



2010

Community Perspectives of a Community Rural
Electrification & Development Project:
Mwanayaya, Malawi



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List of Acronyms

HSA – Health Service Advisor

TBA – Traditional Birthing Assistant

CRED – Community Rural Electrification and Development Project

PM – Project Manager

FW – Field Worker

Poly.T – Polytechnic Staff

Executive Summary

The purpose of this evaluation is to assess the social impacts of a community rural electrification and development pilot project deployed in Mwanayaya village, southern Malawi. This includes assessment of the degree of community ownership and sustainability the project holds and how this contributes to certain CRED project objectives, with a degree of focus on the 'energy committee' as the community level implementation structure developed for the deployment of solar electrification related activities.

In order to evaluate these aspects of the CRED project, participation/decision making and ownership are focal aspects for analysis whereby consultation took place over a 10 day timeframe at the end of the project cycle, in November 2010. Other areas pertinent for rudimentary evaluation are 'access, use of profits and analysis from a sustainable livelihoods perspective.

In summary, community stakeholders report a wealth of benefits from the CRED project and there appear to be good levels of accessibility. Levels of participation are mildly 'functional' in nature and decision making is top-down and reliant on external project stakeholders. While the energy committee perform practical functions in a competent manner, they struggle to reach strong levels of ownership and decision making with regards to the CRED project activities. Members of the community out with the energy committee have low levels of participation or ownership. This impacts on the ability of the project to attain sustainability. The Sustainable livelihoods analysis highlighted project strengths in Human, Financial and Physical capital. Recommendations are proffered regarding areas for improvement for current and future projects in order to promote ownership, participation and sustainability.

Background

The Community Rural Electrification and Development (CRED) is a joint University of Strathclyde and Blantyre Polytechnic initiated project aiming “To use a pilot installation of 4 community solar energy systems to establish and demonstrate a best practice sustainable model for rural community social and economic development based around renewable power supplies, microfinance and income generation while building in-country capabilities and partnerships to enable larger scale independent deployment”. (Grant application, 2008) (Refer to appendix 1 for full explanation of the CRED project).

The income generation component pertains to tariffs charged at community level for mobile phone charging and cold drinks sales, facilitated by the solar energy installation. Income is pooled in a central fund for maintenance and other future uses.

Location of the current impact assessment is Mwanayaya village, situated in the Shire valley of Chikwawa region (population 434,648 0-75 years old, 2008), Southern Malawi (the location of one of the 4 pilot solar installations).

Malawi:

Human development Index: “provides a composite measure of three basic dimensions of human development: health, education and income” (UNDP, 2011), Malawi is placed 153 out of 169 countries included in the HDI survey. This places it amongst those countries with Low Human Development (UNDP, 2011) and below the average sub-Saharan African region average HDI.

- Health

National life expectancy at birth is 54.6 years and maternal mortality ratio is 510/100000 births (UNDP 2011, 2010 figures). Chikwawa 2008, figures (most recent) suggest there are just over 12% of all children under 18yrs orphaned: 228,085 children of whom 27,791 are orphaned (National Statistics Office of Malawi, 2008).

- Education

National adult literacy rate (both sexes, 15+ yrs) is 74% and the average years of schooling a child can expect is 8.9 yrs. (UNDP 2011, 2010 figures).

Chikwawa:

In the ‘southern region’ of Malawi, where Chikwawa is situated, the sex disaggregated literacy levels (5+yrs) are: Male: 1,237,677 in rural areas and Female: 1,089,785, female literacy thus being lower than male in the region (NSoM 2011, 2008 figures)

Chikwawa region education statistics (5yrs+):

Area and Sex	School attendance			Highest level attended				
	Total	Not attending	Attending	Pre-school	Primary	Secondary	University	Other education level
Chikwawa (total)	360,220	271,469	88,751	743	81,455	6,283	109	161
Rural Males	177,406	132,864	44,542	370	40,634	3,396	70	72
Rural Female	177,994	135,355	42,639	371	39,609	2,580	21	58

*(NSoM 2011, 2008 figures)

In Chikwawa region it is evident that women's age at first marriage is younger than men. For women in this region it is highest in the 15-19 yr age category at 61,681 females and for males in the regions it is highest in the 20-24 yr age category at 45,412 males. (This confirms the explanation given in the following report regarding the lack of presence of young female students in FGD in Mwanayaya, Chikwawa region) (NSoM 2011, 2008 figures)

- **Housing and Energy Chikwawa Region:** (NSoM 2011, 2008 figures)

In Chikwawa region the vast majority of all homes are reported to be family or dweller owned: 379, 816 dwellings. Most of the population live in traditional dwellings: 176, 165 (out of 423,571 total), the majority of which, 136, 520 have two rooms. The overwhelming majority of the population gain access to water through means of a borehole: n = 252 928, with only 33, 764 reporting a community stand pipe and 8,283 reporting piped water direct to a dwelling and most report use of the traditional pit latrine, 232, 536.

- Household Energy in Chikwawa Region:

Main source of energy for cooking:	
Electricity	3,887
Paraffin	4,746
Gas	32
Charcoal	21,462
Firewood	389,184
Straw	3,327
Other	933

We can see that firewood, charcoal and paraffin are reported most frequently as cooking energy sources in the region (this is in line with the findings from the consultation process described below).

Main source of energy for lighting:	
Electricity	15,726
Paraffin	373,908
Candles	4,697
Firewood	25,363
Other	3,877

Paraffin, firewood and electricity are reported to be most frequent sources of energy for lighting, which differs slightly from the findings of the current consultation where electricity was not mentioned as a source.

Mwanayaya Village:

Is a small, remote and traditional village located in the Shire Valley of Chikwawa region. It is approximately 50Km from the city of Blantyre and has poor connectivity and transportation links. The main livelihood strategy is subsistence farming. The population is approximately 1000 amongst 300 traditional dwellings. There is a communal school and health facility wherein the solar installations are located.

Purpose:

While there is no formal TOR, the objective of the current evaluation is centred on assessing the social impacts of the CRED Project in Mwanayaya village: predominantly investigating levels of participatory practice and the degree of community ownership (with an additional brief sustainable livelihoods perspective) over the electrification project within the Mwanayaya community.

Methodological Considerations:

Stakeholder perceptions reflected in the report will be analysed from the perspective of, 'ownership' and 'participation/decision making' with a brief section indicating CRED from a Sustainable Livelihoods perspective and touching upon issues of access to the solar facilities. When reference is made to 'external stakeholders' this is in reference to those, non-resident in the community (i.e., CRED staff whom are non-resident in the village) and it is acknowledged when referring to the 'community' that this is not a homogeneous entity in itself and disaggregated perspectives have been sought where possible.

Primary Data:

Consultation took place over a 10 day period. Purposeful sampling occurred through key Malawi-based project staff. Whilst ideally there would have been a random sampling technique carried out independently of project implementing staff, due to time constraints this was not a realistic option.

Time frame also dictated the number of stakeholder groups consulted during the process of which 4 FGD were conducted and 2 key informant interviews (inclusive of Venn diagram and time line activities) at community level. While this provided a wealth of information, an extended time period would facilitate a wider breadth of community opinion and incorporation of external project implementing staff perspectives. This is a thoroughly recommended option in future consultation processes and would provide added validity and reliability of conclusions via triangulation.

Secondary Data:

Documentation utilised in the process consisted of the initial grant application for the CRED project and various email correspondence and documentation (Log Frame), provided by the Scottish Project Manager at Strathclyde University Electrical Engineering Department.

Confounding Methodology:

The translator during part of the consultation process was the field worker, a significant key external project member. It is highly probable that stakeholders interviewed under these circumstances may have felt the environment to be non-conducive to liberated disclosure and thus perspectives provided may be compromised in this sense. Further, FGD's and informant interviews were also carried out in the presence of the project manager and a prominent Malawi based university counterparts which further impacts on the potential for liberated disclosure by stakeholders.

These methodological issues cannot be under-estimated and must be borne in mind when considering the following report. Ideally for future practice, the presence of external project staff should be mitigated and an impartial and independent translator provided. Further, a female translator for female only FGD is recommended in order to facilitate a more conducive environment for disclosure. This was not possible for the current consultation yet the women did engage in the FGD.

Some quotes provided within the body of the report are given through an interpreter and thus are open to a degree of interpretation but other interviews/FGD's were conducted in English.

FINDINGS

Stakeholder Perceptions of CRED Benefits:

Community stakeholder’s perceptions CRED project benefits are illustrated in the table below. There are conceived to be a wealth of benefits (13 mentioned in total) touching on a wide variety of areas such as health, education, finance and social benefits.

BENEFITS	HSA	TBA	E.COMM	TEACHERS	WOMEN	STUDENTS
Increased students study time (improved grades/job prospects/better studying environment)	X	X	X	X	X	X
Savings on phone charging	X		X	X		X (contributes to homework assistance)
Close location for charging (time saving)	X			X		X
Contributes to community fund	X					
Increased group meetings	X		X	X	X	
Cold drinks close by	X		X			
Household energy savings			X		X	X
Less competition for communal energy sources at household level						X
Teachers prep in the evening				X (financial and time saving implication: they no longer have to pay or travel to get fuel.)		
Respiratory health improvements	X					
Vaccines kept locally	X		X			
Extended emergency health hours	X				X	
Better working environment for health workers and better health care provision	X	X	X			

Unanimous consensus by all 6 stakeholders/groups centres on the benefits that the solar installation brings through increased hours of evening study for the students. The next most commonly perceived benefits reported by stakeholders (4 stakeholder groups in concurrence) were that of:

- 1) Savings on phone charging which whilst being a primarily financial benefit also has secondary implications for students ability to obtain help with homework over the telephone (x 1 student had a

mobile) and also impacts on time savings for community members as they no longer have to travel long distances to charge their mobiles.

2) Increased group meetings in the school and health post in the evening were also widely reported to be a direct benefit of the solar installation. While questioning did not probe further into community perceptions of the specific benefits that increased group meetings hold it is an interesting area for future research.

The benefits illustrated in the table above have direct positive contribution to the achievement of various CRED project objectives:

- Increased numbers of students at school during the increased hours of study through school lighting systems
- Increased standards of health through refrigeration, clinic lighting.
- Increased awareness of applications of renewable (solar) energy in rural communities.
- Increased awareness of the income generation potential of renewable (solar) energy in rural communities. (see appendix 1)

This demonstrates the value that a 'community rural electrification and development' approach can hold and illuminates the areas that community stakeholders feel are of importance. While there is no doubt that the CRED project has brought benefits to the community there are other elements which must be analysed in order to gauge the sustainability of such a project: the degree of participation/decision making and ownership within the project will also impact on the capacity for project sustainability.

FINDINGS: PARTICIPATION AND DECISION MAKING

Overarching Participatory Environment:

The concept of participation has at its core “the enhancement of the capabilities of the local people and communities to define and address their own needs and aspirations” (Sen, 2000, cited in Duraipappah et al, 2005, pp.5) and highlight that the participatory approach helps to shift power over the development process away from external stakeholders who traditionally define the nature of the problem and how it might be addressed, to the people immediately impacted by the issue (Sandstrom 1994, cited in Duraipappah et al, ibid).

Further, Hickey and Mohan state that “most development agencies now agree that some form of participation by the beneficiaries is necessary for development to be relevant, sustainable and empowering” (2004, p237). And further that “using participatory approaches does take considerably more time, but can contribute significantly to community ownership of project activities and objectives” (Ikwap and Erickson,1999, p1.34).

Many of the CRED aims and objectives have a ‘participatory focus’:

- “Increased community involvement in ownership and management of a community renewable energy resource”.
- “Growing levels of independence and autonomy of community energy committee”.
- Leading to a “best practice sustainable model for rural community social and economic development based around renewable power supplies.... (Grant application, 2008).

As highlighted above, participation will ultimately lead to increased capacity for ownership, autonomy and sustainability strived for in the project objectives.

Decision Making:

As decision making is a central tenet participatory process (see appendix 2 - scales of participation), this aspect is also focal for discussion and its implications for participatory practice will be analysed.

Level of Participation: ‘Functional’ (see appendix 2)

The CRED project was conceived and defined by stakeholders external to the Mwanayaya community and required alignment with wider governmental development objectives in order to receive support:

- Scottish Government’s International Development Policy
- The terms of the Scotland-Malawi Co-operation Agreement
- Malawi Growth and Development Strategy for *improving the lives of the rural poor through infrastructure development to create an enabling environment for economic and social activities*” (Grant application pp.21, Appendix 1)

The process of ‘problem definition’ and ‘needs analysis’ was carried out at high level meetings and workshops whereby:

“A mixture of one to one meetings and stakeholder workshops were held with government officials (DoE), ESCOM staff, representatives from the MIRTDC and academics at the Polytechnic to discuss the most pressing needs relating to renewable energy. The team also met with a number of international organisations including the UNDP, the World Bank, Unicef and DfiD in order to understand current and future projects. This proposal arises directly from this visit and subsequent discussions” (Grant Application, pp.11, Appendix 1).

After problem definition and needs analysis, a community survey was conducted, aiming to gauge residents perceptions regarding uses of solar energy, whereupon, they indicated the need for cold drinks and mobile phone charging. This indicates a level of consultation at the project initiation phase however, this does not impact significantly on the overarching participatory environment as wider project parameters and objectives were predetermined by external stakeholders.

These processes carried out in the project conception and initiation phase thus, mean that the (see appendix 2 – Degrees of participation) ‘participatory capacity’ of the CRED project continuously functions within a wider ‘functional participatory’ environment whereupon:

“People participate by forming groups to meet predetermined objectives related to the initiative. Local people’s involvement however occurs after major decisions have been made rather than at an early stage in the project cycle. The established groups are dependent on external initiators and facilitators, but over time may become more self-sufficient” (Pimbert and Pretty 1994, cited in Duraiappah, AK, et al 2005, pp.6 – Appendix 2).

Here an ‘energy committee’ (see appendix 3 for energy committee description) is the community structure conceived by project planners, to be appropriate, for the implementation of CRED objectives in pursuit of a community owned and sustainable approach to rural electrification. It is intended that the energy committee, being composed of representatives of different demographics of the community, will be a good structure through which to foster ownership and independence as demonstrated by the following project objective –

- **“Community ownership/leadership:** By ensuring high levels of community involvement, skills and knowledge building and making a community energy committee the centre of all aspects of the solar deployment, awareness of the community wide benefits of renewable energy will be raised and the solar power system will be established as a valuable communal resource” (Grant Application pp22, Appendix 1).

COMMUNITY PERCEPTIONS

Community Perceptions

(See Appendix 9 - for the flow chart pertaining to Community Stakeholders Perceptions of CRED Delivery Structure in Practice).

Field Worker

The field worker role is intended be facilitative and supportive, ensuring a link between the community and the Malawian polytechnic and Strathclyde University. From the perspective of those community stakeholders interviewed there is a different perception of his role.

The HSA perceives that the field workers role is one of utmost authority over the solar activities and that he is “the co-ordinator, [who] has the most influence in the project” (HSA, 2010) and also that “people in the community see him as an authority with credibility” (HSA, 2010)

The women’s FGD highlighted that the field worker is responsible for setting up the energy committee. Referring to the women’s ‘Venn diagram’ (appendix 4/5) it is evident that they perceive the field worker and project manager to hold the most influence over solar proceedings.

Referring to the Venn Diagram (appendix 6) it is strikingly evident that the teachers perceive the field worker to have control over all decision making processes of the solar installation and associated activities, believing that the energy committee will not make decisions without the permission of the field worker due to fear and the belief that they will be evicted from the energy committee if they make autonomous decisions. Therefore the teachers perceive the energy committee to be a “token gesture and everything is really controlled from the top”. The teachers show frustration towards the situation stating “why does he field worker have power over the community even when he is not from the community and doesn’t live here?!”.

The translator during the Energy Committee FGD was the field worker. Thus, the environment may not be conducive to liberated disclosure and perspectives of the Field worker provided by the energy committee may be compromised.

Venn diagram 1 (appendix 7) highlights that the Energy Committee perceive the field worker to be an important link in the decision making chain but less important than the HSA and themselves and the Scottish government. This is in contrast to other community stakeholder perceptions. Diagram 2 (appendix 8) also highlights the key role that the field worker plays in the communication processes of the CRED project. The field worker is perceived by the energy committee to be the pivotal contact point for all communications.

The TBA and the students did not mention the field worker during their FGD and Key informant interviews (however, the field worker was translating the TBA interview which could have an impact).

Health Service Adviser

The HSA describes that his role involves determining “who gets to use the health facility and the school. The energy committee have to get permission from him in order for the solar installations to be used”.

The Energy committee refer to the HSA as their supervisor and in reference to the Venn diagram (appendices 7&8) they illustrate that he is a key contact point between them and the field worker. Indicating the top/down nature of the decision making process although those with their own mobile phones can also contact the field worker directly.

Students state that the HSA gives them access to the school and that he holds the keys: “we get the keys from them” (‘them’ referring to various energy committee members, of which the HSA was the first to be mentioned). The HSA has decision making power at the community level, with regards to day to day access.

While the teachers perceive that “the HSA is in charge” and feel some animosity towards the fact that he “tries to be our boss”. Thus, while they perceive the field worker to have overall decision making authority, they perceive the HSA as being ‘in charge’ on a more community based level.

Women did not mention the HSA directly in their FGD and regarding ‘access’ they state that the school is “open after 5 pm and people can come if they want”. No indication was made that there is a key holder. However, it is suggested in the Venn diagram (appendix 5) that the HSA is perceived as having an influence over the solar activities: the placement of the HSA in the diagram closer to the field worker and project manager show that they perceive the HSA has closer contact with these stakeholders, thus potentially more influence.

Summary/Implications:

- The Field worker is perceived to have the most decision making power and authority over the CRED decisions and Energy Committee proceedings within the community.
- The HSA is perceived to be the community level key holder and ‘supervisor’ of solar related activities but likewise is perceived not have any wider decision making power with regards to CRED project.
- The energy committee perceive themselves to have a degree of decision making power over the practicalities of solar activity, this has positive implications for sustainability, yet they see the HSA as their supervisor, whom in turn, distinguishes the field worker as the project authority and decision maker thus implying dilution of direct decision making abilities of the committee. This is in keeping with ‘functional participation’ where “The established groups are dependent on external initiators and facilitators” (QUOTE). Thus, the CRED project is top down in nature.
- Teachers, students and women do not feel they have any decision making power thus reducing their level of participation in solar deployment and associated activities.

- Levels of participation by those out with the energy committee, struggle to achieve a 'functional participatory' level and may align more towards a (but not exactly aligned with) passive participatory scenario which includes: "Participation by the local people is by being told what is going to happen or has already happened" (QUOTE).
- While the project objective is community ownership "By ensuring high levels of community involvement, skills and knowledge building and making a community energy committee the centre of all aspects of the solar deployment" this will be difficult to attain because:
 - 1) All stakeholders within the community (out with the energy committee) are not part of a participatory process with regards to solar deployment and related activities.
 - 2) Whilst the energy committee is conceived to embody 'community ownership', the top down non-participatory decision making structure and overall project environment impedes this.
- The objectives of autonomy and independence will also be difficult to achieve whilst the implementation of the CRED project is so reliant on external stakeholders.
- The levels of participation within the CRED project mean that sustainability of the project is compromised.

The Energy Committee

The HSA perceives that he is the supervisor of the energy committee and that their duties pertain to performing day to day practicalities. He sees the formation of the energy committee as a community election process, whereby people in the community expressed an interest in being a member and thereafter all community members decided who should be part of the final energy committee.

HSA highlights that the community are suspicious that the committee take a cut of the profits. But, further highlights that they have made the unanimous decision to incentivise their roles (in consultation with the field worker), through cheaper phone charging tariffs and receipt of monetary recompense when profits allow.

This is a non-transparent and 'secretive' practice of which the wider community are not aware because the HSA believes that the community would not believe that this is the only incentive that the energy committee receives: "they would think that they are getting more".

While the practice of incentivising is not an intrinsically detrimental concept for the project objectives, (as the idea for incentive has come from within the community and not from external project stakeholders wishing to increase interest in project activities), it has the potential to create some community conflict. This is illustrated by the fact that the HSA believes community members treat the energy committee with suspicion. That there is no transparency in the incentivising process is problematic for community cohesion but not wholly detrimental from a participatory perspective.

Again - the translator during the Energy Committee FGD was the field worker. Thus, the environment may not be conducive to liberated disclosure and perspectives of the Field worker provided by the energy committee may be compromised.

They state that their contribution to the project has been primarily practical in contribution to maintenance and running of day to day activities. They believe that the energy committee works well because “we work as a team and are good as a group. We can work problems out well together”, highlighting a level of group cohesion.

Venn diagram 1 (appendix 7), illustrates that the energy committee perceive themselves to be the most important community structure followed in a chain of importance by the HSA and then the field worker and Polytechnic partner. However, they do indicate that they have contact with other members of the community. They graphically illustrate that the Scottish government have the biggest influence on decision making and that they have very least contact with this stakeholder.

Communication: They state that they mainly interact with the teachers and the HSA within the community and that if the wider community members want to communicate with them then they go through the village chief, or approach them directly.

Energy committee contentment with the current decision making processes was not directly ascertained. However when asked about changes to the solar activities they did not express that the process of decision making was an area for focus (again the presence of the field worker could act as a confounding factor in this response).

The translator during the TBA key informant interview was the field worker, coupled with the presence of the PM, the interview environment may not have been conducive to liberated disclosure. TBA (as a member of the energy committee) perceived the role of the energy committee to be related to practical functions and that they are the ultimate decision makers regarding the solar activities at the community level. Although she has a part in the energy committee it appears that she feels her role is less prominent due to government policy negating her capacity to utilise the health post for birthing activities.

In addition to the access granting role previously mentioned by the students, they perceive the committee, organise shifts to help with charging phones and carry out maintenance, thus highlighting their responsibility for the practicalities of solar deployment. They do not ascribe these practical responsibilities solely to the HSA as the supervisor, and did not mention external stakeholders.

Communication: The students highlight that they are afraid to communicate with the energy committee and further, that they do not feel they have a right to do so. Thus, while there is unanimous consensus amongst all stakeholders that students are the primary beneficiaries of the solar installation, they have very low levels of participation within the CRED project (more akin to passive participation than functional).

As highlighted above the women consulted, believe the field worker to be responsible for initiating the energy committee and that members were self-nominated and not elected by the community, this holding a contrasting view to that of the HSA.

Communication: while the energy committee will never consult the women concerning solar related activities, women can hold a meeting and the chief will then relay this to the committee or they can take ideas directly to the committee if they desire. This illustrates their lack of consultation regarding

energy committee proceedings and implied lack of influence over decisions making however, it is unclear whether, the energy committee act upon the suggestions given to them by women in the community but irrespective, the committee retain decision making power.

They express that the functions of the energy committee are concerned with practicalities of day to day running and financial responsibilities and that they are happy with the way the energy committee is functioning.

The teachers expressed that the energy committee “serve the community appropriately and they are careful and have good management amongst themselves but have poor leadership skills in general”

Formation: They indicated that they arrived at the school and the energy committee was already in place (they have only been in post for 1.5 yrs so were not present at the beginning of the project): “we arrived and it was here”.

Responsibilities: They express that the energy committee are responsible for practical elements, involvement in maintenance and day to day running (e.g. Rosta for phone charging and security). Additionally they bring to light the issue of “illiterate people on the committee who can’t keep records properly” and that only people who can read and write in English are chosen for the training.

Decision making: while the teachers stated previously that the Field worker has over all decision making power and the HSA tries to be their boss, they perceive that the current committee “dominate” and “they act as the owners” and “others have nothing to say about the running”. They recognise the HSA as the “top most person” (of the energy committee) who has the decision making power at the community level. Thus, they perceive the energy committee as having a top-down decision making structure and that it therefore has little decision making power as a committee.

Communication: the teachers always approach the energy committee, never vice-a-versa. They have approached them twice in the last year to discuss school access and to hold them to account and ask what they are doing for the community. They do not ever say no to the energy committee but they can liaise and try to decide what is best.

They highlighted that there already exists a school committee, with specific responsibility to the school and that the project has created another structure which comes into conflict with the existing one. It appears that communication between the two structures is poor (“misunderstandings”).

Areas for improvement: teachers think there needs to be more integration between the HSA, community members, teachers and the energy committee in order to improve and plan the affairs of the solar activities. They would like to have more power over what happens in the classroom in the evening and also state that they would value a process of election for energy committee appointments.

Summary/Implications:

- The energy committee are perceived by all stakeholders to have responsibility and decision making authority regarding the practicalities and maintenance issues of the solar facilities and also (inclusive of the HSA) assist access to the solar facilities.
- That the energy committee have a good group cohesion and team work abilities and are perceived to carry out the maintenance functions competently.
- All stakeholders perceive the HSA to be the supervisor of the energy committee.
- Other stakeholders must be pro-active in initiating communication with the energy committee.
- There are differences in perception regarding the formation of the energy committee which have implications for how participatory the 'formation process' was.
- The level of participation and decision making of stakeholders out with the energy committee is low and the level of participation and decision making the committee has within the overall CRED project is 'functional', making it difficult to establish a truly community owned and sustainable rural electrification facility.
- The women appear happy with committee proceedings as they are able to communicate their requests to the committee even though the committee retain overall decision making power and never consult with them.
- The students are happy to benefit from the access to the school and benefits of study that the energy committee facilitate, yet they are afraid to communicate with them and do not feel they have a right to influence energy committee proceedings.
- The energy committee are happy with the responsibilities pertaining to management of the day to day practicalities of the solar deployment activities and did not express any opinion with regards to their level of participation and decision making authority.
- The teachers distinctly expressed their displeasure with the authority the committee (inclusive of HSA) have over day to day solar deployment practicalities and feel frustration at the lack of participation and decision making influence they themselves have with regards to the committee. This is problematic as committee decisions and activities have some of the most prominent impacts on teachers, such as use of the school for charging and studying, interruptions to classes, HSA assuming the role of boss, misunderstandings with the school committee.
- There is a teacher on the energy committee however, this is not mentioned throughout the discussion – this could be reflective of the fact that his presence on the energy committee is of no consequence to the teachers or it could have been omitted because no direct questions were asked about this.

- While energy committee play a crucial participatory monitoring function (book keeping and maintenance) with some competency, teachers question the ability of illiterate members of the energy committee, expressing low levels of confidence in their capacity to maintain accuracy.
- Misunderstandings occur between the energy committee and existent established community structures such as the school committee.
- While different facets of the community are represented on the energy committee (e.g., teachers, elders, woman) it appears that the committee is an autonomous structure from the rest of the community and that representation in the committee of these different community members does not necessarily guarantee a participatory process inclusive of shared community decision making and reciprocal communication with other stakeholder and the wider community.
- The project objective stating “Knowledge transfer to, and capacity building in the communities will enable independent financing, operation and basic maintenance of the solar power system” (Grant application pp.22, Appendix 1) has been achieved in that the community stakeholders interviewed express that the energy committee perform their practical, maintenance and record related duties competently (with the possible exception of those with low literacy skills).

OWNERSHIP

Ownership

While degree of participatory practice within the CRED project has implications for the extent of ownership (as previously highlighted), the current analysis further concurs with Figueroa et al, that the importance of an issue [solar energy] to stakeholders is also an indication of ownership (2002, pp.32): energy needs ranking by different community stakeholders may therefore provide a rudimentary indication of the importance community stakeholders place on the issue of solar energy (and thus the potential for ownership of any resulting solar energy based project).

	HSA	TBA	E.Committee	Teachers	Students	Women
1	Solar (household)	Water	Wood	Wood (solar cookers preferable)	Wood	Wood
2	Firewood	Household Lighting	Water	Charcoal (rare)	Matches	Charcoal
3	Charcoal	Wood	Lighting (household)	Paraffin (not readily available)	Solar	Household electricity
4		Solar	Solar	Solar (if cheap, higher on the list)	Paraffin	Matches
5					Candles	Candles
6						Solar torches

While stakeholders expressed a desire to attain solar at the household level and both teachers and women mention the value of solar cookers, they frequently placed solar energy low when ranking community energy needs. In Mwanayaya firewood takes majority precedence with regards to perceived energy need (except in the case of the TBA who noted water and the HSA who highlighted solar first).

- Women –When probed further regarding energy priority for cooking, their preference was solar but if not possible, then fire wood has the most importance for meeting their needs.
- Teachers – They mentioned solar cookers would be a preferable to firewood if possible and if it was cheap then solar would be high on the list.
- Students – may have placed solar higher than most in the ranking as they are in receipt of the most direct benefits through increased study time.

Thus, from the perspective of the wider importance of the issue of rural solar provision in Mwanayaya, it is evident that most stakeholders indicate that other types of energy have higher importance and thus ownership of a project which addresses rural solar provision may not provoke high feelings of ownership.

More specifically, ownership can be directly gauged by ascertaining the degree to which stakeholders “Perceive themselves as responsible for project success and feel they deserve credit/benefits from the project” (Figueroa et al 2002, pp.12).

As previously illuminated many of the CRED aims and objectives have an 'ownership focus' thus, with regards to the specific CRED project, Mwanayaya stakeholders were asked who they perceived to be responsible for the successes of the project.

It is evident that the HSA and the energy committee do feel a degree of ownership over the solar installations. They feel that they have personally contributed to the successes of the solar and that they deserve benefits from the project (also highlighted by their decision to incentivise their roles). The HSA feels that the energy committee role is important as "It makes money which will be assisting the community in many ways", thus highlighting that he feels that the energy committee, inclusive of himself, is responsible for the benefit that solar activities provide for the wider community.

They also perceive that the Scottish government has contributed to the success of the CRED project (appendix 7) while they have little contact with the Scottish government, they ascribe a degree of overall ownership to this stakeholder.

The teachers, students and women highlight that ownership lies in the hands of other stakeholders within the CRED project:

The students themselves express low levels of ownership. They ascribe 'smooth running' to the energy committee and attribute success to the HSA and certain other committee members whereby they give them "a chance to study" and "help to improve the standard of living" in the community. Since the students maintain that they are the main beneficiaries of the project through increased capacity to study, and that this is directly due to the HSA and various committee members, highlights where the students perceive the ownership of solar activities to lie.

In contrast to the perceptions of the students, HSA and energy committee whom all ascribe a level of ownership to the energy committee, women and teachers hold a different view.

Women express low levels of ownership, as they perceive external stakeholders (field worker and external project member) as responsible for successes of the solar activities and thus ownership lies with them.

Teachers express low levels of ownership over the CRED project. They state that the energy committee are responsible for success from the perspective of ensuring practicalities of the solar installation/activities. But, they believe the energy committee to be a 'token' structure and thus do not ascribe wider ownership of the project to either the committee or the community at large.

The majority of stakeholders do not perceive that they have contributed to the successes of the solar installation/activities and ascribe ownership to the energy committee on a practical level and to external stakeholder such as the Scottish government, field worker and external project stakeholders: low overall levels of ownership are expressed.

PROFITS, ACCESS & UPGRADES

Perceptions of Profits:

Profits were mentioned by 3 stakeholders: the HSA highlighted there to be 'little knowledge' in the community that some profits must be kept for maintenance. Further, the energy committee have made an autonomous decision to use 'non-maintenance profits' to aid an elderly woman in the community without consultation of the wider community. As highlighted previously, the energy committee have also decided to incentivise their roles from the profits when funds allow without wider community consensus.

The women in the community highlighted that they think the profits will be used to help construct a new school and have communicated with the energy committee that they think profits should also go towards a new maize mill.

The teachers asked many questions regarding the profits during the FGD thus illustrating their distance from such issues. They also highlighted that they perceive the energy committee to show little capacity for deciding what to do with profits and that ultimately it is the decision of the field worker. They also expressed that they do not have any influence in decisions regarding use of funds.

The issue of 'profit use' is a potential area for conflict within the community. There appear to be low levels of understanding within the community about necessity to retain some of the profits for maintenance (something highlighted by the HSA), and further there distinct divergence in perceptions of profit use and a lack of clarity amongst community stakeholders regarding responsibility for decision making pertaining to profits. The energy committee appear self-assured that making autonomous decisions regarding funds is acceptable.

This area has a high potential to create community divisions unless collaborative decision making and consensus building is undertaken around profit use, this would facilitate feelings of ownership over any development opportunities which the profits from the current income generation activities may provide, and will ultimately increase the participatory nature and sustainability of the CRED project.

Issues of Access

All stakeholders highlighted that there was no-one in the community who was unable to use the solar facilities if they wished to thus indicating positive contribution to the project objective whereby a “solar power system will be established as a valuable communal resource”. However, throughout the course of the FGD and interviews it became apparent that there are potentially 3 groups within the community whom may not enjoy access:

1) Young male cattle herders (this was highlighted during the women’s FGD – they stated that they get home late and thus are either too tired to study or else they arrive back after the lighting in the school has been turned off)

2) Young women also seem to be unable to access the solar in the evening – there were no young women in the student FGD and when asked why this was, the students stated that all the women were married and none attended school.

3) Adult learners: there should be provision made for adult learners. It was felt (by TBA and women) that adults would like to improve their education but they do not feel comfortable studying at the same time as the younger students.

(During the women FGD it was also highlighted that ‘bad boys’ (those who steal cars etc) were prevented from using the school light in the evenings).

Areas for 'Upgrade'

It is evident, from Table 3. below, that there is a common desire for various 'upgrades' to the current solar facilities. There is a common desire to begin a barber shop, which has the capacity for income generation. While this commonly held aspiration is a prime focus around which to foster participation and ownership, consideration should also be taken as to why teachers, the TBA and HSA did not express this as a goal. The capacities for added phone charging capabilities and for the possibility of adult learning evenings are also vital areas for investigation.

	HSA	TBA	E.Comm	Teachers	Students	Women
Households Solar	X				X	
Videos			X			
Music			X			
Barber Shop			X		X	X
Maize Mill					X	X
More Charging Capacity				X		
Adult Learning facility		X				X

Energy Committee –the energy committee stated that they would share the responsibility for running the proposed upgrades.

Women – Already made a request to the energy committee whereby they gathered as women and then independently took the idea to the energy committee at a meeting.

Teachers –At the moment there is only capacity for 6 and they would like to see a facility where 12 phones could be charged because there is demand for it.

TBA – The systems (solar) needs to be extended because the number of people who want to use them is too big. There is no room for other groups.

These propositions for 'upgrades' demonstrate that the projective objective of: "Increased awareness of applications of renewable (solar) energy in rural communities" is being achieved as stakeholders become more conscious of the potential held within the solar resource and express aspirations for future applications.

SUMMARY OF FINDINGS

Summary of Findings

- Non- energy committee stakeholders perceive that the energy committee work well as a team and perform their maintenance and practical duties in a competent manner (except book keeping) – This indicates that the ‘skills and knowledge building’ aspect of the CRED project goals is successful within the energy committee.
- Majority of stakeholders perceive the field worker to hold overall decision making power.
- Majority stakeholders perceive the HSA to be the ‘key holder’ and hold responsibility for making day to day decisions about use and practicalities (such as maintenance and rotas).
- All stakeholders perceive the students to be the primary beneficiaries of the solar installations.
- Majority of stakeholders want ‘upgrades’: barber shop, extra charging capacity and adult learning facilities.
- All stakeholders see the main duties of the energy committee as maintenance, practicalities and banking of funds.
- Majority of the stakeholders do not perceive solar to be the most important community energy need.
- Majority of the stakeholders do not perceive themselves to have ownership of the solar project (only HSA and to a lesser extent the Energy Committee)
- All stakeholders out with the energy committee have low levels of participation.
- All 6 stakeholders/groups unanimously highlight the increased hours of evening study for the students is the primary benefit that the solar installation brings to Mwanayaya.

CRED BENEFITS & A SUSTAINABLE LIVELIHOODS FRAMEWORK

CREd Benefits and a Sustainable Livelihoods Framework

The sustainable livelihoods approach is a valuable approach to foster sustainability of community based projects: “The sustainable livelihoods framework presents the main factors that affect people’s livelihoods, and typical relationships between these. It can be used in both planning new development activities and assessing the contribution to livelihood sustainability made by existing activities” (DFID, 1999, pp.2.2), the main factors presented in the framework are:

Human Capital: “the skills, knowledge, ability to labour and good health that together enable people to pursue different livelihood strategies and achieve their livelihood objectives” (ibid, pp.2.3.1)

Social Capital: “social networks upon which people draw in pursuit of livelihood objectives” (ibid pp.2.3.2)

Natural Capital: “the natural resource stocks from which resource flows and services (e.g. nutrient cycling, erosion protection) useful for livelihoods are derived” (ibid, pp.2.3.3)

Physical Capital: “Physical capital comprises the basic infrastructure and producer goods needed to support livelihoods. • Infrastructure consists of changes to the physical environment that help people to meet their basic needs and to be more productive. • Producer goods are the tools and equipment that people use to function more productively” (ibid, pp.2.3.4)

Financial Capital: “namely the availability of cash or equivalent, that enables people to adopt different livelihood strategies” (ibid, pp.2.3.5)

(For extended explanation of the sustainable livelihoods framework please refer to the DfID, 1999, Sustainable Livelihoods Framework).

While the focus of the current impact assessment did not specifically address information from a sustainable livelihoods perspective, the CREd project has a very strong sustainability focus therefore lends itself to a rudimentary sustainable livelihoods analysis: community perceptions of the 13 CREd project benefits (illustrated in Table 1) will be analysed from this perspective, (see Table 4 below for summary of benefits):

BENEFITS	Human Capital	Social Capital	Natural Capital	Physical Capital	Financial Capital
Increased students study time (improved grades/job prospects/better studying environment)	X				
Savings on phone charging	X			X	X
Close location for charging (time and transport saving)	X			X	X
Contributes to community fund	X			X	X
Increased group meetings		X			
Cold drinks close by					X
Household energy savings					X
Less competition for communal energy sources at household level				(X?)	
Teachers prep in the evening (financial outlay for school lighting)	X				X
Respiratory health improvements/hshold air quality.	X		X		
Vaccines kept locally	X				
Extended emergency health hours	X				
Better working environment for health workers and better health care provision	X				

Human capital: This is important because human capital is necessary in order to command the other 4 dimensions of the sustainable livelihoods framework. Human capital has been directly improved by the solar installations in a variety of ways. Students report more and improved study time. Teachers confirm that student marks have improved since the CRED solar installation. Also people feel more confident about going to the health facility in the evening (e.g. it is safer) and in the event of an emergency after dark it is health assistance is easier to administer due to lighting (previously the HSA would use his mobile phone light). Further, health staff are happier that they have an improved facility which contributes to improved health provisions within Mwanayaya.

Directly contributing to the advancement of the following project objectives:

- Increased numbers of students at school during the increased hours of study through school lighting systems.
- Increased standards of health through refrigeration, clinic lighting.

Social capital: It is evident in the responses from all stakeholders that there has been a substantial increase in the number of social groups who use the school as a meeting point for various religious

and social activities. Whilst the implications of increased social meetings on livelihood strategies are not directly ascertainable from the present consultation, initial indications suggest that there is potential for the CRED project to have positive impacts on social capital. Future investigations should aim to investigate this more directly.

Natural capital: Initial observations suggest there might be less impact on natural capital from the CRED project. Improved household air quality was the only mention of a natural capital related benefit that CRED impacted upon.

Physical Capital: That CRED is an electrification project in itself means that its primary impact is on physical capital. Solar deployment facilitates clean affordable energy intrinsically and also facilitates access to communication through providing a low cost and local phone charging facility. The secondary impacts this has are 'human capital' oriented: students indicated that they use their mobile phones to contact their parents for school supplies when they are staying at the school over exam periods and to get help with homework, thus through CRED improvements in physical capital are interlinked with human capital benefits. This inter-linkage is further highlighted considering the most unanimously reported benefit that CRED has brought is to the students' increased ability to study in the evening. Further, some stakeholders highlighted their desire that the profits from the solar income generation activities, be utilised for the purchase of bricks for new school construction, demonstrating the potential for further contribution the CRED project could make to physical capital.

Financial Capital: The primary means by which CRED impacts on financial capital within Mwanayaya is through its income generation capacity. It facilitates the accumulation of a community fund which has the potential to contribute to various livelihood strategies. However, while there is potential to increase the financial capital of the village, this is also the area for the greatest potential for conflict. There are divergent views currently held regarding the use of funds generated through the solar income generation activities and also a feeling of lack of decision making equality and participation regarding what should be done with the profits.

Secondary impacts on financial capital are highlighted at the household level where financial outlay for lighting is reduced due to the communal evening study area provision for the students and similarly through reduced phone charging rates and transportation costs for energy supplies and phone charging. Students also report that household fuel savings are redirected into the purchase of school supplies thus indicating a tertiary impact on human capital.

The suggested 'upgrades' expressed by the stakeholders such as barber shop and increased phone charging capacity would also have income generation potential contributing to a strengthened 'Financial Capital' sustainable livelihood strategy.

These factors contribute to the following CRED project objectives:

- Increased awareness of the income generation potential of renewable (solar) energy in rural communities.
- Increase in additional income generation activities.

But has not yet contributed to: "empower the traditionally marginalised members of the community to be economically active. (e.g. women's cottage industry groups)" (Grant Application, pp.21, Appendix 1).

Currently the CRED project appears to contribute strongly to 3 areas of the sustainable livelihoods framework: Human capital, Physical capital and Financial capital. The other aspects of the framework (social and natural) appear to be less immediately evident from the responses gathered in the current consultation. While there appears to be a wealth of positive impacts on livelihood strategies offered by the CRED project, a more detailed analysis seated in this framework is fundamental to draw firm conclusions regarding sustainable livelihood impacts.

RECOMMENDATIONS

Recommendations

Participation and Decision Making

Increase communication between school committee – energy committee – health committee and other community stakeholders and develop a more participatory decision making process.

Process of election every 4 years for new energy committee members: this may have training cost implications but investment should be seriously considered in order that the energy committee is a participatory community owned and democratically appointed structure. Further, the current committee members could provide training to new members being that they already have the capacity in this respect.

If election is not possible then election for the ‘supervisory’ role currently played by the HSA would facilitate a more equitable process (only after leadership training has been undertaken).

Platform/forum for participatory discussion and decision making from all facets of the community with regards to the solar resource should become common practice: possible quarterly/bimonthly ‘village solar forum’.

Capacity of the Energy Committee:

Leadership training for all energy committee members should be undertaken, and refresher training with regards to book keeping for those members for whom literacy levels are an issue.

Training for the energy committee in consensus building and collaborative decision making would facilitate their ability to work autonomously from external stakeholders yet function in a more participatory manner with the other community members.

The field worker must begin to reduce his prominence within the community: reducing his decision making role and adopting a purely a facilitative role with regards to communication. In this way the energy committee can begin to function in a more autonomous and independent manner. Meetings once per month are advisable.

Regular meetings between the energy committee and school committee in order to foster shared decision making and collaborative process regarding charging and school based solar deployment activities.

Consider moving the phone charging facility to the Health post. This would reduce disruptions to classes and teachers would not feel imposed upon.

Fixed designated hours for phone charging (irrespective of location): phone charging within class hours is not conducive to learning and creates tension between teachers and committee members. Decisions regarding possible designated phone charging hours should be collaborative and community informed, not autonomously decided upon by the energy committee, HSA and Field worker.

Participation of students on the energy committee should be considered or a platform/space for students to engage in dialogue with other CRED project stakeholders.

Profits

Implementation of a transparent accountability process to enable the community to hold the energy committee to account regarding the use of funds: the wider community must be able to access the account records of the energy committee if so desired. This will increase in importance in the future when profits begin to increase in comparison to maintenance costs, (perhaps quarterly presentations of accounts and intended spending to the wider community)

Transparency and participatory decision making and consensus building amongst all stakeholders and community members regarding the appropriateness of energy committee incentives should be implemented so as to reduce the potential for community conflict and suspicion of energy committee, ultimately leading to a more sustainable solar resource.

Awareness raising within the community with regards to the maintenance costs and realistic uses of solar energy should be undertaken. This will mitigate unrealistic beliefs about solar use (e.g. solar in this village will not be able to power a maize mill) and reduce the potential for conflict over profit use.

Community wide discussions/consensus building must be initiated regarding future profit use. This could reduce the potential for conflict facilitate increased feelings of community ownership over any development opportunities which arise from the current income generation activities, ultimately leading to increased participation and sustainability of the CRED project.

Upgrades

'Upgrades' were agreed upon by all stakeholders and a barber shop was favourable. This could be a focal point where community cohesion, ownership and participatory practice are fostered, in pursuit of future income generation possibilities.

If action is taken in Mwanayaya regarding upgrades, this would be an ample opportunity for the field worker to take a less authoritative role. It is a prime opportunity for the community to begin independent participatory decision making and collaborative consensus building processes towards a common aspiration. It has the potential to foster increased ownership and participation only if the field worker takes a less prominent role and if all community stakeholders participate.

The capacity for added phone charging capabilities and for the possibility of adult learning evenings are also vital areas for consideration and community wide consultation and collaborative decision making processes should be ventured upon concerning these matters. This could increase access potential for those currently in receipt of the benefits of the solar resource: younger married women, adult learners and cattle herders may benefit from extended solar hours and an adult evening class.

Future Practice

In reference to potential future solar installations in other areas: thorough investigation of the pre-existence of community structures through which the project could be implemented, (as opposed to setting up a new structure) is advisable. This increases the potential for community ownership and has proven to be an effective method in other community based development projects (in Mwanayaya there were already, school committees, women's guilds, Parent-teacher groups, a health committee and FEWEMA; another women's organisation).

Potential locations for future solar installations should undergo a 'perception of community energy need' survey to facilitate a better understanding of the importance which stakeholders might place on a solar based project and a Participatory Appraisal and Needs Assessment should be undertaken at the project initiation phase. This will insure that a participatory approach is interwoven into the foundations of the project, aiming to reflect the perspectives and priorities of the residents and the prioritisation of their development objectives whereby, optimising the longevity of the project through capacity building and empowerment and ownership of needs prioritisation.

In addition to the recommended PANA and in contrast to the current social impact assessment, future assessments should be conducted as an iterative process throughout the project cycle in order to inform and redirect the project in a more participatory manner.

Further investigation from a sustainable livelihoods framework could contribute to the overall long term sustainability of the CRED project. This is a recommended framework from which to gain more information regarding the potential for improvements in social and natural capital and may also be a robust framework in which to seat future Social Impact and Participatory Appraisals and Needs Assessments.

Due to community members' high perception of benefit regarding mobile phone charging facilities, further in-depth community investigation of the wider implications and impacts of the mobile phone facility which the solar installation brings would be of advantage as this would help inform future planning of similar projects.

In order to facilitate ownership by the community of the information contained within this report (but in a confidential manner, with anonymity for participants), so that it not be a purely extractive process for external project stakeholders, the presentation of findings from the current report and presentation of recommendations is advisable. This may facilitate dialogue and a synergy of understanding between the different stakeholders, improve transparency and lead to consensus building discussions regarding future practice for the community and the solar electrification and income generation activities.

References

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APPENDICES

**Scottish Government
International Development
Fund**

University of Strathclyde

**Community Rural
Electrification and
Development**

Grant Application

MALAWI ONLY

Grant Application Form

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**SCOTTISH GOVERNMENT MALAWI DEVELOPMENT PROGRAMME
INTERNATIONAL DEVELOPMENT FUND – July 2008**

Assessment criteria:

- **The main applicant organisation must have a presence in Scotland.**
- **The applicant must show that their proposed project fits within the Scottish Government's International Development Policy and with the terms of the Scotland-Malawi Co-operation Agreement.**
- **The applicant must demonstrate their knowledge and understanding of the development needs and priorities identified by the Government of Malawi.**
- **Applications that do not attach written evidence of support from partners in Malawi AND evidence of consultation with the Government of Malawi at local and/or national level – will be rejected.**
- The applicant must demonstrate the **capacity of their organisation/consortium to deliver** development projects in Malawi.
- The applicant must provide evidence that they have the relevant **expertise to deliver** the proposed project in Malawi.
- The applicant must provide evidence of a **strong and ongoing relationship with their delivery partners in-country**; this will include evidence of local partners' involvement in the design of the project as well as setting its aims and objectives.
- While no minimum level of bid has been set, a **maximum level of £400,000** will be available for any one individual organisation or consortium.
- The applicant must show **evidence of inclusivity** throughout all stages of design and delivery of the project, and where possible demonstrate that **girls and women are encouraged to participate** in and benefit from the project.
- The proposal must demonstrate **an efficient use of funds** to achieve the proposed Objective(s).
- The applicant must provide evidence of their commitment to **thorough and rigorous Monitoring and Evaluation procedures** to lead to effective project and programme management.
- The applicant must describe their proposals for **addressing the sustainability of the project** after Scottish Government funding comes to an end.

Please note that all health projects which meet the assessment criteria above will also be subject to a clinical assessment.

Office Use Only	Application ref:
	Project ref:

Grant Application Form
International Division

Please read the Guidance Notes before completing this application

Section A:	BASIC APPLICANT INFORMATION
-------------------	------------------------------------

1. Name of Organisation	University of Strathclyde		
2. Address of Organisation	McCance Building University of Strathclyde 16 Richmond Street Glasgow		
	Postcode:	G1 1XQ	
	Telephone:	0141 548 2001	
	Fax:	0141 553 1521	
	Website:	www.strath.ac.uk	
3. Name of Individual responsible for this application and address/contact details if different from above.	Name:	Dr Peter West	
	Position:	University Secretary	
	Address:	McCance Building University of Strathclyde 16 Richmond Street Glasgow	
	Telephone:	0141 548 2001	
	E-mail:	p.west@strath.ac.uk	
4. Where did you first hear about this grant scheme?	As previous recipients of the international development grant we were made aware by both the Scottish Executive and the Scotland Malawi Partnership.		
5. Is your organisation a registered charity?	✓	Yes	No
6. If yes, what is the Charity Number?	SC015263		
7. What is the status of your organisation if it is not a charity?	Not applicable		

Section B:**BASIC PROJECT INFORMATION**

8. Name of project (Max 30 characters – to be used in all future correspondence)	Malawi Community Rural Electrification and Development (CRED)
9. Duration of funding requested (years)	3
10. Planned start and end date (mm/yy) of your project	from 01/01/2009 to 31/12/2011
11. Amount of funding applied for:	£ 138,538

Year One	£ 69,349
Year Two	£ 38,786
Year Three	£ 30,403
Total	£ 138,538

12. Please tick which strand(s) your project aims to address		
Education	Health	Civil Society & Governance
Sustainable Economic Development <input checked="" type="checkbox"/>		

13. Details of any partner organisations in Scotland		
Name of organisation:	Highlands and Islands Community Energy Company	Scottish & Southern Energy plc
Address:	Earl Thorfinn House 6 Druimchat View Dingwall Business Park Dingwall IV15 9XL Tel: 01349 868933 http://www.hie.co.uk/community-energy.html	Inveralmond House 200 Dunkeld Road Perth PH1 3AQ Contact: Nigel Ellis Tel: 01738 457363
Role of partner organisation in the project	Advisory Board member and contributor (through translation of Scottish experience) to the sustainable energy	Advisory Board member and contributor of expertise on renewable energy development and off-grid power.

	development model for Malawi.		
14. Are you aware of anyone else in Scotland doing similar activity in your field of work?		Yes	If Yes, have you been in contact with them regarding this application?
	✓	No	

Links with Malawi:

15. Details of partner organisation(s) in Malawi			
Name of organisation	Government of Malawi – Department of Energy	University of Malawi – The Polytechnic	
Address:	Lewis Mhango Chief Energy Officer Capital House, 2 nd Floor Private Bag 309 Lilongwe 3 Malawi	Grant Kululanga Vice Principal The Polytechnic Private Bag 303 Chichiri Blantyre 3 Malawi	
Contact Telephone	+265 (0)1 770 688 +265 (0)8 869 330	+265 (0)1 870 411	
Fax No.		+265 (0)1 870 578	
E-mail Address	lewismhango@yahoo.co.uk	gkululanga@poly.ac.mw	
Role of the partner organisation in the Project	Leader of ongoing sustainable model for community renewable energy support going forward and employer for part time pilot project leader and full time rural community development worker.	Academic support in supervision of field work, monitoring of progress against specified markers and analysis of project results.	
Relationship between organisation in Malawi and yours including extent of previous contact	The Malawi Government Department of Energy are a new partner and the relationship was formed in February 2008. A very good common	The University of Strathclyde has had a relationship with the Polytechnic of the University of Malawi for 11 years in other areas (e.g. environmental health)	

	<p>understanding has been attained of the GoM - DoE strategies for rural electrification and renewable energy development and the role these play in economic development. The role of a pilot project such as this proposed has been discussed and agreed to offer valuable support to meeting GoM aims.</p>	<p>and in the last 2-3 years links have been formed in the area of renewable energy with staff and student exchanges in both directions to push forward the development of appropriate technologies for energy production and exploitation in Malawi.</p>	
16. Project contact person Malawi (e.g. for project management and monitoring)			
Name	Damien Frame		
Address and contact details (if different from above)	Co Dr. Emily Frame Queen Elisabeth Hospital Blantyre		
Please list the skills, qualifications and experience of the project manager in Malawi	<p>A full time Research Fellow at the University of Strathclyde, Damien will be seconded to Malawi from Sept 08.</p> <p>Since joining the EEE dept in Sept 07 and commencing a PhD, Damien has been heavily involved with the department's school solar lighting project in The Gambia, building a strong knowledge of solar power system design & specification. Playing a lead role in the most recent expedition to The Gambia helped enhance his project coordination capabilities for solar energy installations in developing countries. Prior to his appointment at the University Damien had 7 years industrial experience in customer facing roles requiring excellent people, technical and management skills. This involved relationship building, detailed problem scoping and solution specification, and latterly leading pre sales design authority on multi million pound public</p>		

	sector tenders for BT.		
	<p>Qualifications</p> <ul style="list-style-type: none"> MEng Electronic and Electrical Engineering with Business Studies. University of Strathclyde 1995 – 2000. <p>Experience</p> <ul style="list-style-type: none"> Systems Engineer with British Telecom: 2003 – 2007. R&D Engineer with Nortel and Mitel Networks: 2000 – 2003. 		

17. Where, in Malawi, will the project be based? (precise location and address where appropriate)	Chikwawa District. (Project office located in Blantyre, address TBC from 1 September 2008)		
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18. Essential evidence required

Is a letter of support and confirmation of partnership with organisation in Malawi attached?

Yes ✓

Is evidence of support from the Government of Malawi attached?

No – Lewis Mhango of the Department of Energy is fully supportive of the project and is in the process of supplying a letter of support and confirmation of partnership. This will be provided before the revised deadline published on the MDP website.

Section C: MORE ABOUT YOUR ORGANISATION

19. Please provide details of the number of people based in your organisation in Scotland

Full time	
Part time	3 Strathclyde staff members from the Institute of Energy and the Environment will be involved with CRED on a part time basis for the 3 years project duration. Graham Ault, Damien Frame & Gary Connor.

Volunteers

A volunteer from our Scottish partner organisations HICEC and SSE will attend advisory board sessions.

Total staff

CRED project: 5. (University of Strathclyde total staff: 3,200)

20. How are equal opportunities/diversity promoted within your organisation?

The university of Strathclyde has a good track record in the areas of equal opportunities and diversity and has well developed and monitored policies in the following areas (each of which can be seen in detail at <http://www.strath.ac.uk/about/equalitydiversity/>):

- Equal Opportunities for staff and students
- Race equality
- Staff development
- Disability
- Personal harassment

The University of Strathclyde confirms its commitment to a policy of equal opportunities within the University. It aims to create the conditions whereby students and staff are treated on the basis of their relative merits, abilities and potential, regardless of their gender, colour, ethnic or national origin, family circumstance, age, disability, religious or political beliefs, socio-economic background, sexual orientation, trade union membership or other irrelevant distinction.

21. How does Scottish expertise add value to this proposal? What expertise will you specifically deploy on this project (Maximum 150 words)

The project manager in Malawi (Damien Frame) has been described in Q16 above. Dr. Graham Ault and Dr. Gary Connor have an extensive research portfolio in renewable energy including projects in sub-Saharan Africa. They have worked closely with the Malawian academics and professionals who have studied at Strathclyde in recent years (MSc and PhD).

The Electronic and Electrical Engineering (EEE) Department at Strathclyde University has a worldwide reputation in teaching, research and innovation. The largest department of its kind in the UK, EEE is home to over 200 academic, research, technical and support staff, 200 PhD, MPhil and MSc students and over 550 undergraduates. Teams of staff and students from EEE Dept. have completed successful solar projects in the Gambia over the last 3 years.

HICEC and SSE contribute valuable experience and knowledge in renewable energy development and in community development of renewable energy.

22. PROJECT AIM: Describe in one sentence the overall aim of this project *See Note 1 in Section D of the Guidance Notes*

To use a pilot installation of 4 community solar energy systems to establish and demonstrate a best practice sustainable model for rural community social and economic development based around renewable power supplies, microfinance and income generation while building in-country capabilities and partnerships to enable larger scale independent deployment.

23. Have you carried out a needs analysis of the development priority issue that your project is designed to address? Please describe the problem that your project will address and state clearly the reasons why this project is needed. (Maximum 150 words)

Problem Definition: Rural Malawians lack the capacity to finance, own, manage and exploit energy infrastructure. At present only 7% of the Malawi population have access to electricity.

Various national strategies addressing the Malawi Development Priorities (discussed in detail in section 30) highlight rural electrification as a key development priority.

Building on the success of recent Strathclyde led projects (under the Strathclyde University Millennium Project), a team of Strathclyde staff visited Malawi in Feb/Mar 2008. A mixture of one to one meetings and stakeholder workshops were held with government officials (DoE), ESCOM staff, representatives from the MIRTDC and academics at the Polytechnic to discuss the most pressing needs relating to renewable energy. The team also met with a number of international organisations including the UNDP, the World Bank, Unicef and DfiD in order to understand current and future projects. This proposal arises directly from this visit and subsequent discussions.

24. OBJECTIVE(S): List the Objective(s) for this project and the Outcome(s) you expect the project to achieve *See Note 1 in Section D of the Guidance Notes*

Objective(s)	Outcome(s)
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<p>To increase the opportunities for social and economic development through increased access to reliable, affordable electrical energy in rural communities.</p>	<ul style="list-style-type: none"> • Successful installation of pilot Community PV systems in four communities within the Chikwawa district. • Increased awareness amongst rural community members of applications of renewable (solar) energy in rural communities. • Increased awareness amongst rural community members of the income generation potential of renewable (solar) energy in rural communities. • Increased community involvement in specification, ownership and management of a community renewable energy resource. • Increased community involvement in the financial and technical maintenance requirements of solar energy systems. • Increased agricultural output through solar irrigation. • Increase in productivity time, especially for women and children. • Increase in additional income generation activities. • Increased numbers of students or increased hours of study through school lighting systems. • Increased standards of health through refrigeration, clinic lighting, water pumping.
<p>To develop and increase the capacity of key stakeholders to advance GoM off grid rural electrification programme.</p>	<ul style="list-style-type: none"> • An established and demonstrated sustainable model for rural community social and economic development based around PV installations in the Chikwawa district. • An increased understanding through demonstration of the remaining barriers to a community energy system. • An increased understanding of the potential a community energy model provides with regards to overcoming barriers to “off-grid” electrification. (This will supplement the outcomes of BARREM, a UNDP funded national programme concentrating on removing national barriers to the PV industry in Malawi) • An increased appreciation of the importance of community support (field community development and support workers) to assist project development and ongoing sustainability. • An increased appreciation of the importance of a community scale micro-finance scheme. • Increased local (Blantyre) capability to expand deployment in the Chikwawa district and

	<p>elsewhere.</p> <ul style="list-style-type: none"> • Increased local (Blantyre) confidence in the likelihood of success in such projects. • Increased availability of supportive training materials.
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25. Activities: Please list the tangible Activities that the project will deliver. See Note 1 in Section D of the Guidance Notes

Pre Project Activities

September 2008 (i.e. pre award from Scottish Government)

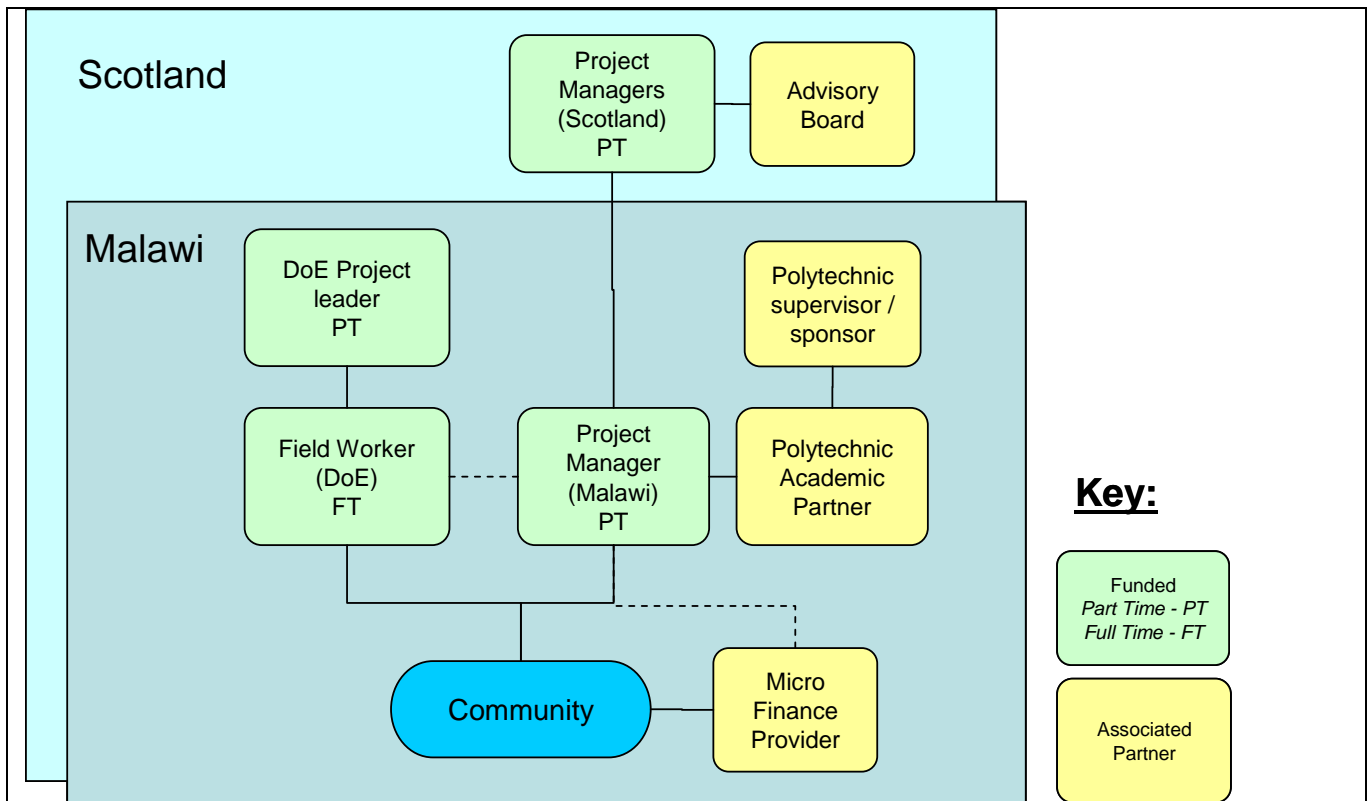
- UoS project manager full time in Malawi.
- Engage with the communities identified from existing Strathclyde Health Initiatives.
- Initial project team meetings and knowledge sharing.

Project Initiation (i.e. after funding notification, prior to kick off date)

October 2008 – December 2008

- UoS project manager full time in Malawi.
- Translation of HICEC community renewable energy development model
- Initiate community energy committees.
- Identify most pressing energy requirements per community.
- Develop relationships with the identified potential microfinance partners.
- Develop existing and identify additional enterprise activities.
- Establish an agreed microfinance approach for community energy with chosen partner.
- Advisory Board and Project Manager meetings.

The relationship of the partners in the project is lustrated in the diagram below:



Project Kick Off

January – August 2009

- UoS project manager full time in Malawi.
- Scope and design solar energy systems.
- Tender for local system supplier.
- Develop training materials.
- Project team training and preparation.
- Deliver training in PV system maintenance and community enterprise development to community committees.
- System installations.
- Field worker support commences.
- Initiate enterprise activities.
- Initiate and embed communities role
 - Microfinance agreement
 - System maintenance and management
- Establish and embed smooth operation of energy system.
- Support enterprise activities.
- Commence monitoring activities.
 - Community Logbooks
 - Fieldworker interviews
- Gather initial results and feedback.

Ongoing support and monitoring

September 2009 – March 2010

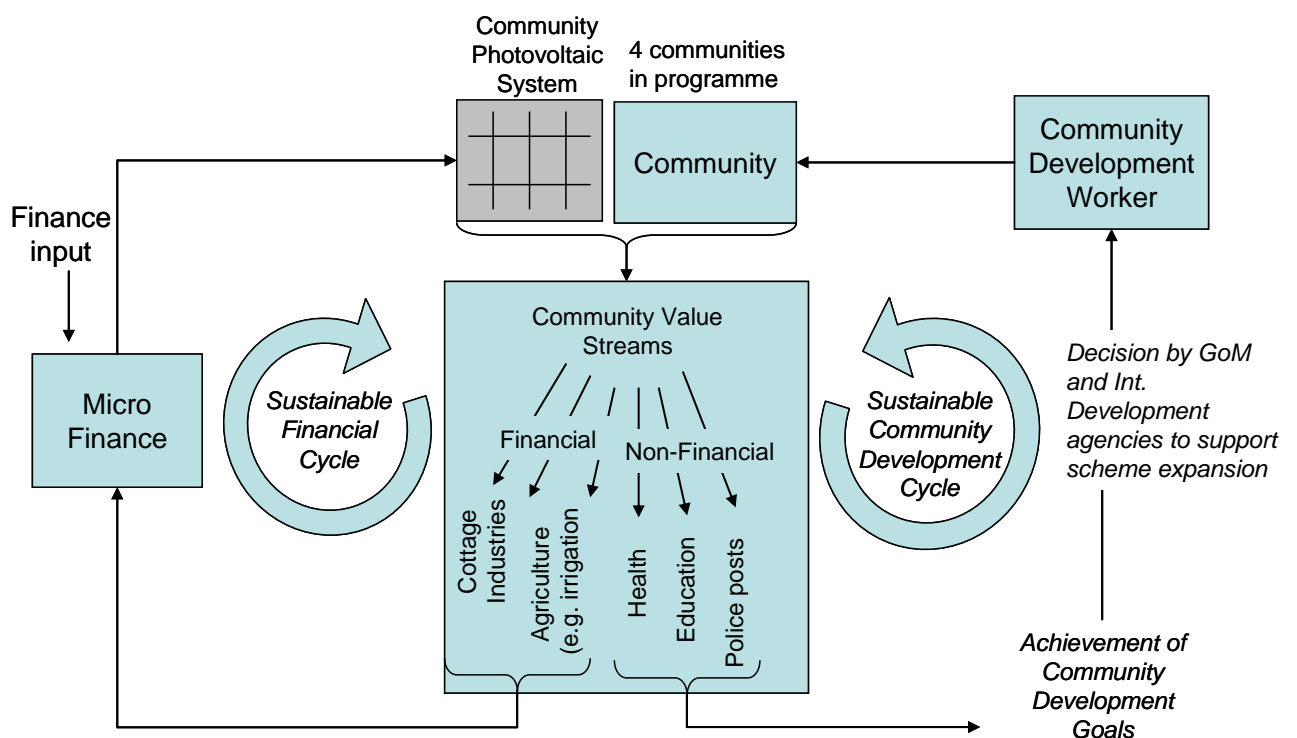
- UoS Project management visits.
- Continued field worker support
- Logbooks to capture monitoring information.
 - Technical
 - Economic
 - Social Benefits
 - Community approach
- Field worker collates monitoring information
- Weekly/Monthly monitoring and information gathering by field supervisor.
- Data analysis by Polytechnic partners.
- Monthly project management reporting.

Pilot Project Closure and Ongoing Programme Development

April – December 2010

- Ongoing support of rural communities through Field Worker, Project Leader, Project Managers and Field Supervisor
- Transfer full project leadership and management responsibility to Malawi partner (Dept of Energy)
- Report and Document project outcomes and proposed sustainable model.

The sustainable model of renewable energy based community development being deployed in this pilot project is illustrated below:



26. Please indicate how you intend to monitor progress towards the delivery of the project's Outcome(s), i.e. what monitoring indicators will you put in place and what information/data sources do you intend to use to

measure them? Insert extra rows if necessary. See Note 1		
Outcome(s) as given in 24 above	Indicator – how are you going to demonstrate the progress of your project?	Information/data source – what will you use as the information source to measure your progress in achieving your project indicators?
Successful installation of four Community PV systems within a Chikwawa village cluster.	4 PV systems installed within project plan timescales agreed with system suppliers.	The project will be monitored closely by the local project manager. A weekly project update will be documented and a monthly report issued to the lead project manager.
Increased awareness of applications of renewable (solar) energy in rural communities.	75 % of working age community members understand the potential for income generation enabled by improved energy supply.	Field worker will be tasked with supporting energy committees and assessing spread of info/understanding throughout community. Information will be gathered via monthly community interview sessions. Results will be collated and documented for final report.
Increased awareness of the income generation potential of renewable (solar) energy in rural communities.	75 % of community is aware and understands the potential for income generation as a result of the renewable energy system.	Field worker and local project manager will assess spread of info/understanding throughout community. Information will be gathered via monthly community interview sessions. Results will be collated and documented for final report.
Increased community involvement in ownership and management of a community renewable energy resource.	Committee size of 10 representing a cross section of community. Committee meetings every 2 weeks.	Field worker and local project manager will support completion of community log books. Information will included details on committee activities.
Increased community involvement in and responsibility for the financial and technical maintenance requirements of solar energy systems.	Growing levels of independence and autonomy of community energy committee. Community initiated basic technical maintenance and book-keeping.	Field worker and local project manager will support completion of community log books. Log books will capture financial and technical activities.
Increased agricultural output though solar irrigation.	Quantifiably improved irrigation and crop yields. Compare to base - information on average irrigation volumes	Field worker and local project manager will support completion of community log books. Log books will capture irrigation

	and yield to be recorded/collated/estimated in first year of project.	volumes and crop yield information.
Increase in productivity time, especially for women and children.	Decrease in manual tasks and increase in beneficial activity through time saved or time provided (lighting) 1 hour per day saved by use of automated irrigation and/or water pumping. 2 hours per day of productive time gained through solar lighting.	Field worker to gather information via community interviews and log books.
Increase in additional income generation activities.	Specific additional instances of successful enterprise. Minimum of 1 additional enterprise activity per community.	Field worker to gain information via community interviews and log books.
Increased numbers of students at school during the increased hours of study through school lighting systems.	15 additional hours of class time (lit in evenings) per month in community with lighting installation.	Field worker/project manager will support completion of community log books. Log books will capture school statistics.
Increased standards of health through refrigeration, clinic lighting, water pumping.	10 additional hours of clinic opening time per month in community with clinic lighting installation.	Field worker monitoring with existing health initiative staff.
An established and demonstrated sustainable model for rural community social and economic development based around PV installations in the Chikwawa district.	A minimum of 1 community will have achieved all of the specific outcomes identified above. All communities will have achieved 50 % of the specific outcomes identified above. A minimum of 2 communities will have a successful relationship with a microfinance provider and be repaying the capital costs of the system in addition to financing the ongoing sustainability of the system.	A final report collating all field information and log book records will assess and document the successes and failures of the project and present the recommended best practice model.
An increased understanding of the barriers to a community energy system.	Project team production of a final report detailing results of the pilot systems and recommended best practice model. Report disseminated widely amongst partner	Lead project manager's visit for partner meeting/discussions and project wrap up assessment.

	organisations.	
An increased understanding of the potential a community energy model provides with regards to overcoming barriers to “off-grid” electrification. (This will supplement the outcomes of BARREM, a UNDP funded national programme concentrating on removing national barriers to the PV industry)	Project team production of a final report detailing results of the pilot systems and recommended best practice model. Report disseminated widely amongst relevant energy focussed organisations (Dept of Energy, ESCOM). Report recommendations received positively by relevant energy focussed organisations (Dept of Energy, ESCOM).	Lead project manager’s visit for partner meeting/discussions and project wrap up assessment.
An increased appreciation of the importance of community support (field workers) to assist project development.	Project team production of a final report detailing results of the pilot systems and recommended best practice model. Report disseminated widely amongst relevant energy focussed organisations (Dept of Energy, ESCOM). Report recommendations received positively by relevant energy focussed organisations (Dept of Energy, ESCOM).	Lead project manager’s visit for partner meeting/discussions and project wrap up assessment.
An increased appreciation of the importance of a community scale micro-finance scheme.	Project team production of a final report detailing results of the pilot systems and recommended best practice model. Report disseminated widely amongst relevant energy focussed organisations (Dept of Energy, ESCOM). Report recommendations received positively by relevant energy focussed organisations (Dept of Energy, ESCOM).	Lead project manager’s visit for partner meeting/discussions and project wrap up assessment.
Increased local (Blantyre) capability to expand deployment in the Chikwawa district and elsewhere.	4 members of Dept of Energy, 6 members of Polytechnic, 4 field workers trained with direct experience of delivery of the sustainable model for rural community development based	Project manager collates figures on individuals attending training sessions.

	on solar power systems.	
Increased local (Blantyre) confidence in the likelihood of success in such projects.	4 members of Dept of Energy, 6 members of Polytechnic, 4 field workers trained with direct experience of project delivery.	Project manager collates figures on individuals attending training sessions.
Increase availability of supporting training materials.	DoE and Polytechnic have master copies of training materials and experience of delivering courses	Project manager confirms that training materials (revised through the experiences of this pilot project) have been left with the Project Leader / Chief Energy Officer at the DoE and with the Head of Department (Electrical Engineering) at the Polytechnic.

27. RISK MANAGEMENT: please outline any potential risks that may affect the delivery of your project. Please complete the risk assessment table below to demonstrate how you have considered any potential risks in your planning. (Insert extra rows if necessary)

Potential risk	Likelihood of risk happening (Low, Medium or High)	Mitigating action(s) (i.e. What will you do to either prevent the risk from happening or reduce the impact that it might have?)	Recovery plan (i.e. what action will you take to respond to the identified risk if you are unable to prevent it?)
<i>Example</i> Shortage of skilled teachers/teaching assistants to run out-of-school MCSE workshops	<i>Example</i> Medium	<i>Example</i> Provide training to new staff to build capacity	<i>Example</i> Adjust class-sizes and number of workshops run
Lack of suitable micro-finance financial partners	Medium	Potential partners already identified. Initial discussions and advice from George Finlayson (Scotland-Malawi Business Group). Possibility of partnering with the Scottish led microfinance project being investigated.	Investigate International microfinance providers. Seek support for an independent microfinance fund.
Difficulties identifying and establishing	Low	Several villages identified through existing health projects.	Reduce number of installations to manageable level.

working relationships with suitable village cluster.			
Theft of solar power and associated electrical equipment.	High	Physical security. Community responsibility. Included spares for key equipment in planning.	Use spares. Reinforce communities security responsibility. Adjust design/ number of installations and purchase additional equipment.
Grid expansion by ESCOM rendering solar power system less attractive.	Low	Working with ESCOM and Ministry of Energy to understand development plans.	Plan for upgrade of system to cover grid connection.
Lack of suitable technical partners for solar power system installation.	medium	DoE and Poly partners advising on technical capabilities of potential partners	Installation by UoS led team as per recent work in The Gambia.
Lack of appetite for scheme within communities.	Low	Work with communities where existing projects are already successfully engaged.	Alter the requirements placed on community.
Delays in designing and installing systems.	High	Use existing knowledge to pre design. Tender process to ensure technical partners are reliable.	Revise time scale of trials. Reduce number of installations.
Unexpected costs of solar power system installation.	Medium	Detailed pre-project planning.	Reduce number of installations. Pursue additional funding sources.
Failure of micro-finance partner	Low	Careful selection of microfinance partner(s) with regard to successful and reliable track record.	Transfer funding and administration to alternative micro-finance partner. Underwriting from Scottish Government is activated.
Poor operation and maintenance of solar power installation	Medium	Field worker support to communities and Field Supervisor and Project Manager oversight.	Additional training and demonstration of correct procedures with emphasis on protecting the community investment in the solar

			power system.
Community enterprise schemes take too much time to set up	Medium	Field worker, Field Supervisor and Project Managers supporting activities. Work with microfinance partner to initiate and develop useful links with other successful small scale enterprises.	Replicate known successful economic development activities (e.g. crop irrigation) rather than more entrepreneurial activities. Diversify away from energy focused income generation activities.
Community enterprise schemes do not recover as much finance as expected	Medium	Field worker, Field Supervisor and Project Managers supporting activities. Work with microfinance partner to initiate and develop useful links with other successful small scale enterprises.	Replicate known successful economic development activities (e.g. crop irrigation) rather than more entrepreneurial activities. Diversify away from energy focused income generation activities.
Technical problems with solar power	Low	Solar power systems are typically very safe and reliable and will be cross checked with partner organisations in project. Local technical partner on hand to support and warrant equipment.	Revisit design and modify scope/scale of solution within community budget. Change access and technical oversight arrangements in community.
Safety of electrical installation	Low	With very basic training and precautions, typical solar power installations are safe and reliable.	Provide additional safety training. Change access and technical oversight arrangements. Design additional electrical protection schemes.
Illness or death of team members.	Medium	Knowledge sharing and cross training in project team (field supervisor and community development worker) and with colleagues in their organisations.	Rely on records, processes and documentation established as part of the project to quickly move forward from this negative eventuality. Recruit and train new team

			members.
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28. How will you ensure that your project is inclusive (please detail how you will ensure that no person will be discriminated against on the grounds of age, gender, ethnicity, disability, religion)? (Maximum 250 words

This project focuses on the aims within the Malawi Growth and Development Strategy for *improving the lives of the rural poor through infrastructure development* to create an *enabling environment for economic and social activities*. By deploying community energy resources in four communities, the project will provide community wide benefits to community members of all ages, genders, ethnicity, disability and religion. Specific measures will be taken to ensure the implementation of these inclusive principals such as: recruiting a community energy committee from a cross section of the community; supporting community enterprises based on the solar energy across a cross section of the four communities; and including health and education/training activities (enabled by the light and power supply) for a cross section of the community.

A firm objective will be the role of women in these committees as international recommendations highlight the success of projects where women have been involved as investors in and caretakers of PV systems.

In addition, women and children have been noted as prime beneficiaries of improved energy resources through increased productivity and improved education respectively.

An important aspect of the project will be the development of income generation activities.

It is anticipated that these activities will empower the traditionally marginalised members of the community to be economically active. E.g. women's cottage industry groups.

29. The Scottish Government intends to support sustainable development outcomes for Malawi through its programme. How will you ensure that the outcomes of the work are built-on or continued at the end of the project (your exit strategy)? (Maximum 250 Words)

Although this project will provide social benefits and development opportunities to the four focus communities, an understanding and demonstration of sustainable solar energy systems in Chikwawa is the primary aim of this project.

The sustainability of the pilot schemes will be ensured in the following ways:

Financial sustainability: A micro-finance partner will be engaged to ensure the PV system is viewed as community owned via a micro-finance loan repayable by the community. Income generation activities will be strongly investigated and promoted to contribute to microfinance repayments

Community ownership/leadership: By ensuring high levels of community involvement, skills and knowledge building and making a community energy committee the centre of all aspects of the solar deployment, awareness of the community wide benefits of renewable energy will be raised and the solar power system will be established as a valuable communal resource.

Knowledge and skills: Knowledge transfer to, and capacity building in the communities will enable independent financing, operation and basic maintenance of the solar power system. The project team members from the Polytechnic and Department of Energy will gain experience in the deployment and support of solar energy projects and be able to support these four communities beyond the end of the project. The project team will also pass knowledge to colleagues in their respective organisations through specific training sessions.

The wider sustainability aims of the project are to demonstrate and document a sustainable model for solar energy systems and provide the groundwork for a broader community deployment of renewable energy.

Section E:

COHERENCE WITH IN-COUNTRY PROGRAMMES

30. How does your Project Aim fit with Malawi's Development Priorities? Please refer to the Malawi Growth and Development Strategy (2007-2011) and national sector strategies (see web link attached) and show how your project will complement these priorities. (Maximum 250 words)

The Malawi Growth and Development Strategy (2007-2011) demonstrates the GoM's commitment to improving the lives of the rural poor through infrastructure development and economic empowerment. Areas four and five of the six key priority areas are Energy Generation and Supply, and Integrated Rural Development respectively. Both state a specific objective of increasing access to reliable, affordable electricity in rural areas. Integral to this is the acceleration of the Malawi Rural Electrification Programme (MAREP) which highlights the use of solar energy for off grid power supply in rural areas where grid expansion is uneconomical.

These improvements to infrastructure are seen as a pre-requisite to development in that they provide an enabling environment for economic and social activities. In addition, the benefits of renewable energy are noted in Theme 1, sub theme 4 with respect to conservation of the natural resource base.

In addition to the clear benefits of rural solar energy in facilitating social and economic development within a small set of communities, the additional aims of the project to develop economic empowerment and a sustainable model with recommendations for expanded deployment provide the potential to empower a continued and more substantial contribution to the national goal of rural electrification.

The importance of rural electrification is clear in the Malawi Poverty Reduction Strategy and hence the National Energy Policy, Rural Electrification Reform Strategy and Other Renewable Energy Industry Reform Strategy highlight rural electrification as a key priority with off-grid solar playing an important role.

31. How does this project fit with the Scottish Government’s International Development Policy, and the Scotland Malawi Co-operation Agreement? In particular, please tick which of the wider cross-cutting themes for funding, your project will address. Projects can contribute to more than one cross cutting theme.

Vocational Training & Education	Gender Issues & Equalities	Enterprise Development	Strengthening the Context for Enhanced Human Rights & Civil Society Development
✓	✓	✓	

Give a short description of how your project will take account of the particular cross-cutting theme(s): (Maximum 250 Words)

This project takes account of three of the four cross cutting themes. Primarily, enterprise development will be addressed since the aim of the project is to establish the model of energy infrastructure underpinning community enterprise and wellbeing and enterprise in turn providing the financial means of establishing the solar power system infrastructure. The role of energy in enabling economic development is well covered in previous sections and in addition to the theoretically acknowledged benefits of improved energy infrastructure this project will actively investigate, pursue and promote entrepreneurial activities that solar energy systems can enable. Gender issues and equalities will be addressed since the focus of the community energy systems will be inclusion and an objective of the income generation schemes will be to specifically enable traditionally disadvantaged groups to become economically active. In addition, vocational training and education will be addressed as some of the installations will be based in education buildings and knowledge transfer and skills transfer will be in integral part of the project from the Dept. of Energy down to community level.

32. Explain how this project links with, or builds upon, other partners/donors working in the geographical area and in the same field of work. (Maximum 150 words)

This project has three main links as follows:

Department of Energy / ESCOM: there are existing trials of solar power systems installed and managed by the electric power company ESCOM and this proposal is supported by them so that an alternative community focused and more holistic (infrastructure, economic development, community wellbeing, etc.) approach might be demonstrated.

Scotland-Chikwawa Health Initiative: This project led by Dr. Tracy Morse established and successfully demonstrated a community ownership/leadership model on health issues. The work proposed on renewable energy will adopt a similar community focused model and may also work in some of the same communities as very good relationships have been formed there.

University of Malawi Polytechnic / Mzuzu university: Ongoing renewable energy research and demonstration activities at the Polytechnic and at Mzuzu will support the work proposed here and the established relationship between Strathclyde and Polytechnic will be developed further and the relationship with Mzuzu will be established.

<p>33. Are you aware of any other projects or activities similar to what you are proposing, which are already taking place / have recently taken place in Malawi?</p> <p>Please ensure that you utilised the Scotland-Malawi Partnership database of activities and projects in Malawi.</p>	✓	Yes		No
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If yes, please explain how your project will build on this work and what you will add to what has already been achieved. (Maximum 150 words)

UNDP Barrier Removal to Renewable Energy in Malawi: 2002 – 2007. This project centred on enabling a vibrant solar PV market. Also included was the Eswazini solar demonstration village providing electrification of schools, an office/hall and health centre. This pilot primarily demonstrated the social benefits of electrification and encountered similar sustainability issues to many other solar installations in developing countries.

Rural Electrification (ESCOM, DfID, UNDP): Our partners in the Dept of Energy are aware of and have been involved in several pilot “off-grid” electrification pilots. However, our understanding is that these installations are focus primarily on the technical aspects of the systems and do not address the community ownership and sustainability aspect.

UNDP Millennium village – Energy sources are a target area for this initiative.

By partnering with the DoE we intend to add substantially to existing projects by focussing on community ownership and financial sustainability.

34. TOTAL PROJECT COSTS (Table A)

Please cost each activity to a separate budget line allocating spend to relevant year (create more rows if necessary). These should be actual costs as far as is possible, not rounded amounts.

Please indicate **total** project costs per activity for each year in Table A below. If there are co-funders, you will also need to complete Table B to provide information on the **Scottish Government contribution**. Please refer to Q25 where you have already outlined what your proposed activities will be.

Payment or reimbursement of actual costs for in-country participation by Malawi partners and/or participants may be included as part of the total project costs. However no additional grant funds may be claimed for attendance allowance or perdiems in-country in addition to actual cost reimbursement.

Table A: Total Project Costs

Activity	Year 1	Year 2	Year 3
4 Solar power installations	£ 23,473	£ 8,383	-
Field worker	£ 1,800	£ 1,800	£ 1,800
Dept. of Energy Project Leader	£ 4,500	£ 4,500	£ 4,500
Motorbike + fuel for field worker	£ 2,400	£ 745	£ 745
Travel for other project staff in Malawi	£ 2,096	£ 2,096	£ 2,096
IT, training materials and consumables	£ 2,621	£ 2,621	£ 2,621
Project Management and Support (Malawi) – DF	£ 12,833	£ 3,209	£ 3,209
Project Management and Support (UoS) – GA+GC	£ 7,045	£ 7,045	£ 7,045
Travel for project managers (UoS)	£ 12,581	£ 8,387	£ 8,387
TOTAL	£ 69,349	£ 38,786	£ 30,403

35. Please confirm whether you have applied for any other funding for this work from other parts of the Scottish Government or external sources		Yes	✓	No
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If yes, please provide details and go on to complete Table B.

Source	When did you apply?	Amount applied for?	Outcome, or when you expect to hear outcome?
		£	
		£	
		£	

36. Have you secured any commitment to match funding or do you expect any leverage of other resources in addition to Scottish Government funding:	✓	Yes		No
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If yes, please provide details and go on to complete Table B.

A total of £31,856 is required for the purchase of the solar power equipment required in this pilot project. The intention is that each community will purchase the solar power equipment through a microfinance arrangement but at this pilot stage, the microfinance fund will need to be either primed with initial funds or underwritten.

It is intended that around £20,000 of the total £31,856 for the microfinance fund will come from other donor and developing countries enterprise supporters of which the project team have established positive leads. The remaining £11,856 to establish and/or underwrite the microfinance arrangements is being sought from Scottish Government.

Please do NOT complete Table B if you are requesting 100% funding from the Scottish Government.

Table B Scottish Government Contribution

Activity	Year 1	Year 2	Year 3
4 Solar power installations	£ 11,856	-	-
Field worker	£ 1,800	£ 1,800	£ 1,800
Dept. of Energy Project Leader	£ 4,500	£ 4,500	£ 4,500

Motorbike + fuel for field worker	£ 2,400	£ 745	£ 745
Travel for other project staff in Malawi	£ 2,096	£ 2,096	£ 2,096
IT, training materials and consumables	£ 2,621	£ 2,621	£ 2,621
Project Management and Support (Malawi) – DF	£ 12,833	£ 3,209	£ 3,209
Project Management and Support (UoS) – GA+GC	£ 7,045	£ 7,045	£ 7,045
Travel for project managers (UoS)	£ 12,581	£ 8,387	£ 8,387
TOTAL	£ 57,732	£ 30,403	£ 30,403

37. Will there be any other non-financial support for this project? i.e. in-kind contributions	✓	Yes	No
If yes, please give details of what these might be.			
<p>In support of the micro-finance aspect of the project, the project managers have established links with the Clinton Hunter Development Initiative (CHDI) and Opportunity International (run as 'Opportunity Bank' in Malawi). Through these links (and others that are being developed in this important area) we expect to develop a model of micro-finance to communities (rather than the more normal model of individual loans).</p> <p>The highlands and Islands Community Energy Company (HICEC) soon to be renamed Community Energy Scotland (CES), through their Chief Executive Nicholas Gubbins, have agreed to support the project by way of providing access to knowledgeable staff in rural community energy development and access to their resources (models, documents, etc.). They have agreed to work with the project team to translate their knowledge and business models to the Malawian situation where their Chairman (Alan Hobbett) has strong links.</p> <p>Scottish & Southern Energy plc previously financially supported the development of a birthing clinic powered by solar power and micro wind generation in a container sited at Makata in the Southern region of the country. The staff behind this (led by Nigel Ellis) have offered their support to this project and their expertise in small scale renewable power generation systems.</p>			

38. Please state who the project manager will be, if different from the project manager on the ground in Malawi, and describe previous experience of project management for the named project manager and also give details of your organisation's ability to manage a project budget effectively (Maximum 150 words) and attach any evidence that you may have to support this.

The lead project manager is Dr. Graham Ault at the Institute for Energy and Environment (InstEE) at the University of Strathclyde and he will be supported by Dr. Gary Connor (also of the Inst EE). Dr. Ault has a strong track record in consortium research and development projects funded by the UK Research Councils, BERR, Ofgem, Scottish & Southern Energy, ScottishPower, NationalGrid, the European Commission and his current portfolio of projects amounts to nearly £6m in funding at Strathclyde. Dr. Connor also has a strong track record in renewable energy research and has a long history of energy projects in the developing world. The pair have good credentials in solar and other small scale renewable power projects in sub-Saharan Africa with higher profile projects in The Gambia and Mozambique. Both project managers have experience in managing complex projects (multi-partner, international, mixed funding sources, etc.).

Evidence attached

Yes No (if no, please explain why)

See attached schedule of recent major project award letters/contracts.

See attached schedule detailing track record in related areas.

See attached schedule with CVs of the proposers.

Section G: PROJECT MONITORING

THE SCOTTISH GOVERNMENT IS COMMITTED TO RIGOROUS MONITORING AND EVALUATION PROCEDURES FOR ALL SCOTTISH GOVERNMENT FUNDED ACTIVITY.

ALL SUCCESSFUL APPLICANTS WILL THEREFORE BE EXPECTED TO REPORT TO THE SCOTTISH GOVERNMENT ANNUALLY ON PROJECT PROGRESS. SIX MONTHLY INTERIM REPORTING WILL ALSO BE REQUIRED FOR FINANCIAL AND RISK MANAGEMENT PURPOSES. See Note 2 in Section G of the Guidance Notes attached.

ALL SUCCESSFUL APPLICANTS WILL BE PROVIDED WITH MONITORING DOCUMENTATION FROM WHICH TO MEASURE PROGRESS AGAINST THE SCOTTISH GOVERNMENT'S AIMS AND OBJECTIVES FOR THIS FUND.

Checklist

Please ensure that you have included the following:

Please tick

If you have **not** already submitted your most recent audited accounts, or independently-signed statement of income and expenditure please tick this box, and do so.

A Project cannot be funded if no audited/independently verified accounts are available

If you have included a copy of your certificate of charitable status from the Inland Revenue - if applicable.

If you have included a letter of support and confirmation of partnership with organisation in Malawi

Written evidence of support from the Government of Malawi (local, district or national government). Commitment to provide this within published timescale extension has been obtained from Lewis Mhango of the Department of Energy.

Declaration

I *apply* on behalf of the organisation named above for a grant as proposed in this application in respect of expenditure to be incurred over the proposed funding period on the activities described above.

I certify that, to the best of my knowledge and belief, the statements made by me in this application are true and the information provided is correct.

Signature

Print Name

Position

Date

Return this form to:

LTS International at:

LTS International LTD Email:

Pentlands Science Park, Bush Loan, Penicuik, Near Edinburgh, EH26 0PH, Scotland.

Appendix 2: Degrees of Participation.

1. Manipulation

Participation is undertaken in a manner contrived by those who hold power to convince the public that a predefined project or program is best.

2. Passive participation

Participation by the local people is by being told what is going to happen or has already happened. It is based on information provided, shared and assessed by external "experts." Therefore, the information being shared belongs only to external experts.

3. Participation in information giving

This is a one-way approach to participation whereby participation is by answering questions posed by extractive researchers using questionnaire surveys or similar approaches. Participants are informed of their rights, responsibilities and options, but are not given the opportunity to influence proceedings, as the findings are neither shared nor checked for accuracy.

4. Participation by consultation

This is a two-way way flow of information in which local people participate by being consulted and external agents listen to their views. Although participants have the opportunity to provide suggestions and express concerns, their input may or may not be used at all or as originally intended. The external agents define problems and solutions, both of which may be modified in light of information provided by the participants. Such a consultations process does not concede any share in decision-making and professionals are under no obligation to take on people's view.

5. Participation for material incentives

People participate by providing resources, for example labour, in return for food, cash, or other material incentives. Much on-farm research falls into this category, as farmers provide the fields but are not involved in experimentation or the process of learning. In this type of participation people have no stake in prolonging activities once the incentives end.

6. Functional participation

People participate by forming groups to meet predetermined objectives related to the initiative. Local people's involvement however occurs after major decisions have been made rather than at an early stage in the project cycle. The established groups are dependent on external initiators and facilitators, but over time may become more self-sufficient.

7. Interactive participation

People participate in joint analysis, which leads to action plans and the formation of new local institutions or the strengthening of existing ones. It tends to involve interdisciplinary methodologies that seek multiple perspectives, and make use of systematic and structured learning processes. As local people take control over the decision-making process, they gain a greater stake in maintaining the structures and practices they have established. A common drawback is that vulnerable individuals and groups tend to remain silent or passively acquiesce.

8. Partnership

Through negotiation, power is redistributed between local people and power holders in an equitable manner.

Decision-making takes place through an exchange between equally respected participants who are working towards a common goal and seeking to optimize the well-being of all concerned. There is mutual responsibility and risk-sharing in the planning and decision-making process.

9. Self-mobilization/active participation

People participate by taking initiatives independent of external institutions to change systems. They develop contacts with external institutions for resources and technical advice that they need, but retain control over how resources are used. Such self-initiated mobilization and collective action may or may not challenge existing inequitable distribution of wealth or power.

(Cited in Duraiappah, AK, et al 2005, "Have participatory Approaches increased Capabilities?" *International Institute for Sustainable Development*, pp. 6. ,Adapted from Arnstein 1971; Pimbert and Pretty 1994; Wilcox 1994; Lane 1995; Pretty et al. 1995; UNDP1997; Jeffrey and Vitra (eds) 2001)).

Appendix 3: **Energy Committee**

(Extracts taken from Grant Application, 2008)

CRED rationale:

By deploying community energy resources in four communities, the project will provide community wide benefits to community members of all ages, genders, ethnicity, disability and religion. Specific measures will be taken to ensure the implementation of these inclusive principals such as: recruiting a community energy committee from a cross section of the community; that committee comprise 10 members, representing a cross section of community.

In the Mwanayaya village energy committee 8 members attended the FGD, there were 5 males and 4 females (of which one female is the TBA) on the committee. The HSA (Male) and one other member (gender unknown) were not present. None of the women in the committee were present in the women FGD that took part later in the consultation process.

Represented in the committee were teachers (x1), elders (x?) and women (x4).

Committee meetings are proposed to occur every 2 weeks.

Aims:

- ***Community ownership/leadership***: By ensuring high levels of community involvement, skills and knowledge building and making a community energy committee the centre of all aspects of the solar deployment, awareness of the community wide benefits of renewable energy will be raised and the solar power system will be established as a valuable communal resource.
- Growing levels of independence and autonomy of community energy committee.
- Community initiated basic technical maintenance and book-keeping.

Support:

Field worker and local project manager will support completion of community log books and that information will include details on committee activities.

Appendix 4: **Venn Activity Description:**

- Venn Diagrams (p.147 – guide to pop PLA)

Outline:

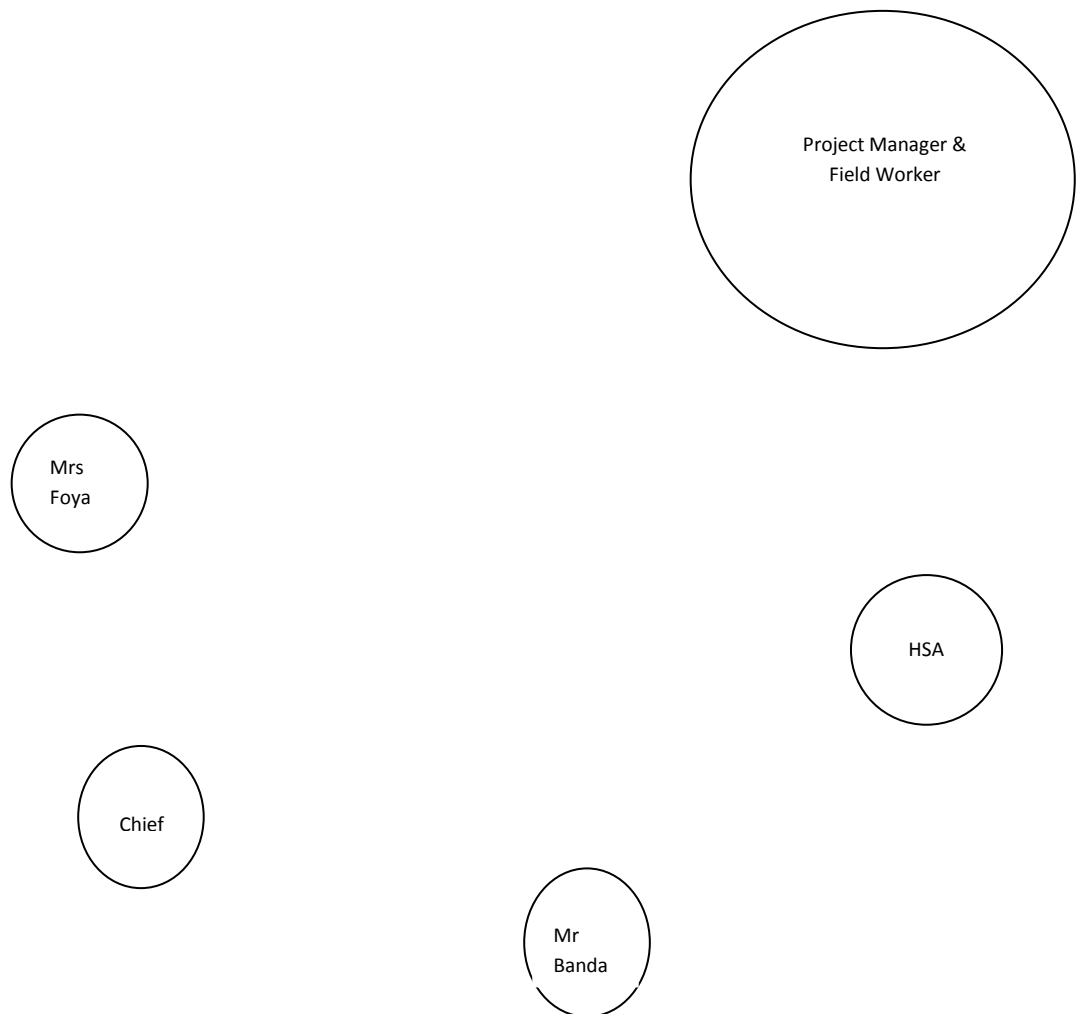
- Ask participants to use those key institutions and individuals identified in the FGD as responsible for decisions/having an influence regarding the solar inst. And any other people/groups they see as involved with the solar inst in this manner.
- Ask the participants to draw circles to represent each institution or individual.
- Ask participants to choose or draw circles of different sizes, depending on the relative importance of the individual/institution represented.
- Ask the participants to arrange the circles as follows:
 - – separate circles = no contact among the individuals/institutions
 - – touching circles = information is shared between them
 - – small overlap = some cooperation in decision making
 - – large overlap = considerable cooperation (circles can be placed within circles also if appropriate)
- When the diagram is completed, use it to ask participants about, for example:
 - a) how things have changed since the beginning of the project (beginning of installation-now)
 - b) what kinds of improvements they would like to see regarding the institutions and individuals represented;
 - c) and the size of membership of the different groups.
- Keep a permanent (paper) record of the diagram, including participants' names to give them credit.

Take photo/sketch of the Venn in order to include in the report.

Appendix 5: Women Venn Diagram1 – Influence over Solar activities within the village

23.11.2010

Location: Mwanayaya Village (east bank Chikwawa).



Notes:

Mr Banda is the chairman of the energy committee.

Mrs Foya is a woman in the community who “is good at mobilising people”. (she joined the FGD about 1/3 of the way through but did not say very much until it came to the issue of the “bad boys” not being able to use the school for study in the evening).

The distances between the circles are supposed to represent the level of communication between the different people/groups but i think this was misunderstood in the activity. When prompted it was discovered that Mr Banda and Mrs Foya talk to the chief regularly and that FW talks to the chief and then after this he will meet with the energy committee and Mr Banda.

The women perceive PM and FW to have the most influence over what happens with the solar. The HSA is prominent in the influence over the solar installation.

The order in which the women wrote down these names has some bearing as there was a period of thought between each one. If the order of names of people of influence is reflective of their prominence in the process then the order to note is:

PM/FW

HSA

Mr Banda

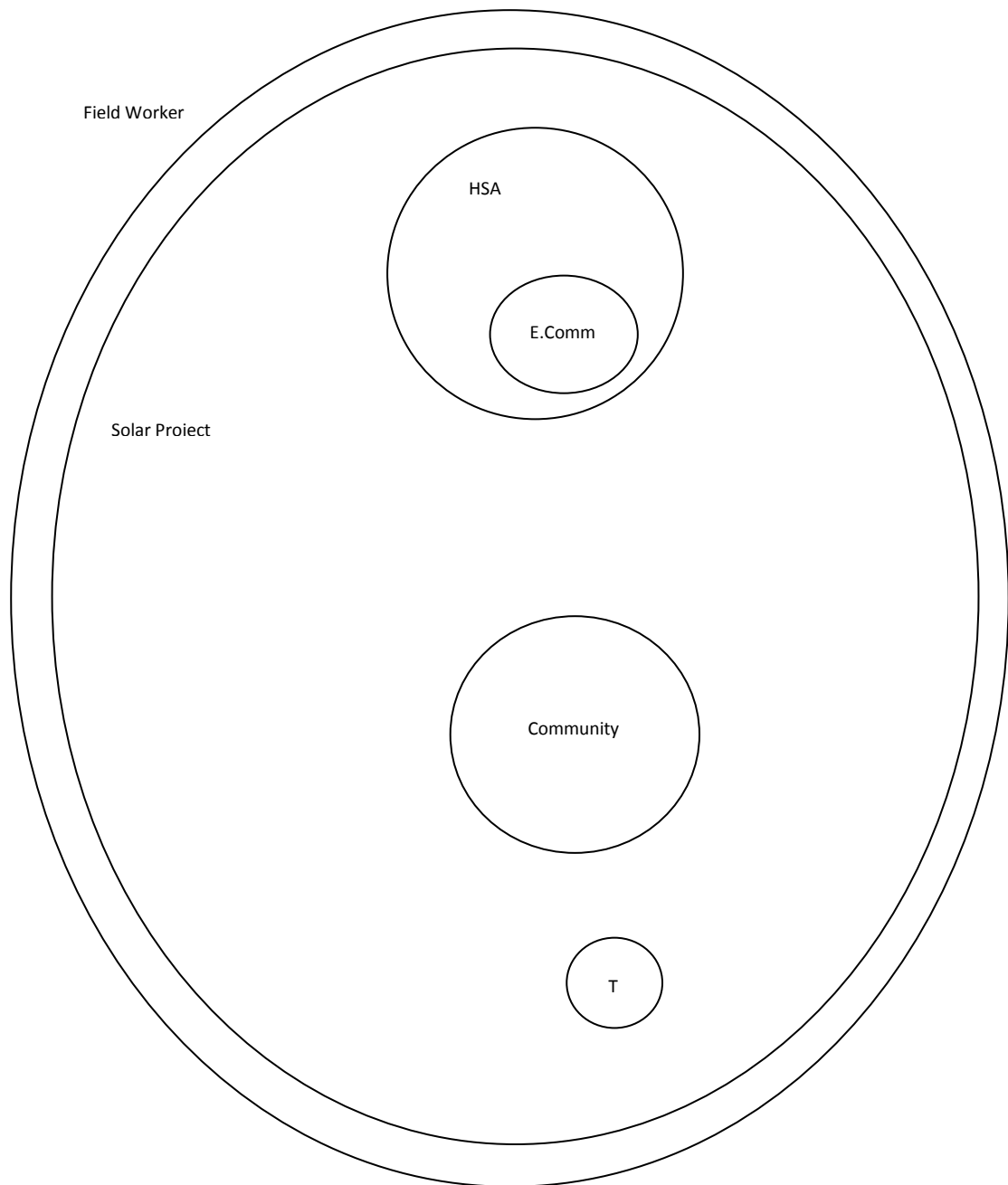
Chief

Mrs Foya

Appendix 6: **Teachers Venn Diagram 1: Influence/Decision Making.**

24.11.2010

Location: Mwanayaya Village (east bank Chikwawa).

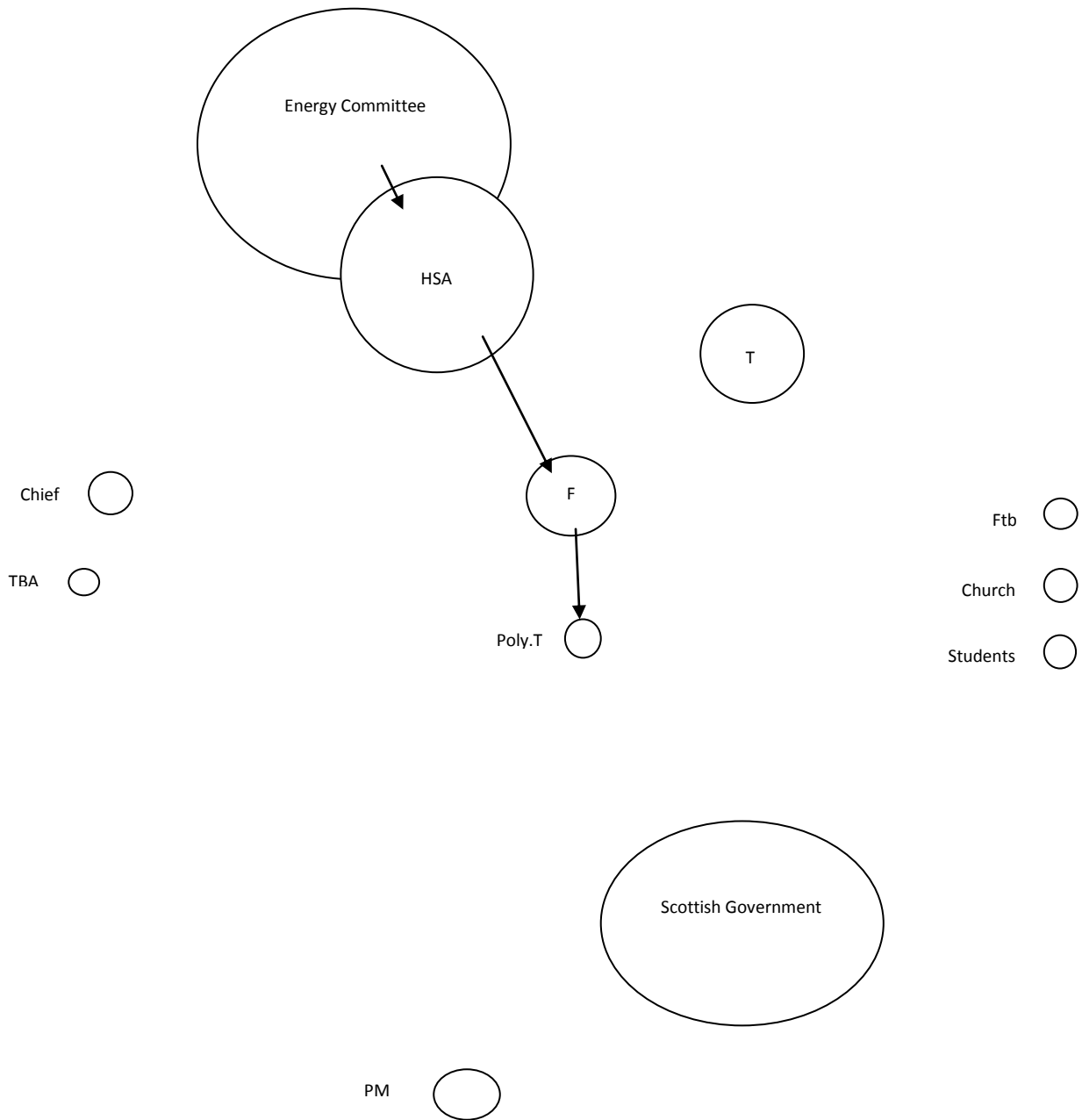


T = Teachers.

Appendix 7: **Energy Committee, Venn Diagram 1 – Influence and Decision Making**

19.11.2010

Location: Mwanayaya Village (east bank Chikwawa).



Key:

TBA = Traditional Birthing Assistant

Ftb = Football Group

T = Teachers

HSA = Health service Assistant

F = Field Worker

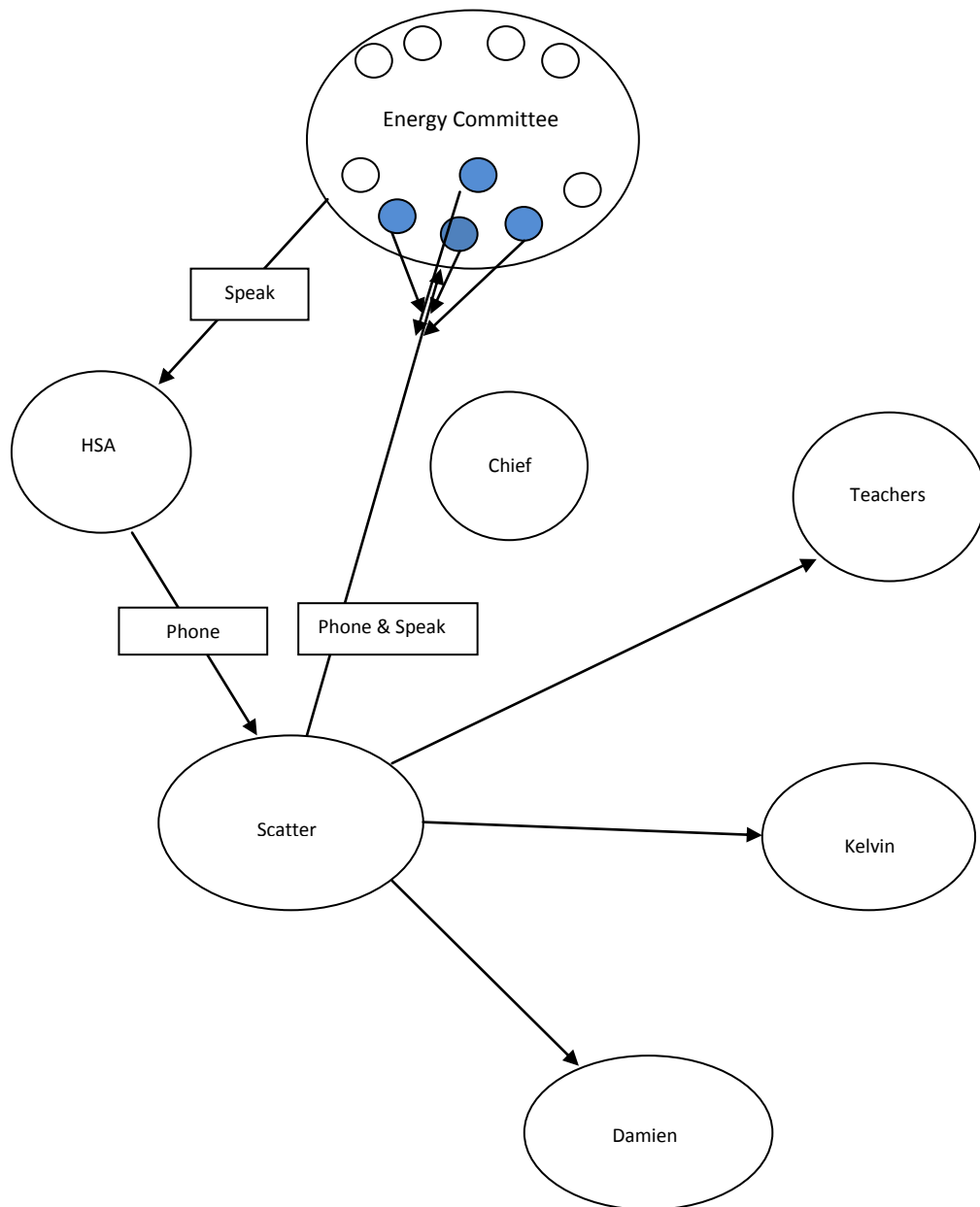
PM = Project Manager

Poly.T = Polytechnic Staff

Arrows indicate the decision making chain as the e.comm perceive it, e.comm is influenced by HSA, who in turn is influenced by FW, who in turn is influenced by Kelvin.

Appendix 8: Energy Committee Diagram 2: Channels of Communication

Location: Mwanayaya Village (east bank Chikwawa), 19.11.2010



Those e.comm members with mobile phones = ●

Appendix 9 – Community Stakeholders Perceptions of CRED Delivery Structure in Practice

