Final Report

On the Project

Access to Electricity in Odighi Community in Edo State Using Photo Voltaic

Community Research and Development Centre (CREDC)

2012

The Full Report on the Project
"Access to Electricity in Odighi Community in Edo State Using Photo Voltaic"
Implemented in Odighi Community of Edo State, Southern Nigeria

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This report was made possible through the efforts of the CREDC Team: **Etiosa Uyigue, Mathew Agho, Okungbowa Golden, Ogbemudia Osamuyi Godfrey, Osazee Paul Uyigue, Agharese Edevbaro, Esther Kir , Agatha Osajiele and Isioku Lilian**

Edited by: **Etiosa Uyigue**

Secretariat
266, Ugbowo-Lagos Road
Ugbowo Quarters
P. O. Box 11011, Benin City
Edo State
Nigeria
Tel: +234 52 878788; 0703 940 5619
Email: info@credcentre.org
Website: www.credcentre.org

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ACRONYMS

CBOs	Community Based Organizations
CREDC	Community Research and Development Centre (CREDC)
ERA/FoEN	Environmental Rights Action/Friends of the Earth Nigeria
GEF	Global Environmental Fund
LED	Led Emitting Diode
NGOs	Non-Governmental Organizations
PHCN	Power Holden Company of Nigeria
PREEEN	Promoting Renewable Energy and Energy Efficiency in Nigeria
PV	Photovoltaic
RET	Renewable Energy Technology
SGP	Small Grant Program
UNDP	United Nation Development Programme

BACKGROUND

Access to energy is essential for socio-economic development and for poverty alleviation. Nigeria is the most populous country in Sub-Saharan Africa, nearly one quarter of Sub-Saharan Africa's population. Despite the huge resources from oil, the country is facing formidable economic, social and human development challenges. One of these challenges is seen in the power sector. Report has shown that about 60% of the Nigeria's population (the entire Nigerian population is estimated at 150 million people) is excluded from the national electricity grid. A large portion of these people are located in rural areas. Even places that are connected to the grid are plagued by frequent power outages that last for several hours daily.

Furthermore, the grid electricity is generated from unsustainable sources (large hydro power stations and a growing number of thermal gas stations) which are contributing to the emission of greenhouse gases leading to climate change. Renewable energy technologies and energy efficiency are promising solutions to this energy crisis. Renewable energies, apart from being sustainable and inexhaustible in supply, can be set up in small units and is therefore suitable for community management and ownership. Hence renewable energy technologies can be used in a decentralized energy system.

To address the environmental and socio-economic challenges posed by the crisis in the electricity sector in Nigeria, the Community Research and Development Centre (CREDC), in 2006, conceptualized, designed and commenced the project titled "Promoting Renewable Energy and Energy Efficiency in Nigeria (PREEEN)". The goal of the PREEEN Project is to increase Nigerian's access to electricity and modern energy services using renewable energy facilities and to promote energy efficiency. Environmentally, the PREEEN Project will help to reduce the dependency on the burning of fossil fuel for energy generation, thereby helping to mitigate climate change. The project is promising to create a big market for renewable energy systems and also to attract investors in the sector. The PREEEN project will also help to reduce electricity demand to minimize the adverse environmental impacts of energy generation through the promotion of energy efficiency policies and practices. The CREDC has organized several conferences and workshops in different regions of Nigeria and a national dialogue in Abuja in 2008 as part of the advocacy component of the PREEEN Project. The current project "**Access to Electricity in Odighi Community in Edo State Using Photo Voltaic"** is part of the PREEEN Project.

The project was implemented in Odighi Community in Ovia North East Local Government Area of Edo State, Southern Nigeria. Odighi Community is one of the numerous communities in Nigeria that is yet to be connected to the national electricity grid. The objectives of the project are to increase access to electricity in Odighi Community using solar generators (photo voltaic); to build capacity in the community to install and maintain solar systems and; to create awareness in Edo State on the potential for renewable energy technologies (RETs) to address the energy crisis in Nigeria and mitigate the emission of greenhouse gases. In the project, a total of 40 households would be provided with electricity using photo voltaic systems and 50 youths from the community would be trained on installation and maintenance of solar systems. The project has been endorsed by the European Commission's Sustainable Energy Europe Campaign as an Official Partner.

EXECUTIVE SUMMARY

The project "Access to Electricity in Odighi Community in Edo State Using Photo Voltaic" has been implemented by the Community Research and Development Centre (CREDC) as part of the PREEEN Project (Promoting Renewable Energy and Energy Efficiency in Nigeria). It was implemented with support from the United Nations Development Programme (UNDP), the Global Environment Facility Small Grant Programme (GEF-SGP) and the Green Grant Fund (GGF). The Project was implemented in Odighi Community located in Ovia North-East Local Government Area of Edo State, Southern Nigeria.

In Odighi Community before the implementation of this project, the community was not connected to the national electricity grid and thus lacked access to electricity. This forced many of the inhabitants to rely on diesel and petrol generators for electricity supply for those who can afford it and majority of the community people used paraffin lamps and kerosene lanterns for lighting at night. This situation exposed them to various respiratory disease associated with the burning of hydrocarbon based fuel to generate heat and light energy and also increased poverty level as they kept spending more of their household income on unsustainable domestic energy sources.

The objectives of the project were: 1. To increase access to modern energy services (electricity) in Odighi Community using solar generators (Photovoltaic systems). This will enhance access to information, boost educational activities, reduce the incidence of respiratory diseases and discourage the use of traditional energy sources (kerosene lanterns, local paraffin lamps, diesel and petro generators) causing the emission of greenhouse gases leading to climate change. 2. To build capacity in the community to install and maintain photovoltaic system. This will ensure the participation of the community in the proposed project and to empower the community members sustain the project and to become potential employees in the emerging renewable energy industry in Nigeria. 3. To create awareness on the potential for renewable energy technologies (RETs) to address the energy crisis in Nigeria and at the same time mitigate the emission of greenhouse gases.

The implementation of this project was broken down into four project activities namely; Inception Workshop, First Installation Phase, Second Installation Phase and Appraisal workshop. The project implementation began in March 2011 with the Inception workshop and climaxed with the appraisal workshop that was held on the 5th of June, 2012 to access the extent to which the project has positively impacted the lives of odighi community people.

At the completion of the project, 40 households who benefited from the project which is about 20% of the entire population of the community now have access to clean energy source for lighting using Solar home Systems. A total of 20 youths from the community were trained as solar Technicians on installation and maintenance of Photovoltaic Systems. They were deployed during the installation process for installation activities and are now economically empowered. Finally over 2000 people from the community are now aware of the Renewable Energy Technology. Also both state and local government Officials are aware of the project and its deliverables.

CHAPTER ONE (Inception Workshop)

This chapter captures the first activity of the project implementation. The workshop was organized to achieve the third objective of the project - to create awareness in Edo State on the potential for renewable energy technologies (RETs) to address the energy crisis in Nigeria and mitigate the emission of greenhouse gases and to train the first set of community members on the installation and maintenance of photo voltaic (PV) system. The Workshop attracted over 140 participants drawn from government, NGOs, CBOs, community members, students, religious leaders and the media. The Workshop featured goodwill messages from policy makers, paper presentation and training of the first set of community members on the installation and maintenance of PV systems.

SESSION ONE: PRE-WORKSHOP VISITS TO EDO STATE POLICY MAKERS

Before the inception workshop on the 22nd March, 2011, the CREDC Team visited top policy makers in Edo State Government. These include the Edo State Commissioner for Energy and Water Resources, Didi Adodo and the Commissioner for Information and Orientation, Anselm Ojezua. The CREDC Team led by the Executive Director, Etiosa Uyigue visited the two commissioners on the 15th of March 2011. Other Members of the Team were Golden Ose Okungbowa (Information Officer), Godfrey Osamuyi Ogbemudia (Project Officer), Osazee Paul Uyigue (Head of Technical Unit) and Agatha Osajiele (Student Trainee). The purpose of the visit was to inform the policy makers on the Odighi Project; to interact with them on the potential for RETs and energy efficiency programme to address the energy crisis in Nigeria and mitigate the emission of greenhouse gases leading to climate change.

Ministry of Energy and Water Resources

At the office of the Edo State Commissioner for Energy and Water Resources, the CREDC Team was received by the Commissioner, Comrade Didi Adodo, the Permanent Secretary, Mr. Jerry I. Ekenimoh and other top management staff of the Ministry. After a brief prayer and introduction, the CREDC Executive Director told the policy makers that they were in his office to inform him of the forth coming inception workshop to inaugurate the project at Odighi Community. Mr. Uyigue said that the current project at Odighi Community is part of larger project "Promoting Renewable Energy and Energy Efficiency in Nigeria (PREEEN)" being implemented by CREDC.

Mr. Uyigue told the Commissioner that CREDC commenced the PREEEN Project in 2006 to address the energy crisis in Nigeria and at the same time mitigate the impact of climate change by promoting renewable energy technologies and energy efficiency. He said that the PREEEN Project has two components - the Advocacy Component and the Direct Implementation Component. On the PREEEN Project, the CREDC Executive Director said that the CREDC has organized conferences in different regions of Nigeria and a National Dialogue in Abuja to achieve the objectives of the PREEEN Project. In the PREEEN Project, CREDC has set a target to provide electricity to 10 million Nigerians using RETs such as photo voltaic and wind turbines Etiosa told the Commissioner that RETs can be installed in small and decentralized units and is therefore good for providing electricity to people located in remote areas and terrains that are difficult to connect to the national electricity grid. He said that in the current project in Odighi Community, 40 households will be provided with photo voltaic system each and 50 youths from the Community will be trained on maintenance and installation of photo voltaic. He also said that CREDC is advocating for energy efficiency policy in Nigeria, and that this will help to reduce energy demand and subsequently, more people will have access to electricity.

He used the occasion to tell the Commissioner of the energy efficiency project the CREDC is planning to embark upon in Edo State. Hard copies of the previous reports and publications of CREDC on the PREEEN Project were presented to the Commissioner. In response, the Commissioner for Energy and Water Resources, Comrade Didi Adodo thanked the CREDC team for their visit and for their effort so far to provide electricity for the people of Odighi Community. He said that the government is already working hard to provide electricity to more communities in the rural areas in Edo State saying that in few months from now, Odighi will also be included as one of those communities connected to the national electricity grid. He called on the need for CREDC to sustain the renewable energy (RE) project in Odighi Community. The Honorable Commission expressed the Ministry's willingness to collaborate with CREDC and pledged their support for the project. The Permanent Secretary of the Ministry assured the CREDC Team that the Ministry will be represented in the Inception Workshop.

Ministry of Information and Orientation

At the Edo State Ministry of Information and Orientation, the CREDC Team was received by the Commissioner, the Permanent Secretary and other top management staff of the Ministry. Mr. Uyigue told the Commissioner that the current rural electrification project in Odighi Community using RETs is part of the PREEEN Project and he used the opportunity to invite the Commissioner to the forth coming Inception Workshop. He solicited the support of the Commissioner to give media coverage to the Odighi Project. He told the Commissioner that CREDC in future is planning embark on a project to promote energy efficiency in Edo State. Hard copies of the previous reports and publications on the PREEEN Project were presented to the Commissioner.

CREDC Team with the Commissioner for Information and Orientation and top officers of the Ministry

In his response, the Edo State Commissioner for Information and Orientation, Bar. Anselm Ojezua commended the giant strides made by CREDC and pledged his Ministry's support and readiness to partner with CREDC on the project. He noted that based on what he has seen from the previous reports and publications by the CREDC, he is convinced that CREDC is a functional organization committed to environmental sustainability. The Commissioner advised CREDC to work out ways of partnering with the Edo State Ministry of Energy and Water Resources. He also suggested that CREDC should partner with the eighteen Local Government Councils in the state in order to replicate the project in other communities in Edo State.

SESSION TWO: INCEPTION WORKSHOP

The inception workshop for the Project "Access to Electricity in Odighi Community in Edo State Using Photo Voltaic" held at Bishop Kelly Pastoral Centre in Benin City, the Edo State Capital on the 22nd March, 2011. The Special Guest of Honor was the Edo State Governor, Adams Oshiomhole who was represented by the Edo State Commissioner for Energy and Water Resources, Comrade Didi Adodo. Also present at the occasion was the Edo State Commissioner for Information and Orientation, Bar. Anselm Ojezua who was represented by the Director of Community Development, Rev. Solomon Ohonba. The Workshop attracted over 140 participants drawn from government, NGOs, CBOs, community members, students, religious leaders and the media. The Workshop featured goodwill messages from policy makers, paper presentation and training of the first set of community members on the installation and maintenance of PV systems. The workshop was organized by the Community Research and Development Centre (CREDC) with support from the Edo State Government, United Nations Development Programme (UNDP), Global Environment Facility Small Grant Programme (GEF SGP), Global Greengrants Fund (GGF) and the Environmental Rights Action/Friends of the Earth Nigeria (ERA/FoEN).

Welcome Address delivered by the Executive Director of CREDC

His Excellency, the Executive Governor of Edo State, Comrade Adams Oshiomhole, who is ably represented by the Commissioner for Energy and Water Resources, Comrade Didi Adodo, the Commissioner for Information and Orientation, Bar Anselm Ojezua, who is represented by the Director for Community Development, Rev. Solomon Ohonba, colleagues, the members of the Press, Ladies and Gentlemen. I will like to begin by thanking every one present here today, everyone participating in the inception workshop of the project we titled "**Access to Electricity in Odighi Community in Edo State Using Photo Voltaic".** It is a very memorable day in my life to see the fulfillment of a vision which was borne some years ago.

You will all agree with me that Nigeria is the most populous country in Sub-Saharan Africa, nearly one quarter of Sub-Saharan Africa's population. Paradoxically, despite the huge resources from oil, the country is facing formidable economic, social and human development challenges. One of these challenges is seen in the power sector. Report has shown that about 60% of the Nigeria's population (estimated at 150 million people) is excluded from the national electricity grid. A large portion of these people are located in our rural areas. Interestingly, for places that are connected to the grid are plagued by frequent power outages that last for several hours daily. More also, the grid electricity is generated from unsustainable sources (large hydro power stations and a growing number of thermal gas stations) which are contributing to the emission of greenhouse gases leading to climate change.

To address the environmental and socio-economic challenges posed by the crisis in the electricity sector, the CREDC, in 2006, launched the project "**Promoting Renewable Energy and Energy Efficiency in Nigeria (PREEEN)**". The project was inaugurated right here in Benin City (charity they say begin at home) on the 18th of July 2006. The goal of the PREEEN Project is to increase Nigerian's access to electricity and modern energy services using renewable energy facilities and to promote energy efficiency. The vision of the PREEEN Project is to provide electricity for 10 million Nigerians using renewable energy facilities and to create awareness on energy efficiency to 60% of Nigerian population in a period of 5-6 years. Under the advocacy component of the PREEEN Project, we have organized several conferences and workshops in different regions of Nigeria and a national dialogue was organized in Abuja in 2008. Today we are inaugurating the Direct Implementation component.

We are starting with Odighi Community because Odighi is yet to be connected to the electricity grid. In the current project in Odighi Community, a total of 40 households will benefit from the project, each of the 40 household will be provided with photo voltaic systems (solar systems) that will provide lighting and also help them to access modern information via electronic media. Also, 50 youths from the Community will be given basic training on the installation and maintenance of solar systems. This will help to give ownership to the Project and sustain it. The project is replicable and will be replicated in other communities in Edo State and other parts of Nigeria. We are using this opportunity to call on the local, state and federal government, the business community, international organizations and other NGOs to give their support to this project so that our people will cease to suffer in the mist of abundant renewable energy resources.

We want to specially thank the Comrade Governor, Comrade Adams Oshimhole, the Honorable Commissioner of Energy and Water Resources, Comrade Didi Adodo, and the Honorable Commissioner of Information and Orientation, Bar. Aselm Ojezua , for all the efforts to make today successful. We are grateful to our funders, the United Nations Development Programme, GEF Small Grant Programme, the Global Greengrants Fund and the Environmental Rights Action/Friends of the Earth Nigeria. To the media, colleagues and all present here today, we say thank you.
Once again, I welcome you all.

CREDC Executive Director, Etiosa Uyigue delivering the welcome speech

A cross section of participants during the workshop

Goodwill Message by the Edo State Commissioner of Information and Orientation

The Honorable Commissioner was unavoidably absent to attend to a special state assignment. He was duly represented by the Director for Community Development of the Ministry, Rev. Solomon Ohonba. Rev. Ohonba speaking on behalf of the Commission said that: "*You will recall that when you were in his office some few days ago, he promised that he will be here. I don't need to say much because that day, he dwelt so much on what the State Government is doing and I am aware also that the Hon. Commissioner for Energy and Water Resources will later declare this workshop open. Whatever needed to be said concerning the State Government, the Commissioner for Energy and Water Resources will do that. But I want to say that the Ministry of Information and Orientation, being one of the Ministries in charge of community development in the State has already told the organizers of this programme that the Ministry is at all time ready to receive organizations that come into the state to support the state government in community development. The Ministry would also ensure that this development is not done haphazardly.*

The Ministry, for a long time has been involved in the mobilization and organization of amenities in various communities. Odighi Community is one of the communities in Edo State which has a very large and forceful local development association and bringing this workshop here, to mobilize and organize them is laudable. I therefore have this to say that all other communities that is yet to form their development association, because that is the base for organization in any community, should try and do so. Once again I want to say that the Honorable Commissioner is with you and has promised adequate publicity to be given to all your activities.
Thank you and God bless".

Rev. Ohonba representing the Edo State Commissioner for Information and Orientation

Some participants during the workhop

Paper Presentation

The Irony of Energy Crisis in Rural Communities in Nigeria in an Era of Renewable Energy Technologies (RETs)

A paper presented by Etiosa Uyigue, the Executive Director of CREDC during the Inception Workshop for the project "Access to Electricity in Odighi Community in Edo State Using Photo Voltaic" at the Bishop Kelly Pastoral Centre, Benin City Edo State, 22nd March, 2011.

Introduction

The objective of this paper is to highlight the different renewable energy technologies available in the world and their advantages. There are several communities in Nigeria especially in the Niger-Delta Region that do not have access to electricity. Several households have been involved in domestic accident because they do not have access to modern energy services. Some time ago, I read in the papers that a woman went for a vigil and left a candle burning in her house and her children were burnt to death. Nigeria is blessed with a lot of resources. We have a lot of sunlight unlike in some parts of the world where the sun is not very strong. We have a lot of resources but in the midst of these resources, we found ourselves in an energy crisis.

The conventional source of energy that is the burning of fossil fuel such as petrol, diesel and gas is emitting dangerous gases such as carbon dioxide, methane, chlorofluorocarbon etc into the atmosphere. These gases are heat-trapping gases and they are heating up the atmosphere causing imbalance in the climatic system. As a result, there is alteration in climate. The result of this is that the rains do not come when they are supposed to come, you have flooding in some places and you have dryness in some other places. These are changes in our climatic systems caused by human activities. The emission of these gases called greenhouse gases into the atmosphere come mainly from energy generation. So the trend in the world now is how to reduce the amount of the gases we emit into the atmosphere. One of the solutions to this problem is the wide use of renewable energy technologies and the promotion of energy efficiency.

Renewable energies include wind, ocean wave and tides, solar, biomass, rivers, geothermal (heat of the earth), etc. They are 'renewable' because they are regularly replenished by natural processes and are therefore in endless supply. They also can operate without polluting the environment. Technologies have been developed to harness these energies and such technologies are called renewable energy technologies (RETs) or sometime also called "clean technologies" or "green energy". Because renewable energies are constantly being replenished from natural sources, they have security of supply, unlike fossil fuels, which are negotiated on the international market and subject to international competition, sometimes may even resulting in wars and shortages.

They have important advantages which are stated below:

- Their rate of use does not affect their availability in future, thus they are inexhaustible.
- The resources are generally well distributed all over the world, even though wide spatial and temporal variations occur. Thus all regions of the world have reasonable access to one or more forms of renewable energy supply.
- They are clean and pollution-free, and therefore are sustainable natural form of energy.
- They can be cheaply and continuously harvested and therefore sustainable source of energy.

One other advantage of RETs is that you can use them in a decentralized system. The electricity we use in Nigeria come from different generation station scattered across the country. Some are generated from large hydro dam all located in Niger state – Jebba, Shiroro and Kainji Dams. Some are generated from gas-powered thermal stations. The electricity generated is distributed over long distances to get to the end users. Today, with RETs, electricity can be generated within the locality where it is needed. RETs are particularly relevant in the Niger-Delta region where the terrains are very difficult to extend the national electricity grid. Other advantages of RETs are that they are never depleted. So I am going to be talking on some of these technologies.

Solar Energy
Solar energy can be collected using artificial devices called solar collectors. The energy collected is used either in a thermal process or a photoelectric (photovoltaic) process. When used in a thermal process, solar energy is used to heat a gas or liquid. In the photovoltaic process, solar energy is converted directly to electrical energy without intermediate mechanical devices.

Wind Energy
The energy contained in the force of the winds blowing across the earth's surface can be harnessed. Such energy can be converted into mechanical energy for performing various works such as generating electricity, pumping water, grinding grain, etc. Modern wind turbines are being used to generate electricity in countries such as Germany, Denmark, India, China, and the United States to supplement more traditional sources of electric power. Design improvements such as more efficient rotor blades combined with an increase in the numbers of wind turbines installed, have helped increase the world's wind energy generating capacity by nearly 150 percent since 1990.

Small Hydro
Because of the environmental and socio-economic challenges associated with large hydro dams, it is now advisable to build small hydro to generate electricity. Where a river runs through a community, a micro turbine can be installed in the river to generate electricity. The flowing river turns the turbine and the mechanical energy is converted to electricity. With small hydro plant, we can generate up to about 1MW of electricity. We have a lot of these resources all around us. In some of our communities in Nigeria, we have rivers passing through them.

Geothermal Energy
The earth is hotter the deeper one drills below the surface. Water and steam circulating through deep hot rocks, if brought to the surface, can be used to drive a turbine to produce electricity or can be piped through buildings as heat. Some geothermal energy systems use naturally occurring supplies of geothermal water and steam, whereas other systems pump water down to the deep hot rocks. The cheapest and best form of geothermal energy comes from the ground in the form of dry steam. In most habitable areas of the world, this subsurface energy source lies so deep that drilling holes to tap it is very expensive. Presently, many nations of the world have begun tapping these subterranean resources to generate electricity. A fundamental advantage of geothermal energy is that it is relatively clean, free energy source, and the reserves are thought to be long lasting. On the contrary, the capital investment for developing geothermal energy is high, and prospecting is somewhat limited

Bioenergy

Biomass is the short form for biological mass, which is the amount of living materials provided by a given area of the earth's surface. Biomass energy is the fuel energy that can be derived directly or indirectly from biological sources. Biofuel is any solid, liquid, or gaseous fuel produced from organic matter. Biofuel is produced either directly from plants or indirectly from industrial, commercial, domestic, or agricultural wastes. Biomass energy from wood, crop residues and dung remains the primary source of energy in many developing regions. In a few instances, it is also a major source of power. Biological waste can be subjected to microbial degradation to produce methane, which can be used to run a turbine to generate electricity. We advocate for the use of biological waste instead of stable crop that could serve as food items to man

Conclusion

The current project in Odighi Community is aimed at increasing access to electricity using solar generators (photo voltaic), building capacity in the community members to install and maintain solar systems and creating awareness in Edo State on the potential for renewable energy technologies (RETs) to address the energy crisis in Nigeria and mitigate the emission of greenhouse gases. In the project, a total of 40 households would be provided with electricity using solar generators and 50 youths from the community would be trained on installation and maintenance of solar system. The project will be replicated in other communities in Edo State. Nigeria has high potential to harness energy from renewable sources. The country falls within the tropics of Cancer and Capricorn where the abundance of sunlight is inevitable. This energy whose reservoir is the sun is one of the energy resources whose availability is infinite if it is developed. Therefore, it is fundamental to proffer the strategy of diversifying energy resources development outside the conventional energy resource. With the abundant supply of renewable energy resources in Nigeria, efforts need to be geared towards the utilization of these resources to improve community livelihood. It is a big irony that many communities in Nigeria are suffering in the midst of plenty.

Etiosa Uyigue
Community Research and Development Centre
266, Ugbowo Lagos Road,
Benin City, Edo State
Nigeria
+234 703 940 5619
etiosa@credcentre.org
www.credcentre.org

Project Work Plan

The work plan for the Odighi Project was presented by Golden Okungbowa, the Information Officer of the CREDC.

Activities	Date	Remarks
Consultation meeting with Odighi Community	January, 2011	To notify the community of the date and venue for the Inception Workshop
Distribution of letters of invitation	February 2011	To invite stakeholders for the Inception Workshop
Courtesy visit to Edo State policy makers	March 2011	Tell them about the project and enlighten about RETs
Inception workshop and the training of the first set of community members	March 2011	To for inaugurate the project train the first set 25 youths of Odighi Community on installation and maintenance of solar systems.
Installation of the first set solar system in Odighi Community	April 2011	20 PVs will be installed in 20 households
Training of the second set of community members	May 2011	To train the other 25 youths of Odighi Community
Installation of second set of PVs	June 2011	To install additional 20 PV in 20 households
Appraisal workshop and writing	July 2011	Appraisal workshop
Writing of final project report and submission of final report to SGP and stakeholders	August 2011	Write final project report

A SPEECH DELIVERED BY THE COMRADE GOVERNOR, ADAMS ALIYU OSHIOMHOLE AT THE WORKSHOP ORGANIZED BY THE COMMUNITY RESEARCH AND DEVELOPMENT CENTRE ON TUESDAY, 22ND MARCH 2011 AT BISHOP KELLY PASTORALCENTRE, AIRPORT ROAD, BENIN CITY

Let me stand on existing protocol.
Ladies and Gentlemen, I am here this morning to represent the Comrade Governor who is unavoidably absent due to other important state matters. He would have wished to be here and to demonstrate his interest for this important workshop; he has directed me to represent him. I therefore want to state that I have the singular honour and privilege to deliver his speech to this august gathering. It gives me great pleasure to stand before you this morning as a Special Guest at this very auspicious and important workshop on **Access to Electricity using Solar Generators or Photo Voltaic.** I am particularly happy because this workshop on alternative power is coming at a time when the whole world is faced with the challenges of safety of lives and property from the use of conventional energy sources such as fossil fuel and nuclear reactors.

That is why the initiative of the Community Research and Development Centre to contribute its quota to the provision of power through solar generators for households is a very welcome and commendable development. It is worthy to note that the Centre has planned to provide solar electricity for 40 households while about 50 youths would be trained in the installation and maintenance of these plants. Through this process therefore, 40 households which hitherto were without electricity supply would have access to electricity and thus, enhance their socioeconomic status. In addition, the 50 youths that would benefit from the training programme would invariably be gainfully employed and become self sustenance. I would therefore want to use this opportunity to thank the Center for these laudable contributions to the overall development of Edo State. Permit me to inform you that the State Government has been pursuing aggressive rural electrification and the reinforcement of existing electricity networks system across the State. Under the rural electrification programme, electricity power has been extended to the following communities:

1) Sasaro in Akoko-Edo Local Government Area
2) Ekpenada in Etsako Central Local Government Area
3) Idumu-Eran/Idumueson in Esan North East Local Government Area
4) Urhomehe in Orhiomwon Local Government Area
5) Udo-Iguafolo in Ovia South West Local Government Area
6) Errua-Evborien in Uhunwode Local Government Area
7) Agbonkhina in Egor Local Government Area
8) Eshiorir/Ekeke/Errah in Owan East Local Government Area
9) Oshomegbe in Etsako Central Local Government Area
10) Evbuabogun in Ikpoba Okha Local Government Area
11) Udochi in Etsako Central Local Government Area
12) Oghomere in Estako Central Local Government Area
13) Upgrading of Otou 2.5MVA to 7.5MVA
14) Reinforcement of electricity supply to Ake I & II
15) Construction of 33KV (ITC) overhead lines 132/33KV line from Uluoke to Okpella to improve power supply to the whole Estako and parts of Owan East

In addition, seven others are nearing completion. The state Government had also taken it as a point of duty to reinforce existing PHCN network systems through the supply of additional transformers as well as replacement of faulty ones. In the process sixty-five (65) transformers were approved and released for injection into PHCN existing network system which benefited more than 60 communities. Let me also inform you that we have just completed the process of awarding 4 contracts for the extension of electricity supply to every rural community in Edo State by the year 2015. Ladies and Gentlemen, I would like to call on the Centre to assist the State government on the issue of consumer enlightenment or education on the importance of developing the appropriate attitude on the use of electricity. The Citizenry should be made to understand the demerit of leaving their lights on through the day even when there is no need for it. We should all form the habit of putting on our electrical appliances and lighting points only when we need them, because it is only through this way we will be able to achieve the efficient use of our energy and through this process, power would be made available for more users at all time.

Most importantly, I want to use this opportunity to inform organizations and institutions planning to set up renewable energy plants in the State to always, as a first step, contact the relevant organs of the State Government - the Ministry of Energy and Water Resources and Edo State Rural Electrification Board for detailed information about the choice of location so as to avoid duplication of efforts as well as to ensure the maximum benefits to greater number of persons would be achieved at most times. Finally, I want to once again thank the Community Research and Development Centre for its planned contribution to the development and advancement of renewable energy in the State and call on other investors or NGOs in the energy sector to emulate the Community Research and Development Centre because it is only through such collaborative efforts that the socioeconomic lives of our rural populace can be enhanced.

Thank you and have a fulfilling training session.

March, 2011

The Edo State Commissioner for Energy and Water Resources, Didi Adodo

CREDC Team with the Commissioner for Energy and Water Resources and other dignitaries

Group photograph

SESSION THREE: TRAINING OF COMMUNITY MEMBERS

The training for the first set of community youths on the installation and maintenance of PV systems held after the opening session of the Workshop. The training was conducted by a consultant Valentine Eku, who physically demonstrated with a set of PV. The trainees were trained using the do-it-yourself approach.

The consultant took the trainees through a theoretical session where he introduced the trainees to the different components of the photo voltaic system – the panel, the battery, inverter and the charge controller and their different roles. In a demonstration, he illustrated how the PV system can be installed and then allowed trainees to do it themselves.

CHAPTER TWO (First Installation Phase)

The first phase of installation activity was held at Odighi Community from 7th - 12th September, 2011.The installation activity fulfills the Project objectives- to increase access to modern energy services in the community using solar generators (Photovoltaic Systems). This will enhance access to information, boost educational activities, reduce the incidence of respiratory diseases and discourage the use of traditional energy sources (kerosene lanterns, local paraffin lamps, diesel and petrol generator) causing the emission of Greenhouse Gases leading to Climate Change. The installation activities of the first Phase was in two stages which include: reminder (pre-installation) visit to Odighi community, PV systems' user training and PV installation activity.

Session One: Pre-Installation Visit to the Odionwere of Odighi Community

The CREDC team led by Mr. Etiosa Uyigue, the executive director paid a reminder visit to the Odionwere (Community Head) of Odighi Community on the 2nd of September 2011. Other members of the team who made the trip include: Mr. Ogbemudia O. Godfrey (Programme Manager), Mr. Paul Uyigue (Technical Director) and Miss Tosin Obiuwevbi. The purpose of the visit was to reassure the Odionwere, the community council of elders and other members of the entire community of the desire and unwavering commitment of CREDC to complete the project.

CREDC Team at the Odionwere's Residence

At the house of the Odionwere (Community Head) of Odighi Community, the CREDC Team was received by the Odionwere, Pa Amanyo and some elders of the community. Also present at the Odionwere's house was the Youth Development Association representative Mr. Oguns. After a brief introduction of the CREDC team, the executive director Mr. Etiosa Uyigue told the Community Head and others present at the Odionwere's house that CREDC was there to inform them of the commencement of the third stage of the project which is the installation of photo voltaic systems.

Elders of Odighi Community at the Odionwere's House during CREDC's visit

Mr. Etiosa Uyigue apologized on behalf of CREDC to the community for failing to meet up with the date that was earlier chosen for the first phase of installation which was actually scheduled for April 2011. According to him, the reason for the lapses was due to delay in release of funds by the funding partner agency (GEF-UNDP/SGF), who gave the grant for the installation in August 2011. He promised them that the project would kick off without further delay and that the new date for the installation in the first twenty houses would be 7th – 12th September, 2011. In his response, the Odionwere (Community Head) Pa Amanyo thanked the CREDC team for their visit and initiative. He also thanked them for empowering some youths of the community during the inception/training workshop (on installation and maintenance of photo voltaic systems) of the project, which came up in March 2011. Pa Amanyo expressed disappointment in the long delay of the installation phase after the completion of the inception/training workshop. According to him, the community was almost losing faith in the realization of the project. However, he pledged the support of the community for the completion of the project and later handed the list of the first twenty beneficiaries to the CREDC Executive Director, Mr. Etiosa Uyigue.

Session Two: Photovoltaic Systems' (PVs) User Training

On the 7th of September 2011, the CREDC Programme Manager, Mr. Ogbemudia O. Godfrey, in company of Engr. Valentine Eku (Project Officer), Orewole wasiu (Intern) and Uyi Lincoln (Intern), held a meeting with the elders of Odighi Community, the first 20 beneficiaries and the 15 youths who had earlier been trained on installation and maintenance of photo voltaic systems. The purpose of the meeting was to educate beneficiaries on how the photo voltaic systems work, precautions to be taken and its maintenance.

Engr. Valentine Eku (Project Officer) educating trainees and beneficiaries at Odighi Community about the Photo Voltaic Systems.

Delivering his technical advice, the Project Officer Engr. Valentine Eku told the 20 beneficiaries and the 15 trained youths that the Solar Powered LED Home Lighting System (Photo Voltaic Systems) can provide lighting for 8 hours everyday. According to him, the Solar panel has a lifespan of 10years, the battery's lifespan 3years and the LED lamp, more than 20years. He advised them to use it for a period of about 3hours per day when there is constant rainfall and less sunshine. This he said is to ensure at least 3 hours of lighting for additional three days at a stretch without sunshine to power the panel (during bad weather). A demonstration of how the system works was then carried out by the project officer. After the training session, an inspection of the twenty benefitting households' roof tops on which the solar panels would be installed was carried out. This became necessary due to the different roof configurations of the benefitting households. The process afforded CREDC the opportunity to determine the direction of the "South Pole" for every household to which each of the solar panels would be oriented to ensure maximum year round energy production .

Session Three: Photovoltaic Systems Installation Activity

The installation of the photo voltaic systems by CREDC started on the 8th September, 2011. Mr. Ogbemudia O. Godfrey (Programme Manager), Engr. Valentine Eku (Project Officer), Orewole Wasiu and Uyi Lincoln arrived at Odighi Community at about 8:00am local time for work. The installation activity was coordinated by the project officer, Engr. Valentine Eku.

Engr. Valentine Eku (Project Officer) and Mr. Ogbemudia O. Godfrey (Programme Manager) during the Installation at Odighi Community

The first day (8th September 2011) witnessed the installation of Nine (9) photo voltaic systems. The complete solar systems which were supplied by Schneider Electric, one of the world leading Energy Management companies comprised of a 90 LED lamp, a 12 volts battery (backup unit), a 10watt solar panel, connecting cables and screws. A special solar panel support was designed by CREDC's team of engineers to ensure that the panels were all oriented southward and tilted at angles between 5-15 degrees in order to ensure maximum year round energy production. Some of the panels were mounted on roof tops while for houses with weak roofs, the solar panels were mounted on vertically erected solid poles.

Trained community youths coupling the fabricated solar panel support

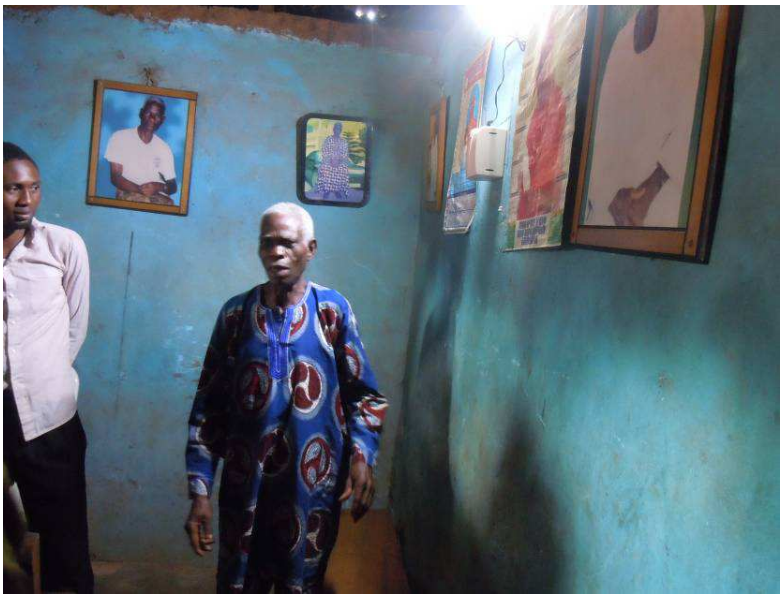
The first installation was carried out on the roof top to the Odionwere (Community Head) of Odighi, Pa R.O Amanyo at about 9:45am, after which other households were provided with the facilities. The choice of households that benefitted from the gesture was determined by the leadership of the community, on the basis of hierarchy and need. The installation for the first twenty households was completed on the 12th of September, 2011.

A female community trainee mounting a solar panel on the roof top in Odighi Community

Some trained youths of Odighi Community carrying out installation activity at the Odionwere's sitting room

Reactions from Beneficiaries:

Reacting to the successful installation of the first system at the Odionwere's house, the Community head, Pa R.O. Amanyo commended the CREDC team and the trained community youths for a job well done. He described the solar LED lamp as bright as the sun and prayed for God's continued blessings on the Executive Director of CREDC, and his entire staff as well as the funding partner agencies, which made the dream, a reality.



Pa R.O Amanyo (Odionwere of Odighi Community)

Beneficiaries of the first nine (9) photo voltaic systems which were installed on Thursday 8th September, 2011 could not hide their joy when they saw the CREDC team in the community on Monday, 12th September 2011 as they arrived for the installation of the remaining eleven (11) photo voltaic systems. According to some of them, they had never seen anything as bright as the solar systems. Other members of the community people who were initially skeptical about the efficiency of the solar systems became very interested and wanted to be part of the next phase.

CHAPTER THREE (Second Installation Phase)

The second phase of installation activity started from the 6th - 9th February, 2012.The installation activity fulfills the Project objectives- to increase access to modern energy services in the community using solar generators (Photovoltaic Systems). This has enhanced access to information, boost educational activities, reduce the incidence of respiratory diseases and discourage the use of traditional energy sources (kerosene lanterns, local paraffin lamps, diesel and petrol generator) causing the emission of Greenhouse Gases leading to Climate Change.

The completion of this second installation phase marked the end of the installation activities for the Odighi Solar Project. It witnessed the installation of twenty (20) more solar home systems for twenty benefiting households. The installation activity was conducted by CREDC from on the 6th through the 9th of February, 2012 in Odighi Community.

CREDC TEAM (Lillian Isioku, Engr Valentine and Paul Uyigue)

Session One: Photovoltaic Systems' (PVs) User Training

On the 6th of February 2012, the CREDC Program Manager, Mr. Ogbemudia O. Godfrey, in company of Engr. Valentine Eku (Project Officer), Isioku Lilian (Intern), Doris Idubor(Intern) and Mr. Paul Uyigue, held a meeting with the second 20 benefiting households at the Odionwere's compound there in Odighi Community. The purpose of the meeting was to educate beneficiaries on how the Home systems work and what to do to get maximum efficiency from the system. Addressing the beneficiaries, the Program Manager Mr. Ogbemudia Osamuyi Godfrey said that the LED lamps of the solar home systems should only be put on at night when needed most so as to conserve the energy already stored in the battery during the daytime when the sun was shining. Beneficiaries were also told to minimize the use of the solar LED lamps during the period of continuous rain fall without sunshine so as to have the lamp working for up to three to four more days. They were also told to

dust the solar panel with damped cloth during the dry season so as to remove layers of settled dust on the panel which can reduce its efficiency.

Session Two: Photovoltaic Systems Installation Activity

On the 8th of February, 2012, the first 10 solar home systems were installed for ten beneficiaries out of the total twenty for the second installation phase. Installation activity started at about 9:45am local time. Each of the twenty solar home systems supplied by Schneider Electric Nigeria were made up of a 90 LED lamp, a 12 volts battery (backup unit), a 10watt solar panel, connecting cables and screws.

Mr. Ogbemudia (Program Manager) untying the solar panel connecting cable

A special solar panel support was designed by CREDC's team of engineers to ensure that the panels were all oriented southward and tilted at angles between 5-15 degrees in order to ensure maximum year round energy production. The solar panels were mounted on top of the roof for those houses with strong roof and for those with weak roof, the solar panel were mounted on a wooden pole and was raised into the air.

Installation activity during this second installation phase was however faster than in the case of the first installation phase because the youths were now used to what they have been trained to do and did it better with speed and accuracy. The remaining 10 solar home systems were installed on the 9th of February for the ten remaining beneficiaries to complete the total twenty beneficiaries for this second installation phase and a total of forty Solar Home Systems for the whole Project.

A trained youth at work

another one passing a wire through the ceiling

Reactions from Beneficiaries:

Following the success of the first installation activity, the beneficiaries who have been selected by the elders of the community for the second 20 Home Systems could not wait for the commencement of the second phase as they kept calling at CREDC secretariat even before installation started. At the end of the installation activity for the second twenty beneficiaries, the villagers could not hide their joy as they were full of praise for UNDP/GEF-SGP for providing them with energy access. They also commended the CREDC team for the professional manner in which the installation activities were carried out and pledged their readiness to support CREDC in future projects.

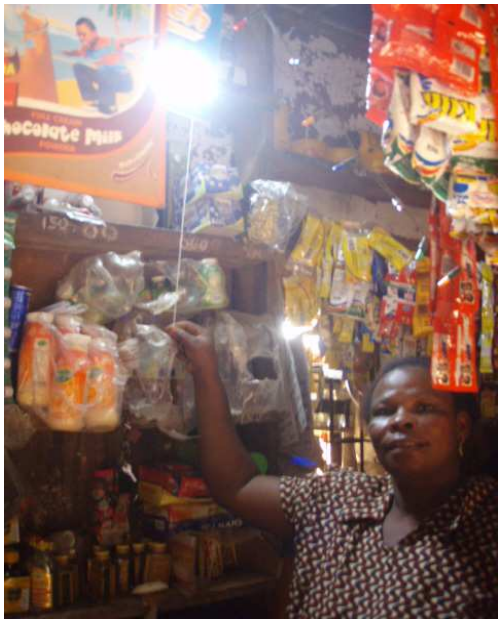
Some reactions gotten from beneficiaries include;

"The solar lamp dey shine like the light from sun" - Mrs. Osifo

"I can now sell till 11:00pm with the solar "– Mrs. Arikki

"Thank you for this light, the light good and I still need another one" – Mr. Dominic Umeh

On the last day of second installation phase, many of the villagers trooped to the Odionwere's house, the Community head, Pa R.O. Amanyo to beg if they can be selected for the third phase as widely acclaimed by some youths of the community. They were however disappointed when they were told that, that was the last day of the installation activity.



(Village Retail Shop Owner)

(Village Restaurant Operator)

The Visit of the French Embassy to Odighi Installation Site

On the 24th of February 2012, the French Embassy Nigeria, visited Odighi Community in company of some CREDC staff. The French Embassy team from Abuja was lead by the Project Officer for the Social Development Fund (SDF), Mr. Carl Engelson. The purpose of their visit was to have an on the spot assessment of the Odighi Solar Project as stated in our previous report. This was due to the great interest the French embassy has on the project and their willingness to sponsor a bigger project of this type in another Community.

Mr. Carl, (Left) Odighi Community Head (Centre) and CREDC staff

On arrival in the community, the team was received by the Community head known as the odionwere, Pa Amanyo. He was very excited about their visit and expressed gratitude to UNDP-GEF for the initiative to fund such a project in the community which has greatly affected the lives of the indigenes. He however pleaded with the French embassy to help scale up the project from where the UNDP-GEF grant stopped.

Mr. Carl at some of the Beneficiary Shops where the Solar Systems where installed

The team was conducted round the various households that benefited from the project by the CREDC Program Manager Mr. G.O Ogbemudia. Mr. Carl and his entourage were able to see on site the forty solar home systems that have been completely installed by CREDC with the support of UNDP-GEF/SGP. It also afforded them the opportunity to ask beneficiaries questions on how they felt about the project as a whole.

CREDC Program Manager Mr. Ogbemudia (Left) leading the team for inspection

All the beneficiaries spoken to expressed satisfaction about the workings of the solar home systems. They however pleaded for the immidiate scale up of the project to help meet the growing energy demands of other villagers that couldn't benefit from the forty solar home systems.

CHAPTER FOUR(Appraisal Workshop)

The Appraisal workshop for the Project "Access to Electricity in Odighi Community in Edo State Using Photo Voltaic" was held at Bishop Kelly Pastoral Centre in Benin City, the Edo State Capital on the 5th of June, 2012. Special Guests of Honor present at the occasion includes; the Edo State Commissioner for Environment and Public Utilities Prince Clem Agba who was ably represented by Barr. J.G. Akhimien the Director of Forestry Regeneration and Conservation, the Edo State Commissioner for Information and Orientation, Mr. Luis Odion ably represented by Mr. Femi Okhuo the Director of Community Development and the Country President, Schneider Electric Mr. Marcel Hochet. The workshop attracted over 127 participants drawn from government, NGOs, CBOs, community members, students and the media. The Workshop featured goodwill messages from policy makers, paper presentation and documentaries. The workshop was organized by the Community Research and Development Centre (CREDC) with support from the Edo State Government, United Nations Development Programme (UNDP) and Global Environment Facility Small Grant Programme (GEF SGP).

Welcome Speech by the Executive Director

Addressing participants at the workshop, the Executive Director of CREDC Mr. Etiosa Uyigue said the workshop was organized to appraise the impact that has been made following the completion of the Odighi Solar Project. According to him, about 40 households in Odighi Community now has access to electricity and 50 youths have been trained as Solar technicians who can now install and maintain solar home systems. He said the project was part of the PREEEN Project (Promoting Renewable Energy and Energy Efficiency in Nigeria) lunched in 2006 with the objective of providing access to electricity to 10 million Nigerians using Renewable Energy Technology.

Mr. Etiosa Uyigue Addressing Workshop Participants

Mr. Etiosa thanked the UNDP and the GEF-Small Grant Program for their support and also thanked Schneider Electric for the role they played during the execution of the odighi Project. He assured the Edo state government of CREDC continuous commitment to ensuring that other communities in the state have access to electricity using solar technology.

Goodwill Message by the Honorable Commissioner for Information

The Edo State Commissioner for Information and Orientation Mr. Luis Odion was unavoidably absent but was ably represented by the Director of Community Development Mr. Femi Okhuo. The message from the commissioner was delivered as follows;

Mr. Femi Isaac Okhuo Delivering a speech

"It is my pleasure to be in your midst this morning to deliver this keynote address as the special guest of honors at the opening ceremony of a day appraisal workshop on "providing access to electricity in Odighi community, Ovia North-East Local Government Area of the state, using solar photovoltaic system". I thank the founders of Community Research and Development Centre who are the organizers of this workshop for their initiative in renewable energy to providing electricity to a rural community like Odighi. This Bottom-Top grass root approach is highly commendable and I hope our communities especially those in the rural areas will benefit immensely from this pilot scheme on renewable energy in Odighi community.

The main of this workshop is to appraise the level of effectiveness of the solar photovoltaic renewable energy providing for Odighi by community research and development centre in collaboration with UNDP-GEF small grant programmed. It is also to create awareness among the citizenry on the use of renewable energy in proving clean access and at the same time ensuring the effective preservation of our environment. The importance of this assessment workshop on the effective management of

renewable energy need not be over emphasized as we cannot continue to entirely rely on PHCN as our only source of power supply. There is therefore the need to diversify our sources of energy for renewable energy. Among other inherent benefits in this initiatives of renewable energy over the conventional electricity includes: appropriateness in remotely located communities with difficult terrains where electricity poles cannot be easily installed, cost effectiveness, less hazardous, reduces the health burden of energy use and above all, it is more stable due to increasing availability of energy services.

Others are efficiency in energy production, distribution and greater local control resources and broader energy sources. Although, many past renewable energy programmers have not succeeded due mainly to technological know-how. However, globalization and the emerging new world order have brought about enhancement in technologies that has improved performance on renewable energy in recent times. These technologies include the use of wind, solar power and the use of biomass.

I sincerely feel that we should avoid white elephant investments that are highly expensive and inefficient but rather concentrate more on less costly and less environmentally damaging strategies and more efficient renewable sources of energy. Researchers have demonstrated that developing countries can meet their energy requirement at a much lower financial cost and less environmental hazards through a shift to energy efficiency in renewable technologies. Therefore, our energy policy should be flexible and it should be included in the concurrent list of our constitution so that states and local Government can generate, transmit and distribute energy. The followings are required for sustainable energy in the country:

(i) Increasing availability of energy service to provide improved standard of living.

(ii) Reduce the health burden of current energy production and consumption pattern.

(iii) Cutting the environmental damage caused by energy use, including the rate of global warming to the level that does not exceed the ability of ecosystems to adjust

(iv) And reversing the rising financial and economic cost of current energy investment and use pattern.

Assessing the Nigerian energy use based on the above criteria is grossly inadequate and unstable. Meanwhile, the technology, institutional management and resources exist to provide energy services required for improved quality of life to more people at lower environmental and financial cost. Innovation in some developing countries has demonstrated that this is achievable. There is widespread recognition that the inefficiency of energy use in developing countries imposes enormous financial and environmental costs. As a nation, we must realize that services which require energy use are critical to improving quality of life, enabling economic and industrial growth and encouraging development. These services can be achieved using either much or little energy depending on efficiency at use. We have spent billions of Naira in building power plant to generate electricity without achieving the intended goal. Yet only a fraction of this huge amount would be required for renewable energy in Nigeria.

I therefore use this occasion to call on other NGO's in the state to continue to assist communities in order to complement the developmental efforts of the state government. My Ministry will give the necessary support to your foundation. Finally, I am calling on all well-meaning Nigerians and corporate organizations to effectively participate in this laudable initiative by contributing effectively

in cash and kind to support the objective of the Community Research and Development Centre to ensure success in renewable energy in Nigeria.

Once again, I welcome you all and wish you a fruitful conversation in this workshop.

Thank you and God bless"

Participants at the Workshop

Crossection of Workshop Participants

Goodwill Message by the Country President of Schneider Electric Nigeria

In his speech, Mr. Marcel Hochet said he was very happy with what CREDC has been able to achieve in Odighi Community by successfully deploying the solar home systems also known as the In-Diya and promised that Schneider Electric was ready to sustain and strengthening the existing relationship between them and CREDC. He said that as stakeholders in the energy sector they are ready to also partner any other agencies or government initiatives which shares similar vision with them.

Mr.Marcel Hochet Speaking

Mr. Marcel Hochet also used the occasion to talk about what Schneider Electric are into. According to him, Schneider is aware that so many rural communities in Nigeria do not have access to the electricity grid. Consequently they have developed renewable energy solutions which do not require grid access and which generate power without impacting the environment negatively. Amongst these solution includes the Villasol, In-Diya and the Water Pump solution; water of the Sun.

Three Schneider Staff dressed in Black Suit amonst Participants

Goodwill Message by the Honorable Commissioner for Environment

The Edo State Commisioner for Environment and Public Utilities Prince Clem Agba was represented by the Director of Forestry Regeneration and Conservation Barr. J.G Akhimien. In his good will message to the participants, Barr. Akhiemen said the initiative taken by CREDC to provide Energy access to Odighi Communiuty is very laudable.

Barr.J.G. Akhimien Speaking

According to the Commissioner, some major roads in benin like Akpapava Road is now been powered by solar street light which shows that the State Government is ready to embrace projects and programs that are environmentally friendly. The commissioner who also used the opportunity to address environment issues since the workshop was held to mark the world environment day , told the people of Odighi to ensure that their forest is preserved. He noted that in the past, Odighi Community was formerly heavily forested but because of man-made activities, the forest has been destroyed but however advice the people not to mortgage their future because of present gains.

TECHNICAL SECTION

Documentary

Before the paper presentation, there was a 15 minutes Documentary which was shown to the viewing of participants present at the workshop. The documentary captured the interview of the the Community Head Pa R.O. Amayo, the oldest man in the community Pa Uyi Solomon Osaremwindamwen, the community youth leader Mr.Osadolor Erabor and also Mr. Osas osazuwa who was the focal contact to the community during the project. They all spoke positively about the project and beged for more solar systems to be installed so that others who don't have will benefit. Mrs. Dorris Orikhi and Mrs. Queen Ogunbadejor and Mrs. Egbe were full of praise for the project as

it has help boost their business daily sales. Also there were comments from two of the trained youths Kehinde Oleye and Ogbebor osayende who are now solar technicians.

Paper Presentation

The technical paper was presented by Mr. Olumide Fatoki of Schneider Electric on the Innovative Solution for access to Energy for residential and light industrial applications. He said that Nigeria is facing a great energy crisis and if care is not taken can lead the country's economy to a total collapse. He cited the publication made by one of the Nigeria dailies that about a total of 23.73 million households, out of the 28.9 million in the country, do not have access to the national electricity grid. He continued by saying that one of the ways to solving the energy problem in the country is the use of renewable energy technologies like the Villasol and the In-Diya.

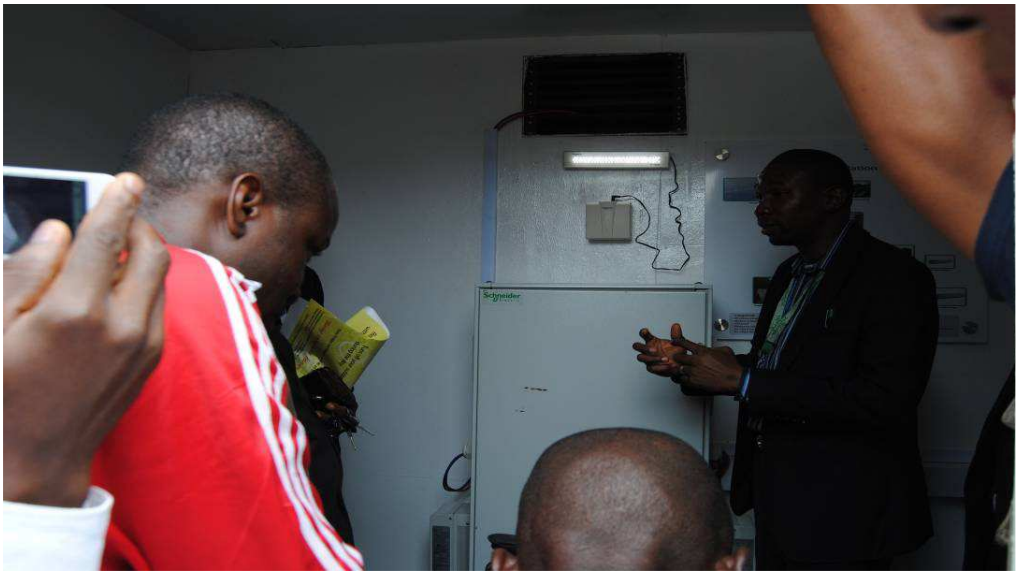
Mr. Olumide Fatoki during his Presentation

Mr. Olumide said Schneider have successfully install the Villasol in one of the communities in Kwara State and that they are willing to partner with governemnets at all level to use their varous renewable energy technologies to provide energy access to communities not connected to the grid.

SECTION TWO

Villadol Exibition

After the group photograph, the Edo state commissioners present at the occasion and other participants were taken to the exibition site where the Villasol(The Mini Off-Grid Plant) has been set up. The Villasol was made up of componets like the solar panel, batteries, charge controllers e.t.c. The instructor Mr. olumide Fatoki demonstrated how the Villasol is used in electricity generation and how it can be used to power housedhold appliances ranging from fans, Tv set to other mini industrial machines.



Inside the Villasol during the Exhibition

Group Photo with the Commissioners,Schneider Team and CREDC Team

SECTION THREE

Feedback from the Community

The particpants reconvined after the exhibition to take part in the feedback section. This section of the workshop presented the Odighi people who were present at the workshop to formally meet with CREDC team the implemeters of the project and the technology provider for the project, Schneider Electric.

Amongst those who spoke at this section were the youth leader Mr. Osadolor Erabor, the community spokes man, Mr.Friday Oduware and the Representative of the Community head, Pa. Pius. In their varous remarks, the community youth leader Mr. Osadolor Erabor commended CREDC for bringing the project to the community and said that since it came, the solar project has been very reliable. Also speaking at the ocassion, Mr. Friday oduware thanked the Director of CREDC as well as the partners and sponsors of the Odighi project. According to him, the project has really save the Odighi people from the dangers of using diesel or fuel generators as well as kerosene lamps and candles sticks. He also added that Nigerians should embrace this solar technology and forget PHCN which is unreliable. The representative of the community head, Pa. Pius also thanked CREDC for a job well done in the community and pleaded that the project should be made to reach more people instead of the 40 households that have benefited.

Question and Answer Segment

Later there was time to entertain some questions regarding the project from the Community people.

Question: *How can we get the Villasol from this project? ……. Odighi Community*

Answer*: The villasol was not part of this project which was supported by the UNDP/GEF-Small Grant Programmme. However we will source for another funding opportunity to implement it in your community if you want it…….. CREDC*

Question: *What will be done if any part of the Solar system develops Factory fault or error? ... Odighi Community*

Answer: *It will be replaced after it has been established that it was a factory fault……. Schneider Electric*

Question: *When are we receiving our certificate of training? ……. Odighi Youths*

Answer: *We will bring it to you in the community when it is ready. ……. CREDC*

LESSONS LEARNT

The project was implemeted successfully using the various activities as stated in the project document. However during the implementation process, some lessons were learnt and they are as follows;

1. Technology Transfer: We notice that after the training of the solar technicians, only few of them participated actively during the installation process while the others though they were part of the training, did not take the exercise serious but rather went about their farming activities.
Lesson Learnt: We will have to be conducting our own screening even after the list have been submitted to us by the community to ascertain the number of youths who will be willing and passionate about becoming a solar technician.

2. Information Dissemination: We notice that virtually all the stakeholders that were invited for the inception workshop at the beginning of the project were also present at the Appraisal workshop to mark the end of the project and both workshops were to disseminate information about the project and how renewable energy can be used to preserve the environment.
Lesson Learnt: in subsequent project, only the Appraisal workshop will be necessary. The message is well understood by the target audience when they see the evidence of what has been done. This also gives them the opportunity to personally appraise the impact it has made on the people and also to avoid inviting stakeholders twice for the same project.

CONCLUSION

The Project ; “Access to Electricity in Odighi Community of Edo State using Photovoltaic” is part of the Community Research and Development Centre (CREDC)’s renewable energy initiative called PREEEN (Promoting Renewable Energy and Energy Efficiency in Nigeria) which was launched in 2006. Through this initiative, CREDC has a goal of providing energy access to 10million Nigerians using Renewable Energy Technology which is purely environmental friendly.

Haven accepted the reality of the energy crises currently been faced by Nigeria and the environmental challenges that the world at large is currently coping with in terms of climate change, the only real and sustainable energy source that can address these issues is renewable energy . We are very grateful to the UNDP/GEF-Small Grant Program for the support we received in executing this project and hope to collaborate in other projects in the near future.

APPENDIX 1

The Names of the First Twenty (20) Beneficiaries of the Photo Voltaic systems installed at Odighi Community, Ovia North East, Edo State

1. Prince Godwin Akenzua
2. Pa. R.O. Amanyo
3. Pa. Esewi
4. USA
5. Mr. Osazuwa
6. Osadolor Erabor
7. Mr. P Olaye
8. Mr. L. Imafidon
9. G. I Uwughiaren
10. Brown Osayende
11. Erabor Agbons
12. Mr. ojo
13. E.P Omozusi
14. Mrs. Imaria
15. Olaye Samson
16. J. Ekhurose
17. Mr. Amadasun
18. Ammom Eghianruwa
19. Mr. F. Olaye
20. Sunday osasuyi

APPENDIX 2

The Names of the Second Twenty (20) Beneficiaries of the Photo Voltaic systems installed at Odighi Community, Ovia North East, Edo State

1. Emmanuel Igiebase
2. Monday Asenoguan
3. Edwin Oyomarhe
4. Mrs. Omolade
5. Dominic Umeh
6. Mrs. Osifo
7. Friday Oduware
8. Mrs. Christy Omokaro
9. Donatus Iginneh
10. Samuel Ologbosere
11. Jatto Efe Sunday
12. Mrs. Osatohanmwen igbinevbo
13. David uwoghiren
14. Mrs. oriki
15. Ojo igbinoba
16. Mrs. Queen Ogunbadejor
17. Mrs. Omosede Igbinevbo
18. Osagie Ekomwenrenren
19. Ogbemudia Idemudia
20. Uwadiae Adegue

APPENDIX 3

PROGRAM OF EVENT

A One Day Appraisal Workshop organized by the Community Research and Development Centre (CREDC) with support from UNDP/GEF-Small Grant Programme
5th June, 2012 at Bishop Kelley Pastoral Centre, Benin City

10:30-11:00am	Arrival/Registration of Guest
11:00-11:10am	Introduction of Guest
11:10-11:30am	Welcome Speech-**Mr. Etiosa Uyigue** *(Executive Director CREDC)*
	Goodwill Messages by;
11:30-11:35am	**Mr. Marcel** *(Country President-Schneider Electric Nigeria)*
11:35-11:40am	**Hon. Sunny Osazemwinde** *(Rep. Ovia North-East Constituency 1) EDHA*
11:40-11:45am	**Honorable Chairman** *(Ovia North-East L.G.A)*
11:45-11:50am	**Mr. Luis Odion** *(Commissioner for Information and Orientation)*
11:50-12:05pm	Documentary on Odighi Project
12:05-12:20pm	Vilasol Presentation
	Workshop Opening Declaration by
12:20-12:25pm	**Prince Clem Agba** *(Commissioner for Environment and Public Utilities)*
12:25-12:30pm	Group Photograph
12:30-12:40pm	Exhibition/Tour of Vilasol
12:40-12:50pm	Feedback from Odighi Community
12:50-1:00pm	Refreshment/Vote of Thanks/Departure

APPENDIX 4

Workshop Attendant List

S/N	NAME	SEX	ORGANISATION & ADDRESS	PHONE NO.	E-MAIL
1	Osazee Edevbaro	M	Student	07036727769	pp_benson@yahoo.co.uk
2	Mrs. T. Edevbaro	F	Business woman	08037071226	
3	Blessing Idahosa	F	Student	08160778930	
4	Salem S. Tokulah	M	St. Patrick's Catholic Church, Ugbowo	08181479552	
5	Elijah Iheoma	M	Student	08153818950	
6	Victoria Imadeh	F	Business woman	08074135774	
7	Uyigue Cecilia	F	Business Woman	08137966927	
8	Olewuike Daniel	M	Africa Network for Environment and Economic Justice (ANEEJ)	07030733434	daniel@aneej.org
9	Uyigue Osaigbovo	M	Student	08162681206	
10	Mrs. Ehis Osifo	F	Business woman	07038819714	
11	Eunice Ighodaro	F	Business woman	08071386281	
12	Uyigue Osasumwen	M	Student	08070613517	
13	Uyigue Lincoln	M	Community Research & Development Centre	08056434148	

			(CREDC)		
14	Emakhu Dariw	M	Student	07052149049	
15	Moses Ojo	M	Student	08074646350	
16	Oni Larry	M	Student	08174919809	
17	Mathew Adeniyi	M	Student	08060748687	
18	Olukoya Sunny	M	Environmental Right Action (ERA)	08058413287	sunnyolukoya@yahoo.com
19	Donald Ero	M	Student	08084014693	
20	Efekomwan Jatto	M	Odighi Community	07036242406	
21	Osato Igbinevbo	M	Odighi Community	08060702779	
22	Osazuwa Osas	M	Odighi Community	08033822124	
23	Oyomare Omoregie	M	Odighi Community	08039568989	
24	Dominic Omeh	M	Odighi Community		
25	Moses Imayu	M	Odighi Community		
26	Dora Oriakhi	F	Odighi Community	08067070279	
27	Omo-Okparaboh Erunu	M	Odighi Community	08030561455	omo_pulcher@yahoo.com
28	Adedej Adewun	M	Ministry of Information	08027221229	
29	Nkechika Anthony	M	Quality Analytical Lab Services (QALS)	08188252194	tonner020@yahoo.com
30	Izekor O. Margaret	F	Quality Analytical Lab Services (QALS)	08038579768	meggizek2000@yahoo.com
31	Abu R. Oluwatosin	F	Quality Analytical Lab Services (QALS)	08057807071	
32	Enogiomwan O. Betty	F	Quality Analytical Lab Services (QALS)	08182334294	osasubetty@yahoo.com
33	Imuagbonhen-Ehol Maris	M	Quality Analytical Lab Services (QALS)	08095026394	
34	Matthew Rita	F	Quality Analytical Lab	07062235965	fmrita985@yahoo.com

	Funmi		Services (QALS)		
35	Aiyedun Joy O.	F	Quality Analytical Lab Services (QALS)	08076148317	myjoyfullworld@yahoo.com
36	Ogboriaphien Ava Voke	F	Quality Analytical Lab Services (QALS)	08130328978	vkayrobb@yahoo.com
37	Tricia Okosagha	F	Quality Analytical Lab Services (QALS)	08054306510	tricia@yahoo.com
38	Emmanuel B. Ehikwandu	M	Quality Analytical Lab Services (QALS)	07038972314	
39	Peter Esere	M	Odighi Community	07033667578	
40	Friday Oduware	M	Odighi Community	08060236922	
41	John Uwoghiren	M	Odighi Community	08039140335	
42	Peter Oleye	M	Odighi Community	08062241396	
43	David Uwoghiren	M	Odighi Community	08021124635	
44	Enanel Igiebase	M	Odighi Community	08137365653	
45	Godfrey Ekhorose	M	Odighi Community	08168227389	
46	Queen Ogunbase	F	Odighi Community	08165046278	
47	Osadolor Erhabor	M	Odighi Community	08037119817	
48	Ajayi Zazzy Osato	F	Odighi Community	08136266583	honeysex4real@yahoo.com
49	Marcel Hochet	M	Schneider Electric Nig. Ltd	08035059040	marcel2.hochet@schneider-electric.com
50	Samuel Aigbokhai	M	Schneider Electric Nig. Ltd	08057495620	ohisbaba@yahoo.com
51	Olumide Fatoki	M	Schneider Electric Nig. Ltd	08078191507	olumide.fatoki@schneider-electric.com
52	Edwin Erhunmwen	M		08062948276	
53	Aguebor Stanley	M		08056137498	
54	Aigbighiriase Michael	M	Imade Foundation	08052750232	imadefoundation@yahoo.com
56	Idehen Vincent	M		08038672328	

57	George Igho	M		07052405063	georgeigho@yahoo.com
58	Pst. Kir Daniel Aungwa	M	Faith Immaculate College	07035763456	
59	Olupese Joy	F	Student	08038972314	
60	Helen Olupese	F	Student	08060158099	
61	Ogbebor Osayande	M	Student	08066447250	
62	Nosakhare Osarodion	M	Student	07058141418	eceptionaldion@yahoo.com
63	Esangbedo Osaro Steve	M	Student	08075938400	osy4real2020@yahoo.com
64	Emagbetere Ejiro	M	Student	08168650642	
65	Asemota Osamuyi	M	Student	08038561020	
66	Uwagboe Samson	M	Student	08067494328	
67	Idiave Margaret	F	Student	08067494710	
68	Osaretin Joyce	F	Student	08134427128	
69	Robert Victor Okojie	M	Student	08138820617	
70	Uyigue O. Courage	M	Student	08067931676	courageuyiuyi@yahoo.com
71	Ogbemudia Ernest	M	Student	07067065166	ernestosaretn@gmail.com
72	Enoghama Bright	M	Student	08027448317	uwagboeinfo@yahoo.com
73	Osifo Efosa	M	Student	08060476110	efosaiyams4love2000@yahoo.com
74	Okoro Ewis	M	Student	08164074733	chickenzy40@yahoo.com
75	Eghmeuba Osas	M	Student	08077126474	
76	Eromhonsele Job	M	CPED	08080472801	j.eronmhonsele@cpedng.org
78	Barr. J.G. Akhumien	M	Ministry of Environment & Public Utilities	08060402133	jmgeorge33@yahoo.com
79	Union Endurance	F	Student	07067522343	

80	U. Henrienta	F	Ministry of Information	08027674145	
81	Florence Edogiawere	F	Student	08055301500	
82	Angela	F	Student	08075780635	
83	Odha Vivian	F	Student	08070605666	
84	Okosagha Paula	F	Student	07039109940	
85	Ogbomo J.I.	M	Student	08126939412	
86	Idahosa J.I.	M	Student	08025851946	
87	Glory Ohama	F	Student	0815341858	
88	Williams Onome	F	Student	08060691322	
89	Uyi Emokpae	M	Student	08074896576	
90	Oke Shedrack	M	FGBMFI	08070860209	shedyoke@yahoo.com
91	Uhumuavbi O. Clement	M	IISS Electric	08136442369	santosme10@yahoo.com
92	Osayamen Cyril Okungbowa	M	Green Hedge Resources Int.		
93	Eholor O. Joy	F	Student	08038768482	joyb4real@yahoo.com
94	Osatohamwen Ekhator	F	Student	08055125891	
95	Etoghe Sunday O.	M	Student	08135653262	exboy30@yahoo.com
96	Esegba Grace	F	Student	08062991317	graciourukky@yahoo.com
97	Onotu Oghenekevwe	F	Student	08135048714	
98	Dongo Faith	F	Student		
99	Emmanuel Abel	M	Student	08169887917	
100	Emmanuel B. S.	M	Student	08071095322	
101	Itari Diseph B.	M	Student	08066418291	brightitari@yahoo.com

102	Onosaekpero Eloho Uyoyo	F	Student	07037977706	ellybenchick@yahoo.com
103	Osaretin Mercy	F	Student	08167384989	
104	Enabulele I. Alex	M	Student	08038466031	enabulele.alex@gmail.com
105	One Million Trees for Peace Project	M	Ministry of Environment	08035797017	nigafricapeace@yahoo.com
106	Philomena A.	F	Student	08056514122	
107	Anene N. Blessing	F	Student	08131007906	nkiruane@yahoo.com
108	Benjamin Blessing	M	Student	07035826466	
109	Esther N. Kir	F	Community Research & Development Centre (CREDC)	07031948893	
110	Isioku Ese Lilian	F	Community Research & Development Centre (CREDC)	08064184380	isiokulilian@yahoo.com
111	Anene Nwankego John	M	Student	08066468040	jside2go@yahoo.com
112	Mr. Femi Okunade	M		08183783635	
113	Elizabeth N.A	F	Student		
114	Osazee Paul Uyigue	M	Community Research & Development Centre (CREDC)	08154337139	osazee@credcentre.org
116	Ogbemudia Godfrey Osamuyi	M	Community Research & Development Centre (CREDC)	08063505709	godfrey@credcentre.org
117	Etiosa Uyigue	M	Community Research & Development Centre (CREDC)	08028978877	etiosa@credcentre.org
118	Agharese Edevbaro	F	Community Research & Development Centre (CREDC)	08037532272	ese@credcentre.org
119	Deborah ogbeifun	F	ITV/Radio, Benin City	08034374287	debbieogbeifm@yahoo.com

120	O. Ahimien	M		08056372285	
121	Ajayi Solomon	M	EBS	08059044441	
122	Isaac Olamikan	M	National Waves	08062086244	skyblueoloriebi19@gmail.com
123	Robert Ogbebor	M	EBS	08027909377	robert.ogbebor2yahoo.com
124	James Azama	M	Punch Newspaper	08028641484	azaman@yahoo.com
125	Kunle Kaleyaye	M	Vanguard Newspaper	08020709760	kunzee2030@yahoo.com
126	Edosa Okunbo	M	Midwest Herald	08059122333	edosawest14@yahoo.com
127	Ann Ezeh	F	Schneider electric		