any options for sharing data? On data collection, is there any ability to commercialize?*

A: Yes, the plans are there.

*Q: How much does it take to install a remote sensor?*

A: The system because it was a donor funded it is a bit expensive but it can be affordable if the government can come in. It's about MK 5, 000,000. Some components of the equipment are imported hence the price.

*Q: Are you able to set up a test department like TCRET?*

A: Currently no, but it can be done with the help from others.

## Day 2: Addressing Barriers in the Malawian mini-grid sector

### Session 3: Mini-grids: Solar PV Projects

#### Sustainable Energy for Rural Communities SE4RC: Lonjezo Binga, CARD

Malawi Sustainable Energy 4 Rural Communities (SE4RC) are targeting 10000 people in Malawi. The project has anchored off-grid energy service delivery to underlying agriculture and socio-economic development in isolated rural communities of Nsanje and Chikwawa in Malawi.

The mini-grids are servicing irrigation schemes, clinics, schools, rural Entrepreneur Kiosk Operators, Community Energy Service Companies (CESCOs) and small rural businesses. Energy kiosks enable service delivery for low energy users.

The project is building the capacity of 4 CESCOs to become a legal entity with capacity to access funds and be able to deliver sustainable services modelled around constant re-investment, tariff setting and growth of the existing facility. CESCOs and Kiosk committees have been trained in business management, leadership, governance and basic operation and maintenance of the system.

The challenges so far are

- Low literacy levels to grasp technical skills
- Low income levels
- High demand for electricity coupled with low supply of power

#### Questions and answers

*Q: How was the initial cost covered and how did you arrive at the tariffs?*

*Q: How will be possible to replace batteries in 5 to 10 Years with small revenue collections?*

*Q: Who owns irrigation systems?*

A: Irrigation is owned by communities. (There are communities that were trained in management of the irrigation systems)

*Q: What are the tariffs per kWh from the min-grid?*

A: On the tariffs, currently there are flat tariffs but in future there will be metering systems. Right now there three categories: Households are paying mk2500 per month; Social enterprises 1500 per month; and business is mk3000 per month. The initial cost the data is there but I cannot answer now.

## Appendix B: Challenges, Suggestions and Questions Submitted

	Energy Access	Minigrids	PSP
Key Challenges	<ul style="list-style-type: none"> <li>• Donor grants provide upfront funds, RE projects need income throughout the project life</li> <li>• Lack of financial access hinders access to energy as well as high interest rates on loans</li> <li>• REIAMA membership is not working</li> <li>• Energy and gender are crosscutting issues that are difficult to coordinate</li> <li>• High installation costs</li> <li>• Importation taxes change all the time</li> <li>• Banks do not understand energy projects</li> <li>• Consumer financing costs high, especially for base of pyramid customers</li> <li>• Start-up capital inaccessible to many people</li> <li>• Over-reliance of hydro</li> <li>• Centralization of department of energy</li> <li>• Lack of information on energy issues</li> <li>• No technical support for energy projects in rural communities</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of a conducive environment for private sector participation in energy challenges</li> <li>• Malawi government does not fund min-grids through rural electrification programs</li> <li>• Lack of government commitment</li> <li>• Lack of financing</li> <li>• Government is key, but too much talk and no enforcement</li> <li>• Lack of good demonstration/reference project for PV systems: poor system designs</li> <li>• Renewable energy financing for rural poor and a lack of sense of ownership</li> <li>• Licensing mini-grids cost and process</li> <li>• Tariff setting/ Non-cost reflective tariffs</li> </ul>	<ul style="list-style-type: none"> <li>• Poor quality products make people lose trust in solar as a whole</li> <li>• High cost of products</li> <li>• Lack of regulation when it comes to restriction to the distribution of fake products on the market</li> <li>• Absence of sovereign guarantees from government</li> <li>• High cost of finance</li> <li>• Influx of substandard energy products</li> <li>• The bodies responsible for checking the conditions of the PSPs are not doing a good job because there are a lot of fake products on the market which hinder the sale of the original ones.</li> <li>• High importation cost</li> </ul>
Suggestion:	<ul style="list-style-type: none"> <li>• Establishment of energy database to spell out critical information e.g statistics that could help new entrants make informed decisions</li> <li>• Identify key priority areas in terms of energy needs</li> <li>• Use more modern forms for information dissemination to increase awareness of standards</li> <li>• Set up a MFI energy industry or body or platform</li> <li>• “Blended” finance including donor and bank funds for products or projects</li> <li>• Local production or assembly</li> <li>• Pay as you go</li> <li>• VAT waiver, can we lobby and pull together on this</li> <li>• Hold a microfinance for renewable energy workshop</li> </ul>	<ul style="list-style-type: none"> <li>• Electricity costs should be liberalized in order to attract more companies to get involved in energy generation</li> <li>• Training for local technical expertise on the ground</li> <li>• There is a need for a platform for mini-grid operators in the country</li> <li>• Establish a development bank</li> <li>• Reduce end user tariffs</li> <li>• Subsidize loans for key energy players</li> <li>• Donor grants spread out throughout project timelines</li> </ul>	<ul style="list-style-type: none"> <li>• Find a way to deal with substandard products</li> <li>• Control the type of systems coming in</li> <li>• Government bodies need to be more proactive</li> <li>• Enforce standards</li> <li>• Increase consumer awareness on issues like warranties, and quality</li> <li>• Have MERA certify importers</li> <li>• Offer products on pay as you go</li> <li>• Reduce taxes</li> <li>• Remove VAT to increase affordability</li> </ul>
Key Question:	<ul style="list-style-type: none"> <li>• How to coordinate MERA, REIAMA, CAMA, Department of energy?</li> <li>• How can we make the 80% of Malawians have access to electricity?</li> <li>• MERA: can you lobby on solar supplier’s/installers behalf? There are many components to making solar installation the list on duty exempt items needs to be expanded</li> <li>• Update from banking – how far is the BARREM that was being administered by National bank of Malawi to support Solar Home Systems installation?</li> <li>• MBS are inconsistent with their charges where can we find list of their charges? It feels like we are being penalized for bringing quality products by having to pay additional fees</li> <li>• How do we prevent dependency syndrome on donor funding?</li> <li>• Is Malawi following ISO 50001 standard for energy management systems i.e. Energy Audits a tool for needs assessment?</li> <li>• How do we provide energy to the last mile?</li> <li>• Does energy access increase political participation?</li> </ul>	<ul style="list-style-type: none"> <li>• What are the legal provisions for mini-grid electricity?</li> <li>• Promote solar for productive use apart from irrigation</li> <li>• What ownership model is most suitable for mini-grids in Malawi and why</li> <li>• Can electricity levy be accessible by private players like IPPs?</li> <li>• Do we currently have examples of min-grids (Already installed in Malawi)?</li> <li>• What makes it difficult for mini-grids or hydro systems to be implemented in so many areas in Malawi</li> <li>• How far is Sitolo project?</li> </ul>	<ul style="list-style-type: none"> <li>• Current energy needs is going beyond lighting what is the future of PSPs</li> <li>• Waste management, do we have a policy or strategy for this in Malawi</li> <li>• What is MERA doing on the influx of substandard products</li> <li>• In terms of uptake on the pico solar products how should we increase uptake for these solar products by women in Malawi</li> <li>• On the influx of low quality products what can one do as a stakeholder in energy sector for legal enforcement?</li> </ul>



## Appendix C: Timetable

	<b>Day 1: Increasing energy access in off-grid areas in Malawi</b>	<b>Day 2: Addressing barriers in the Malawian mini-grid sector</b>
8.00	Registration and Networking	Networking
9.00	<b>Mapping the Enabling Environment</b> <i>Chair: Edgar Bayani, CEM</i> <ul style="list-style-type: none"> <li>Workshop Opening: <i>Department of Energy Affairs</i></li> <li>Energy Access in Malawi: <i>Andrew Nkoloma, REIAMA</i></li> <li>District Energy Officers: <i>Estrida Nyirenda, CEM</i></li> <li>Standard Compliance and Quality Assessment of Renewable Energy Equipment and Systems: <i>Kondwani Gondwe, Mzuzu University</i></li> <li>Energy and Gender: <i>Barbara Banda, National Association for Business Women</i></li> </ul>	<b>Mini-grids: Support for Reaching Scale</b> <i>Chair: Memory Suwedi, CEM</i> <ul style="list-style-type: none"> <li>Overview of Mini-grids Framework: <i>Francis Gondwe</i></li> <li>Mini-grids Legal and Regulatory Framework: <i>Tufwane Mwagomba</i></li> <li>Tariff Framework For Mini-Grids: <i>Mathews Kadondo</i></li> <li>UNDP GEF Programme: <i>Emmanuel Mjimapemba, UNDP</i></li> </ul>
10.30	Break	
11.00	<b>Facilitation through Funding and Finance</b> <i>Chair: Admore Chiumia, Practical Action</i> <ul style="list-style-type: none"> <li>Donor Insight: <i>Andrew Spahn, USAID</i></li> <li>Finance for Energy Access: <i>William Kihara, REACT</i></li> <li>Update from the Banking Sector in Malawi: <i>Faith Lemani, NBS</i></li> </ul>	<b>Lessons From Hydro Mini-grids</b> <i>Chair: Edward Philips, Practical Action</i> <ul style="list-style-type: none"> <li>MEGA update: <i>Arnold Kadziponye, MEGA</i></li> <li>Kavuzi Micro Hydro: <i>John Taulo, Malawi University of Science and Technology</i></li> <li>Usinigini Hydro: <i>Edward Philips, Practical Action Consulting</i></li> </ul>
12.30	Lunch	
13.30	<b>Tier 1 Access: Lessons from the Field</b> <i>Chair: Samuel Martin, Business Innovation Facility</i> <ul style="list-style-type: none"> <li>Support to the development of the PSP market in Malawi: lessons learned and way forward: <i>Business Innovation Facility</i></li> </ul>	<b>Lessons from Solar Mini-grids</b> <i>Chair: Berias Unyolo, CEM</i> <ul style="list-style-type: none"> <li>Sitolo PV mini-grid: <i>Morton Kaunda, CEM</i></li> <li>Sitolo: Capacity building and PUE, <i>Memory Suwedi, CEM</i></li> <li>SOGERV: <i>Lloyd Archer, United Purpose</i></li> <li>MREAP &amp; SOGERV Remote Monitoring and Control Learning: <i>Kelvin Tembo, WASHTED</i></li> <li>SE4RC: <i>Lonje Binga, CARD</i></li> </ul>
15.00	Break	
15.30	<b>Discussion Session: Energy Access</b> <ul style="list-style-type: none"> <li>Market Activation: <i>Chiedza Mazaiwana, Practical Action Zimbabwe</i></li> <li>Discussion: Challenges and opportunities in the energy access sector Malawi</li> </ul>	<b>Discussion Session: Mini-grids</b> <ul style="list-style-type: none"> <li>Barriers and Opportunities in the mini-grid sector: updates from recent research: <i>Aran Eales, University of Strathclyde</i></li> <li>Discussion: Addressing Barriers in Mini-grids in Malawi</li> </ul>
17.00	Closing remarks	Workshop Summary