

1. PROJECT BASICS

1.1 Title of the project

Alternative Energy as part of the Engineering Core Curriculum

1.2 Type of partnership

Please indicate the type of project and list all the countries involved in this partnership. (Refer to Annex 4 of Guidance Notes for the different types of partnerships.)

Type of partnership	Lead Partner Country	Other Partner Countries
<i>E.g. Multilateral</i>	<i>Zambia</i>	<i>UK, Zimbabwe, India & France</i>
Multi Institutional	Sierra Leone	India

1.3 Project partners

Please include details for all project partners (please expand and add more tables as necessary).

LEAD PARTNER INSTITUTION						
(please note Ministry Departments, NGOs and hospitals which are not affiliated to HEIs cannot be lead partners but can be involved as named partners)						
Name of HE institution	Government Technical Institute - Kissy					
Type of Institution , e.g. university (public or private), college, research institute, medical institution)	College					
Project coordinator	Mr J.T Cole					
Position	Principal					
Department	N/A					
Address	Kissy Dockyard, Freetown					
Country	Sierra Leone					
Phone	Country Code:	+ 232	City Code:		Phone Number:	76770890
Fax	Country Code:	+	City Code:		Fax Number:	
Co-ordinator's email	Josephtejan2006@yahoo.com					
Department website						
Department email						

PARTNER 2						
Name of partner	Environmental Foundation for Africa					
Type of Institution , e.g. university (public or private), college, research institute, medical institution, NGO, ministry department, business)	NGO					
Project coordinator	Simon Willans					
Position	Programme Co-ordinator : Alternative Energy					
Department	Alternative Energy					
Address	1 Beach Rd, Lakka, Freetown Peninsula, PMB 34, Sierra Leone					
Country	Sierra Leone					
Phone	Country	+ 232	City		Phone	76 506 753

Fax	Code:		Code:		Number:	
	Country Code:	+	City Code:		Fax Number:	
Co-ordinator's email	simonwillans@gmail.com					
Department website	www.efasl.org.uk					
Department email	info@efasl.org.uk					

PARTNER 3

Name of partner	THRIVE Energy Technologies PVT. Ltd.					
Type of Institution , e.g. university (public or private), college, research institute, medical institution, NGO, ministry department, business)	NGO					
Project coordinator	Ranganayakulu Bodavala					
Position	Director					
Department						
Address	H.No. 12-13-133, Street No. 10, Tarnaka, Secunderabad, 500017					
Country	India					
Phone	Country Code:	+ 91	City Code:		Phone Number:	09866305772
Fax	Country Code:	+	City Code:		Fax Number:	
Co-ordinator's email	rangathrive@yahoo.com					
Department website	www.thrive.in					
Department email	N/A					

PARTNER 4

Name of partner						
Type of Institution , e.g. university (public or private), college, research institute, medical institution, NGO, ministry department, business)						
Project coordinator						
Position						
Department						
Address						
Country						
Phone	Country Code:	+	City Code:		Phone Number:	
Fax	Country Code:	+	City Code:		Fax Number:	
Co-ordinator's email						
Department website						
Department email						

1.4 Project background

Is your partnership a result of the British Council's online DelPHE Partner Finding Tool? If so, please give details and any feedback on your experiences of using this tool.

No, the partnership builds on an existing working relationship between the various organisations.

How has the relationship with the partner institutions been developed, and how long have you been working together if this is not a new partnership?

If it is a new partnership please tell us what and how each partner will contribute and add to the project.

If partners have been working together for over 18 months – please tell us about your successes to date.

The Environmental Foundation for Africa (EFA) has been working with the two partners in various capacities which has led to this collaboration. This will be the first partnership between Government Technical Institute-Kissy (GTI) and Volunteers for Rural Health, Education and Information Technology (THRIVE).

GTI and EFA have been partners since September, 2008 and are collaborating on introducing Alternative Energy programmes into the core curriculum of the college. Introductory classes (Solar Hot Water and Photovoltaic Electricity) have been introduced on a single course basis and it is hoped this programme will expand.

THRIVE and EFA have been working on solar electricity projects since May 2008. Both are south based organisations that use a non-profit model for their solar electricity work, the bulk of which targets rural and under serviced communities. The primary collaboration has been in establishing 'charging stations' which can be used by a community to recharge items such as rechargeable lanterns that replace kerosene. An EFA staff member recently went to THRIVE on a two week exchange, to learn more about the products and their programme implementation strategy.

Has this partnership previously been in receipt of other DFID funding (HE Links, England Africa Partnerships or other) or applied for funding from Education Partnerships in Africa? If so, please provide full details including how many years of funding you received and what was achieved. How will the proposed DeLPHE project build on/complement this?

No this partnership has not previously received DFID funding.

1.5 Relevant experience

If appropriate, provide a short summary of the experience all partners have had in international partnership collaborations and project management.

GTI was heavily damaged and looted during the civil war. Located on the only major road connecting Freetown to the Interior, this portion of the city was most affected and received the heaviest infrastructure damage. A variety of international and national partners funded the post-war rehabilitation resulting in numerous partnerships and collaborations that were overseen by the GTI administration.

The Environmental Foundation for Africa has been working in Sierra Leone since 1996 and has amassed a wealth of experience working and managing international partnerships. In addition to previous experience with the UNHCR, UNICEF, Irish Aid and other international donors EFA is currently working in conjunction with the IUCN-NL, The Centre for Hydrology and Ecology (Darwin Initiative) and hosts the secretariat of the Green Actors of West Africa (GAWA), a network of environmental NGOs across Africa. Focussing on Alternative Energy, EFA has worked with partners including the UNHCR, CAUSE Canada, Light Up The World, CARE and Welthungerhilfe and implemented projects in both Sierra Leone and Liberia. A portion of the Liberia project included training students from the University of Liberia, who later participated in the implementation phase.

THRIVE has previous international experience working in Afghanistan, Kenya and throughout India. THRIVE brings over seven years of solar electricity experience and invaluable lessons learned in developing a small-medium scale business in this field. Among their many

successes, THRIVE was a winner of a 'Lighting Africa' award from the World Bank in 2008. Both their international and domestic project experience combined with their technical expertise will be vital to the overall success of the project.

1.6 Project team

Who are the core members of the project teams at the lead and partner HEIs and what are the roles, responsibilities and contribution of each member?

Mr J.T. Cole / Mr Mohammed Kamara - Government Technical Institute

Mr Cole will serve as the overall project co-ordinator and ensure that the courses can be integrated into the core curriculum in a sustainable manner. This will involve working with the two other partners to align the technical content of the courses with the needs of the institution and critically ensuring that all necessary internal procedures are adhered to in the syllabus review process.

Mr Kamara is the head of the Plumbing and Mechanical Services programme and has been the lead faculty member throughout the partnership. He has been counterpart teaching the Solar Hot Water preparatory classes and will be the first lecturer to complete his course based training.

Simon Willans / Chris Playford – Environmental Foundation for Africa

Mr Willans will serve as the principal technical advisor for the Photovoltaic and Solar Hot Water classes. He will teach the PV class and be the liaison between EFA and THRIVE in establishing course content and facilitating technical support and exchanges. He has a BEng - Mechanical, from the University of Western Ontario in London, Canada and additional degrees in International Development and Political Science. He spent seven years working in the automotive industry as a Product Engineer and has spent the last two years working with the Environmental Foundation for Africa, leading their Alternative Energy programme.

Mr Playford will teach the Solar Hot Water class and act as the primary liaison between GTC and EFA. He has been teaching the Solar Hot Water Preparatory classes at GTC and will support the programme development and syllabus integration efforts. He has over 34 years of experience working in the plumbing and heating industry and is fully certified under the City and Guilds certification programme. In the last 15 years he has been involved in the design, development and installation of solar water heating systems, both in the UK and other parts of West Africa. In more recent years he has worked as Senior lecturer at Gambia Technical Training Institute, where he developed and introduced solar water heating training courses and interrogated and adapted these course into the existing plumbing diploma course

Ranganayakulu Bodavala – THRIVE

Mr Bodavala will support the two partners in developing a supply base for the training course materials and providing technical support for specific technologies that have been developed by the organisation. THRIVE will also host two students from the programme to provide first hand experience in PV product design, manufacturing and installation. This will give invaluable insight into the potential for south based small-medium enterprises in this field.

1.7 Status of application

Is your application new, referred back or a non-supported proposal from a previous DeLPHE round? If referred back please tell us how you have responded to JSC recommendations and any feedback. How does this differ from your original proposal?

Also, please indicate here if this proposal has been submitted in previous rounds but did not make the BC overseas shortlist.

Yes, this is a new application and has not been previously submitted.

2. PROJECT RATIONALE - GOAL AND PURPOSE

2.1 Focus Areas

Indicate the Millennium Development Goal (MDG), theme and specialised subject area that this partnership falls under from the lists in Annex 2 & 3 of the *DelPHE Guidance Notes*. (Please select only one category under each area.)

AREA	CATEGORY (select only one, i.e. the most appropriate)
MDG (No. 1 – 8) (Annex 2)	1 – Eradicate extreme poverty and hunger 7 – Ensure Environmental Sustainability
Theme (Annex 3)	Engineering and Technology Environment
Subject specialisation (Annex 3)	General Engineering Renewable Energy

2.2 Project purpose (short-term impact)

Please provide a short summary on the overall purpose of the partnership –what is the key thing you are hoping to achieve by the end of the three year project? What will be the main benefit, improvement or change on institutions and people in terms of improvements in HE capacity/ systems, and/or changes in behaviour and attitudes? (Maximum of 500 words)

The primary purpose of the partnership is to fully integrate an Alternative Energy programme into the overall syllabus of the Government Technical Institute. To consider the programme is fully integrated, the following three criteria must be met; all formal syllabus documentation updated and approved by the relevant authorities, programme courses being taught by local, permanent staff and all necessary labs and equipment in possession of GTI.

The current two courses, *Solar Hot Water* and *Photovoltaic Electricity* are being taught as electives to the plumbing/mechanical engineering and electrical engineering students respectively. For the 2009-2010 school year, a third course, *Building Design for Alternative Engineering* will be added and offered to students in the Building and Construction programme. Beginning in 2010-2011 two additional courses, *Biofuels* and *Micro-Hydro and Wind Power* will be offered to the Mechanical Engineering students. The final stage of the programme will occur starting in the 2011-2012 school year. At this point the entire programme will be offered as a final year stream for the Mechanical Engineering students and result in a certificate attached to their degree. Each of the individual courses will be mandatory as part of their respective syllabus but those students will not be eligible for the overall certificate programme. This allows GTI to create opportunities for a wide cross section of students to participate in the courses but ensures a permanent home for the programme and dedicated certification.

GTI will benefit directly from improved staff capacity and infrastructure. GTI staff (see section 2.5 for a staff breakdown) are expected to begin teaching each of the initial three courses for the 2010-2011 school year and the final two courses in 2011-2012. Staff training will be handled through a 'counterpart' methodology, where GTI staff take the class alongside the students but also work with the EFA or guest lecturers in course design, lesson planning and evaluations.

Indirectly the HEI will benefit from an improved status in the community and among peer institutions, which is invaluable in attracting high calibre students and potential funding through grants, awards or international tuition fees.

2.3 Project goal (wider impact)

Please provide a summary of the long term goal of the partnership – what are the wider MDG related problems and opportunities (country and or regional level) that the project will help to resolve? (Maximum of 500 words)

This partnership will directly address two related MDGs:

MDG#1: Eradicate extreme poverty and hunger

The partnership will address this MDG through both direct and indirect means. Directly, the specialised, technical training will result in immediate employment opportunities for graduates.

Youth unemployment is a major challenge for Sierra Leone with an estimated youth unemployment rate of between 60 and 70%.¹ One of the causes of this issue is that the generalized nature of many of the higher education programmes does not provide students with the specialized skills required for the existing or emerging job market. As an example only 7.6% of 25-34 year olds reported having participated in an apprenticeship programme.²

Indirectly, increases in energy availability will support national development. As the United Nations Development Programme has stated, “providing the poor with access to clean, modern, affordable energy services has multiple, synergistic impacts on productivity, education, health, and gender equality... for the poorest people and countries, small, incremental increases in access to modern energy have led to dramatic gains in HDI.”³

The 2005 Sierra Leone PRSP highlights the desire for increased and improved training programmes, stating the, “focus for government is support to post-basic tertiary level training, especially in technical and vocational skills in specialised disciplines, to meet the human resource needs of key poverty reduction programmes. The citizens also need more of this type of training to meet the current and future challenges of building a modern state. Investment in skills training will give a chance to the Sierra Leonean youths to become more productive and access job opportunities and income. Through rational allocation of funds and collaboration with the private sector, technical and vocational education will be aligned to the needs of the economy, particularly private sector employers”.⁴ These efforts will directly support this stated goal.

MDG#7: Ensure environmental sustainability

By integrating an Alternative Energy Programme into the syllabus of the HEI, the concepts will become part of mainstream national programming. This also allows for the implementation of similar programmes at other institutions throughout the region, as structures and lessons learned can be transferred. Additionally, expanding the knowledge base regarding this type of technology will significantly enhance the general public acceptance as a replacement for current, environmentally damaging power generation through generators.

2.4 Stakeholder and needs analysis

¹ Data is taken from the 2007 World Bank Study on Youth Employment in Sierra Leone. This study also estimated that the formal sector represented a mere 9% of total employment with over 50% of people describing themselves as self-employed.

² Data taken from a 2006 presentation, ‘Youth Employment in Sierra Leone: An Agenda for Research’, Cunningham and Peters. Original source cited as the Sierra Leone integrated Household Study, 2003

³ United Nations Development Programme. *The Sustainable Difference: Energy and Environment to Achieve the MDGs*. (New York: UNDP, 2005)

<http://www.undp.org/energyandenvironment/sustainabledifference/PDFs/SustainableDifference.pdf>

page 16,17

⁴ Government of Sierra Leone. *Poverty Reduction Strategy Paper*. Sierra Leone: 2005, pg 97

Please identify your primary, secondary and external stakeholders / beneficiaries? What will the benefits of your project be to these stakeholders/ beneficiaries?

Primary Stakeholders - Customers /Beneficiaries (Initial or immediate users of products or services which arise from the project)			
Secondary Stakeholders - Project team, Suppliers, Clients & Partners (Those involved in delivering the project)			
External Stakeholders (Those who are neither directly affected by the project nor intermediaries in the process but will have an influence on decision making and implementation and those who will benefit in the longer term, i.e. malaria patients, school children or farmers etc)			
Type	Who are they?	What are the expected benefits to stakeholders?	Numbers
Primary	Students and staff of the Government Technical Institute will be the primary beneficiaries of the partnership.	Both staff and students will receive specific, technical training. For staff this will provide professional development by improving their overall knowledge base and increasing the range of courses they can teach. Students will gain from the training by receiving direct post-graduate employment. The specialised nature of the programme also provides the potential from higher initial wages.	Staff: 2 / class Students : 20-25 / class There will be 13 total courses offered over the three year partnership. The total number of staff and students depends on the exact enrolment and counterpart training model.
Secondary	The management and organisations involved in the partnership.	The HEI will benefit from the improved facilities and staff capacity within the organisation. The higher profiles of the organisation will allow for more funding opportunities. EFA will benefit through the direct hiring of graduates for their Alternative Energy Programme. Currently staff must be hired internally which is economically burdensome and does not provide the broad employee choice that will come from this partnership. THRIVE will benefit from skilled labour during the post-graduate internship and from creating networks with potential customers and partners in the region.	There are a total of 45 lecturers and 802 students enrolled in the respective four programmes that will be part of the programme. EFA has 28 full time employees that will potentially have the possibility of participating in the programme or benefiting from EFA's participation.
External	Businesses, customers and other organisations involved in Alternative Energy and the National Government.	Businesses and other implementing organisations will benefit from the availability of pre-trained, technical staff. Customers will benefit from improved service and skills that can eliminate costly, poor advice regarding these technologies. The National Government will benefit in that shifts toward Alternative Energy will reduce ever increasing central grid demand and increase the spread of rural electrification. As an example the utilisation of solar hot water reduces early morning peak demand which creates large system	

		redundancy and costs.
--	--	-----------------------

Have you conducted a needs analysis with stakeholders, and how will you ensure their interests have been addressed and that they are actively engaged?

This proposal represents an evolution of an existing partnership between the Government Technical Institute and the Environmental Foundation for Africa. As such the course content, implementing strategy and partnership structure are a product of adaptation to the specific needs of all the relevant stakeholders. The addition of THRIVE is a direct result of these ongoing needs assessments, as they provide expertise and insight into additional technologies, electronics design and manufacturing, and small and medium size business development.

For the lead institution, GTI, this programme has specifically been designed to supplement their current transition to a Polytechnic. Providing specialised technical courses is beneficial in this process as it increases the capacity of the institution and the quality of programmes it can offer students within Sierra Leone.

Are there any risks/conflicts of interest?

The major risk to the programmes overall sustainability is if the required syllabus modifications are not approved by the National Vocational and Other Technical Awards (NCTVA). If this does occur the programme would still be taught but as individual courses in the relevant programmes but full certification granting would not be permitted. This does not affect the overall quality of the programme or the accrued benefits from the courses. It is important to note that once the Principal approves the syllabus internally there is very low risk of the NCTVA not approving the request.

2.5 Institutional provision and communication strategy

Please provide an overview of the current provision which exists at the lead partner institution in the identified focus subject area. What tangible difference will this project make in helping to build and strengthen capacity at the lead and any focus country partner institution(s)?

GTI is a fully accredited Higher Education Institute in Sierra Leone. This programme will be directly supported by staff from the following departments, each with their own specialised skill set and technological knowledge base:

Electrical Engineering – 12 lecturers (4-Diplomas and 8-Certificates)

Mechanical Engineering – 15 lecturers (5-Diplomas and 10-Certificates)

Plumbing – 3 lecturers (Tech. Studies 1 and other Tech Cert.2

Building and Construction – 15 lecturers (5-Diplomas and 10-Certificates)

Each of the participating faculty from the Government Technical Institute will receive specialised training in Alternative Energy technologies related to their general area of knowledge. The coursework, although focussing on specific technologies, utilises and builds on concepts that each of the lecturers will have significant experience with and the information will be easily absorbed and teachable following the initial training period. By prioritising lecturer education, the knowledge transfer will be rapid and quickly allow for the programme to be self-contained and sustained. The current courses will provide immediate feedback regarding this technique and allow for any required modifications to be implemented during the 2009-2010 school year.

The courses will be placed in the final year of each or the respective programmes to ensure that the necessary re-requisite courses have been taught. Any necessary syllabus modifications can be made during the first two years of the programme implementation and prior to its certification status within the Mechanical Engineering programme. From the initial review process the only perceived modifications will be to add courses in plumbing and chemistry into the Mechanical Engineering programme, courses that are already available on campus.

How will partners communicate with each other and what will be done if the relationship encounters problems or breaks down?

The Government Technical Institute and Environmental Foundation for Africa partnership has been ongoing since 2008 and involves continuous communication in developing the programme content and overall direction. EFA staff is currently on campus two days per week, working with GTI staff and students and meeting with the Centre's management team. This will continue throughout the first and second year as EFA staff will remain active in the teaching process.

As stated THRIVE and EFA have an existing partnership through their solar electricity programmes. This is largely facilitated through email and phone conversations in an as needed basis. There has also been one employee exchange with an EFA staff member working with and at the THRIVE sites in India.

The GTI and THRIVE relationship will develop throughout the programme lifecycle. Email, phone and more interactive technologies such as skype and the various chat functions available through the internet will be the core of the communication methods. Much of the co-ordinating work in the first year is between GTI and EFA which allows for this relationship to develop over time. The exchange visit at the end of year one will be a vital event in solidifying the relationship.

The major communication risk involves a slow development of the relationship between GTI and THRIVE. This is being managed by slowly increasing THRIVE's participation, rather than placing it directly at the forefront of the programme. Also, if problems did emerge, EFA is well positioned to act as a liaison between the two partners until the relationship and communication can naturally grow.

2.6 – Wider country relevance

What wider social/economic development needs of the lead and any other focus countries are you addressing? Is there any tie in with development priorities/ strategies of national and/or regional representative bodies/ government?

The primary social and economic issues to be addressed are discussed in Section 2.3. As a result of this the current All People's Congress government has highlighted energy provision as a primary goal in its development agenda. Within that overall development goal the Ministry of Energy and power has identified Alternative Energy, including micro-hydro, biomass and solar as critical in promoting rural electrification.

Regionally, many of the more energy abundant ECOWAS countries have begun to integrate Alternative Energy into their mainstream energy policies, indicative of the growing

understanding throughout the region of these technologies. Ghana has created a Renewable Energy Division within the Energy Commission of Ghana and waived all import duties on complete energy systems. Senegal has taken this one step further and created the Ministry of Biofuels, Renewable Energy and Scientific Research.

Also within the region, Liberia, a country that emerged from a devastating civil war in 2005 has also highlighted the potential role of Alternative energy in its own reconstruction phase. A 2007 White Paper from the Ministry of Lands, Mines and Energy strongly advocated for the utilisation of Alternative Energy to boost its rural electrification efforts. This was largely based on the reduced costs compared to grid expansion for typical low energy usage in the rural environs.

Within Africa, South Africa has been the leader in project implementation and policy advances. The government has set a bold target of 10 000 GWh of total energy consumption from Renewable Energy by 2013. To provide scale for this figure, the total electricity production of Ghana in 2006 was roughly 8400 GWh. One of the many initiatives established to support this goal was the Solar hot Water Heating programme from 2008, which through a rebate system aims to contribute 23% of the overall renewable target.

These examples clearly show that Alternative Energy is rapidly becoming a standard policy tool across Africa and the ECOWAS Region. Providing this training will support many of these initiatives by providing a ready supply of trained and employable graduates.

3. PROJECT METHODOLOGY & RESULTS

3.1 Outputs and Outcomes

Please give details of the expected outputs and outcomes from the project, i.e. what will be produced within the life cycle of your DelPHE project. All applicants must complete all boxes in outcome 4, but should only otherwise complete boxes relevant to their project.

Please be realistic and only provide information on those outputs and outcomes which apply to your project and can sensibly be achieved.

Please also tell us about the success indicators or positive changes you hope to bring about that you will be evaluating your project against.

OUTPUT 1 (countables and deliverables)	Internationally recognised joint research studies/ publications
No. of planned joint research initiatives	
Titles and whether aimed at national or international audiences	
Type/level of research	
Who will own the Intellectual Property Rights?	
Stakeholders/ Beneficiaries	
Activity period, i.e. year 1, 2 or 3	
Project partner institutions who will be involved in this activity	
Expected impact of research findings by end of project	
Success Indicators*	
Assumptions and risks	

* Success indicators for outputs should focus on efficiency (time, costs and quality).

OUTPUT 2 (countables and deliverables)		New / revised programmes and courses developed which are relevant to country needs	
Title of any new courses /modules to be developed		LEVEL (i.e. undergraduate, postgraduate, Masters, diploma, certificate, modules)	STATUS (i.e. new/revised)
1. Photovoltaic Design and Installation		Undergraduate	Revised
2. Solar Hot Water		Undergraduate	Revised
3. Building Design for Alternative Energy		Undergraduate	New
4. Biofuels		Undergraduate	New
5. Micro Hydro and Wind Power		Undergraduate	New
(Add further lines as necessary)			
Which HE institution will be the awarding body particularly for any new courses? Please note wherever possible this should be the lead partner HEI	Government Training Centre – Kissy		
Activity period, i.e. year 1, 2 or 3	Year 1 and 2		
Current provision in these subject areas in all partner countries	EFA is teaching PV Design and Installation and Solar Hot Water in conjunction with the GTI. Other courses will need to be developed between the partners.		
Target market & anticipated student numbers per annum, by project end	Class size will be restricted to 20-25 students per class. There will be between 1-2 counterpart lecturers per course from GTI during the initial course offerings.		
Evidence of demand for courses – expected student enrolment?	Class size has been restricted based on previous experience with these courses. Demand from students was so high and beyond anticipated levels that it has forced this class restriction.		
Success Indicators	This will be based largely on simple measures of completion rates and quantities, for both students and lecturers. The initial three year period will be a large learning curve for the programme and more defined success indicators will be developed during this process.		
Assumptions and risks	The largest risk is ensuring that the courses are properly located within the syllabus to ensure all necessary pre-requisites are fulfilled. The courses are highly specialised and depend on the preliminary base knowledge being in place. This can be managed through the on-going curriculum review process.		

OUTPUT 3 – (countables and deliverables)	Professional development and staff training
ACADEMIC STAFF	
What training of HEI staff and students will be undertaken?	Staff training will follow a counterpart methodology with 1-2 lecturers being assigned to each of the respective classes during each session. HEI lecturers will work directly with the outside lecturers during the initial course offering and will then teach subsequent offerings.
Who will be trained, and what level e.g. academics, administrative staff, under graduate/ postgraduate	Each class will have between 1-2 lecturers and 20-25 students.
When – Proposed activity period: year 1, 2 or 3	Years 1, 2 and 3
Numbers of staff involved in Professional	Year 1 – 3 classes x 2 lecturers; 6 total

Development Training	Year 2 – 5 classes x 2 lecturers; 10 total Year 3 – 5 classes x 2 lecturers; 10 total
Frequency (e.g. one off, on request, annually)	On-going
Benefits of training	Specialised knowledge will be passed to staff which allows for the courses to then be taught by the existing staff members.
Assumptions and risks (how will brain drain be avoided)	It is likely that there will be some small leakage of staff to the private sector. For the institution the effect will be mitigated by training a number of staff for each of the courses, ensuring that the relevant knowledge remains within the institution. Analysing this 'brain drain' under the larger goals of MDG#1 and MDG#7, if there is movement to the private sector it indicates that both there is job creation occurring in this sector and that environmentally sustainable and responsible technologies are gaining a mainstream market place.
WIDER COMMUNITY AND POLICY LEVEL	
Planned training of wider community/ professionals	This option is under discussion and is being provisionally planned for as an income generating activity for the school and programme. It may be possible to offer courses to the public as one off training opportunities. These would be for profit and provide a revenue stream for the programme.
Target audience and level e.g. junior midwives, senior civil servants, ministry officials	The target audience would be professionals in the electrical, building or plumbing professions and NGO workers.
When – Proposed activity period: year 1,2 or 3	Year 3 (most likely as a post-grant activity)
Number of people to be trained	Two classes, 25/class --- Total 50
Frequency (e.g. one off, on request, annually)	Once per year
Benefits of training	Income generating activity for the school and the programme and also contributes to MDG#7 by increasing the exposure of the technologies to the general public.
Assumptions and risks	Lack of demand from outside professionals. From previous experiences EFA has in the NGO community the level of demand is high as they have received numerous requests for training.

Please note that successful projects will be required to provide statistics in the annual progress report on the total number and gender of all project participants.

OUTCOME 4 (attitudes and behaviours)	Increased gender parity and numbers of women taking part in research and partnership courses
Total number of project team members	Six core members, two from each of the partners.
How many of these are women?	One of the project team members from THRIVE is a women. Her role with THRIVE is to develop and implement Corporate Social Responsibility into their activities and her experience will be invaluable in developing strategies to increase women's participation in technical fields such as these.
Estimated total number of participants in wider	There will be a total of 13 courses offered

project activities, i.e. number of people to be trained, students undertaking newly designed courses	during the three year programme. Based on a class size of 20-25 students this will result in a total of between 260-325 students over the three year span.
Estimated no. of how many of these will be women?	There are currently 802 students enrolled in the four participating programmes, of which 71 are women. This represents a roughly 10:1 ratio of men to women in these programmes. The target for women's participation will be 5:1, doubling the existing programme ratios. Based on that there will be between 43 and 55 female students who participate in the programme.
No. of women taking part in research and new/revised courses?	See above
What steps will the project team take to ensure (where appropriate) women are involved in project activities?	Participation ratios will be adhered to, providing demand exists.
Success Indicators*	With increased participation in these specialised classes it is hoped the profile of technical studies will be raised, especially among female students. The existing participation numbers and men: women ratios will be compared pre and post programme to see if an increase occurred.
Assumptions & risks	Increasing women's participation in technical programmes has been challenging throughout the world. Increasing the profile and respectability of these programmes may increase women's participation but this is not a certainty.

***Success indicators for outcomes are the positive changes you hope stakeholders will experience as a result of the project.**

OUTCOME 5 (attitudes and behaviours)	Improved networking and exchange of information between partner institutions
What are your plans for wider networking beyond the partner HE institutions? E.g. participation in research group, regional conference, regional research projects/publications?	<p>1) Partnerships will be pursued involving GTI and other like minded institutions in West Africa, India and beyond. This is expected to develop out of the programme as our work becomes more concrete and professional as well as recognised within Sierra Leone and beyond.</p> <p>As stated EFA hosts the Green Actors of West Africa network and can access over 50 Environmental NGOs in the region, many of which are working in renewable energy projects.</p> <p>2) There will be an exchange programme between students from GTI and THRIVE. This will allow graduates to gain valuable first hand experience working in the NGO sector but in a product development and manufacturing environment.</p>
When; year 1, 2, 3 or post DelPHE project	1) These efforts will be on-going throughout the three year programme.

	2) The GTI-THRIVE exchange will occur at the end of each of the programme years.
What is the scale of this activity (e.g. regional conference with 1,000 attendees)	1) There are no specific activities targeted under this category. 2) Two to four per year
Who is involved (i.e. no. of participants per HE institution, which institutions & countries)	See above
Benefits of participation?	1) Increased networking among the NGO and HEI communities will create opportunities for programme growth, staff and professional development and student opportunities. 2) The exchange programme will serve as a learning experience for programme graduates and also provide first hand experience regarding the potential for small scale manufacturing and product design within the sector.
Success Indicators	Number of exchange visits.
Assumptions & risks	These are low risk activities and are not based on any substantial assumptions.

Outcome 6 (attitudes and behaviours)	Improved management and administration within HEIs in the focus countries
<p>What are the planned changes to systems or processes (financial, administrative/ managerial) at the lead HE institution?</p> <p>What are your plans for leadership and/ professional or personal development or training for senior staff at the HE institution?</p>	<p>The programme is being designed to fit within the existing GTI structure and not to create costly, separate programming and administrative structures. There will be an additional staff position created to co-ordinate the overall Alternative energy programme. The lecturers will be trained from within the existing staff and not additional staff.</p> <p>Staff training will be conducted using a counterpart teaching method, where GTI lecturers will participate in the initial course offerings.</p>
What are the wider benefits and how will you share and disseminate the lessons learned?	<p>With GTI transition to a Polytechnic it becomes more closely aligned with the other HEIs across the country, this includes Northern Polytechnic in Makeni and Eastern Polytechnic in Kenema. If successful these programmes can be rapidly integrated into those other institutions.</p> <p>Regional partnerships will also be sought within the ECOWAS region as previously stated. These can serve as a platform to scale up this type of programming across the region.</p>
What are the benefits of changes to the HE institutions?	The benefits rest predominantly in the additional staff skill set and the high level training that will be offered to the students.

	For the institution they will receive modern laboratories for the programme and the establishment of this unique and highly sought after type of programme within the institution will increase the profile and status, allowing for increased funding opportunities and the ability to draw the highest calibre students.
Success Indicators	The establishment of a fully functioning Alternative energy programme under the administration of a dedicated GTI staff member.
Assumptions & risks	The primary roadblock to the formation of the programme is a failure to receive appropriate syllabus approval from the relevant authorities. This is low risk as the Principal has initial approval rights and it is uncommon for request forwarded by the Principal to be rejected at the higher level. Even if this eventuality occurred the courses could still be taught as is but without the certificate granting authority.

4. MONITORING, EVALUATION AND SUSTAINABILITY

4.1 Monitoring progress and evaluation mechanisms

Please tell us about any *baseline studies* or *audit* partners have conducted, or will conduct against which you will be able to measure the success of your project.

It will be a requirement for the project team to review and assess the progress of the project at regular intervals, and report back to British Council. What processes and systems will you use to monitor and evaluate your progress against stated outputs, outcomes and purpose? What evidence will you collate?

The majority of the measurables for this programme are easily quantifiable, which allows for straightforward reporting. Annual written reports which contain numbers of students and staff (by gender) trained and the number of courses established will be the primary reporting mechanism. The curriculum review process will also require audits from the relevant authority and these can also be used to evaluate the programmes progress. Student feedback will be critical in the development phase and summaries of student evaluations will also be used for reporting and course development.

These primary measures serve to record the successful implementation of the programme but do not indicate whether the programme has been successful in addressing the two affected MDGs. To more accurately quantify the impact of the programme we will track student employment within the Alternative Energy industry of Sierra Leone.

Currently there is one private business and two NGOs dedicated to Alternative Energy, all focussing on solar electricity. There are other organisations that do small work in the field but do this alongside a number of other business ventures. This is expected to grow and create opportunities for trained individuals. Current employment numbers are not exact but it is estimated that the majority of students (50-60%) are self or underemployed upon graduation. This is based on GTI information that tracks the number of students who receive employment following their final year placements. Those that do not are assumed to be either self or underemployed. The intent will be to raise the level of formal employment among graduates and will be tracked using the same methodology for comparative purposes and additionally through selective surveying.

4.2 Sustainability

How will the knowledge and skills be embedded in the lead/ other focus country HEI institutions in a sustainable way?

Detail how the stated outputs and outcomes will be sustainable after funding has ended, e.g. further funding, institutional strategy, recruitment of students to new courses.

The programme has been designed with sustainability as a primary requirement. All of the partners have experience with programmes that struggle once the initial funding has been utilised and realise that these efforts have no lasting impact on the institution or country.

The following are the key programme design elements to ensure sustainability;

- 1) Syllabus integration – Courses could be taught using the current stand alone model, however this will not result in long term success. Creating a defined and unique Alternative Energy programme that is integrated into the syllabus of GTI is critical to ensuring the programme is recognised as part of the overall programming.
- 2) Counterpart teaching – The courses do offer specialised skills and knowledge but this builds on the existing capacity of the GTI staff. As a result using a counterpart teaching method, where staff take the course and participate in the course preparation, allows for a rapid dissemination of knowledge within the institution. Following a slow and structures programme for training ensures that the information is fully understood and spread to as large a lecturer base as possible.
- 3) Minimal costs and overhead – The programme is not being designed as an elaborate and costly separate entity but integrated into the existing GTI structure. As a result the on-going cost levels can be minimised to one permanent staff member and equipment replacement costs.

The large overhead costs will be absorbed during the initial three year funding period and as such the programme can be sustained through the current GTI budget. This was the intent of the programme from its conception and remains the budgeting target. Despite that, there are numerous potential income generating opportunities from the successful establishment of this programme. Offering paid training to non students not only can generate revenue for the programme but also increase the dissemination of knowledge to the greater community. A second potential income generating stream is from attracting students from across the region to the programme. Sierra Leone has been a traditional education and professional hub in West Africa and this type of unique and high skill programme can help to restore this previous status.

4.4 Dissemination and Knowledge Transfer

How will the project team share information and skills more widely with stakeholders, beneficiaries, and other universities/ organisations?

Please tell us more about the level of engagement of policy makers and appropriate local organisations in your project at this stage?

How will any outputs/outcomes from your project be applied on the ground and translated into practice?

The knowledge transfer aspect of the programme is central to its operating philosophy. Direct training of lecturers and students will occur throughout the programme and continue with an integrated programme at GTI.

The partnership directly involves a local NGO that is working in the Alternative Energy sector. They have vast experience working at the community level, in both Sierra Leone and Liberia.

Of the projects they run, the Tiwai Island Wildlife Sanctuary is the largest and is Sierra Leone's only community led eco-tourism site. EFA is also active in working in the Western Area Rural and throughout Pujehun and Kenema Districts. Focussing on their Alternative Energy experience, they have conducted over 30 installations in the last 18 months and are building both community and HEI level training documentation and programmes. The experiences gained from the partnership between GTI, EFA and THRIVE will be invaluable in scaling these existing initiatives.

The outcomes from the programme will be translated into practice through a number of channels. EFA will be the primary driver of local and grassroots programming, building on their previous work and strengths. This will bring the knowledge directly to the communities, which will have immediate impacts in supporting rural electrification efforts using these technologies. GTI students will become practitioners of these technologies in numerous capacities, much of this relying upon the student's wants and needs. They will have the knowledge base to practice these skills, with some moving to the private sector through employment, others through starting their own businesses or others joining the NGO and charitable sector.

5. PROJECT PLANNING & FINANCES

5.1 Year 1 activity

Please give an overview of the proposed activities in the first year and **link these to delivery of planned** outputs for year one; include brief details of any visits, workshops, training activities, field work and any regional events.

Year 1 will be dedicated to establishing the first three courses at GTI. They will be run as individual courses during this time period to allow for the programme to develop within the institution. The following provides a brief overview of the planned activities for the year, which coincides with the school calendar year.

September 2009 : Planning meetings for 2009-2010 school year

October 2009 : Order equipment for labs

October - November 2009 : Course preparation and introductory seminars

December 2009 : Install equipment in labs and make final course preparations

January 2010 – June 2010 : Conduct three preliminary courses

- 1) Photovoltaic Design and Installation
- 2) Solar Hot Water
- 3) Building Design for Alternative Energy

July 2010 : Course evaluations and marking

July/August : Graduate Student Exchange (Sierra Leone-India)

July/August 2010 : Short Course Biofuels

- Course to be taught by external expert

August 2010 : Course design and revision

Throughout the year planning will occur for the syllabus review process. Additionally on-going efforts will be made to establish and develop links with other HEIs and Alternative Energy partners across the region.

5.2 Year 1 budget (see below for Years 2 & 3)

Please provide proposed budgets for the first activity year.

BUDGET HEADING *	AMOUNT (£'s sterling)
Travel, accommodation and subsistence costs	

Workshop/seminar costs	
Short course / conference costs <ul style="list-style-type: none"> Flight for external expert (biofuels) Accommodation and subsistence costs (14 days x \$185) Courseware Refreshments 	1500 1885 500 500
Secretarial / Administrative Staff Costs	1000
Printing and publishing costs <ul style="list-style-type: none"> Courseware and website development 	1000
Books for HE Institution <ul style="list-style-type: none"> International textbooks on all renewable energy subjects On-line journal subscriptions (open to campus) 	1000
Temporary / new staff costs (Maximum of 10% of total budget) <ul style="list-style-type: none"> Programme Co-Coordinator 	2500 (2467)
Project equipment costs (Maximum of £2,500 per project) <ul style="list-style-type: none"> Tools and sample equipment for the initial courses 	2500
Consumables <ul style="list-style-type: none"> Fuel and generator costs Office supplies and stationary Classroom equipment (desks, blackboards, etc) 	2000
Field work / local travel costs <ul style="list-style-type: none"> Vehicle running costs calculated at Le1920/km 	900
Other (please specify) Exchange visits <ol style="list-style-type: none"> Two people from Sierra Leone to India One person from India to Sierra Leone 	(9390)
Flights – 3 x roundtrip	3750
Airport transfer (2 per flight)	240
Accommodation and subsistence costs (90 days India)	3600
Accommodation and subsistence costs (30 days Sierra Leone)	1800
TOTAL COSTS (For year 1 activities)	24675

* These are examples of budget headings; please add further headings as relevant for your project costs.

Year 2 and 3 budgets – **Successful projects should expect to receive around the same level of funding for Years 2 and 3 that is awarded in Year 1.** All successful projects will be asked to complete a detailed project planning spreadsheet with detailed activity plans and costs for Year 1 and subsequent years.

5.3 Other sources of funding

Do you plan or, are already in receipt of other sources of funding to carry out related activity?
Please provide full details of the amount, nature & source of this funding.

We are not in receipt of additional funding beyond the existing budget for this programme. On-going funding searches are occurring with an existing pending application through the Youth Employment Network, a UNIDO funded initiative. Additional funding searches are on-going and focussing on developing partnerships with other West African HEIs and organisations in Europe and North America that focus on Alternative Energy.