



Report of Project Inception Workshop

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

Community Research and Development Centre

March 2011

***The report of the Inception Workshop for the Project
“Access to Electricity in Odighi Community in Edo State Using Photo Voltaic”
held at Bishop Kelly Pastoral Centre, Benin City, Edo State, Nigeria
22nd March, 2011***

***This workshop was made possible through the support of the Edo State
Government, United Nations Development Programme, Global Environment
Facility Small Grant Programme, Global Greengrants Fund, Environmental Rights
Action/Friends of the Earth Nigeria and Sustainable Energy Europe Campaign***



This report was made possible through the efforts of the CREDC Team: **Etiosa Uyigüe, Golden O. Okungbowa, Osamuyi G. Ogbemudia, Osazee P. Uyigüe and Agatha Osajiele**

Edited by: **Etiosa Uyigüe**

Copyright © Community Research and Development Centre, 2011

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

All or part of this publication can be reproduced without prior authorization. However, the Community Research and Development Centre (CREDC) should be credited.



TABLE OF CONTENTS

Acknowledgements	5
Acronyms	6
Background	7
Executive Summary	9
Session one: Pre Workshop Visits to Edo State Policy Makers	10
Session Two: Inception Workshop	12
Session Three: Training of Community Members	25
Appendix 1: Workshop Programme	26
Appendix 2: List of Participants	27

ACKNOWLEDGEMENTS

First, we remain grateful to the Almighty God for giving us good health and strength to embark on this project. The Community Research and Development Centre deeply appreciate the support of the United Nations Development Programme (UNDP), Global Environment Facility Small Grant Programme (GEF SGP) and the Global Greengrants Fund. The support of the Edo State Government, the Environmental Rights Action/Friends of the Earth Nigeria (ERA/FoEN) and Sustainable Energy Europe Campaign is greatly appreciated. Special thanks go to the Executive Governor of Edo State, Comrade Adams Oshiomhole for his support to ensure the success of the workshop. The Edo State Commissioner of Information and Orientation, Anselm Ojezua and the Commissioner for Energy and Water Resources, Didi Adodo are appreciated for all their supports. Our deep appreciation goes to Rev. Nnimmo Bassey, the Executive Director of ERA/FoEN for his encouragement and support.

Worthy of appreciation is the relentless effort of Mrs. Ibronke Olubamise, the National Coordinator of the GEF Small Grant Programme. All her efforts to ensure the success of this workshop are greatly appreciated. The efforts of Mrs. Halima Kolo Mohamed, the GEF Desk Officer, Federal Ministry of Environment are greatly appreciated. We appreciate the effort of members of Odighi Community for all their inputs and cooperation. All members of staff of CREDC are appreciated for all their time and the energy expended to ensure the success of this conference. To all our participants during the conference we say thank you for all your time, energy and ideas. The Management and staff of Bishop Kelly Pastoral Centre are appreciated for all their support.

ACRONYMS

CBOs	Community-based Organizations
CREDC	Community Research and Development Programme
ERA/FoEN	Environmental Rights Action/Friends of the Earth Nigeria
GEF	Global Environment Facility
GGF	Global Greengrants Fund
KV	Kilovolts
MW	Mega Watts
NGO	Non-governmental Organization
PHCN	Power Holding Company of Nigeria
PREEEN	Promoting Renewable Energy and Energy Efficiency in Nigeria
RETs	Renewable Energy Technologies
SGP	Small Grant Programme
UNDP	United Nations Development Programme
PV	Photo Voltaic

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 is being 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. The inception workshop for the project held on the 22nd March, 2011 in Benin City, the Edo State capital. It was organized to achieve the

second and third objectives of the project - to create awareness on renewable energy among policy makers in Edo State and also to train the first set of community members on the installation and maintenance of photo voltaic.

EXECUTIVE SUMMARY

The project “Access to Electricity in Odighi Community in Edo State Using Photo Voltaic” is being implemented by the Community Research and Development Centre (CREDC) as part of the PREEEN Project. It is being implemented with support from the Edo State Government, the United Nations Development Programme (UNDP), the Global Environment Facility Small Grant Programme (GEF SGP), Global Greengrants Fund (GGF), Environmental Rights Action/Friends of the Earth Nigeria (FoEN) and the Sustainable Energy Europe Campaign. The Inception Workshop of the project held at the Bishop Kelly Pastoral Centre, Airport Road, Benin City on the 22nd March, 2011.

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.

The Special Guest at the workshop was the Executive Governor of Edo State, Comrade Adams Oshiomhole. The Governor was represented by the Edo State Commissioner for Energy and Water Resource, Comrade Didi Adodo. Also present at the Workshop was the Edo State Commissioner for Information and Orientation, Bar. Anselm Ojezua who was represented by the Director of Community Development of the Ministry, Rev. Solomon Ohonba.

In the address delivered by the Edo State Governor, he expressed satisfaction and happiness over the initiative of the CREDC to embark on the Odighi Project. He said that the project 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. He commended the CREDC for their initiative on alternative energy. The Governor highlighted on-going rural electrification projects being embark upon by his government. He called on the CREDC to assist the State Government to educate citizen on the importance of developing the appropriate attitude on the use of electricity. On the goodwill message delivered by the Commissioner for Information and Orientation, he commended the CREDC for the project and pledged to assist in the area of giving adequate publicity to the project.

Before the inception workshop, the CREDC Team visited key policy makers in Edo State on the 15th March, 2011. They include the Commissioner for Energy and Water Resources and the Commissioner for Information and Orientation. The visits were made to intimate 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.

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, who physically demonstrated with a set of PV. The trainees were trained using the do-it-yourself approach.

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 (PREEN)" being implemented by CREDC.

Mr. Uyigue told the Commissioner that CREDC commenced the PREEN 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 PREEN Project has two components - the Advocacy Component and the Direct Implementation Component. On the PREEN 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 PREEN Project. In the PREEN 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 PREEN 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. Uyigwe 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 Uyigwe 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 workshop

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 and
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 PASTORAL CENTRE, 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 socio-economic 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 Ugun 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 socio-economic 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.



APPENDIX 1: WORKSHOP PROGRAMME

PROGRAMME OF EVENTS

Opening Activities

10:00-10:30	Arrival/Registration of Participants
10:30-10:45	Arrival of Dignitaries
10:45-11:00	Introduction of Special Guests
11:00-10:15	Welcome Remarks, Etiosa Uyigue the Executive Director of Community Research & Development Centre (CREDC)
11:15-11:45	Goodwill Messages/Speeches Honourable Speaker, Edo State House of Assembly Commissioner for Information and Orientation Commissioner for Energy and Water Resources Commissioner for Environment Honourable Member Representing Ovia North East Chairman of Ovia North-East L.G.A National Coordinator, UNDP/GEF Small Grant Programme
11:45-12:05	Lecture: The Irony of Energy Crisis in Rural Communities in Nigeria in an Era of Renewable Energy Technologies (RETs)
12:05-12:10	Project Work plan/Timeline
12:10-12:15	Presentation of Awards/Gifts by Prof. A. E. Ogbeibu, Chairman Board of Trustees, CREDC
12:15-12:30	Opening Address by His Excellency, Comrade Adams Oshiomhole , the Executive Governor of Edo State
12:30-12:35	Vote of Thanks
12:35-12:45	Group Photograph
12:45-1:00	Refreshment
<u>Training Session</u>	
1:00-2:30	Installation and Maintenance of Photo Voltaic Systems by Valentine Eku

APPENDIX 2: LIST OF PARTICIPANTS

S/N	NAME	ORGANISATION/ADDRESS	PHONE NO	EMAIL
1	Etiosa Uyigue	CREDC	07039405619	etiosa@credcentre.org
2	Osajiele Agatha	"	07060597771	mails2agatha@yahoo.com
3	Tosin Obiuwevbi	"	08069733434	luvlywhispers@yahoo.com
4	Ajufoh Amanda	Action for Community Development	08033479893	actionforcd@yahoo.com
5	Emovon Osafumwen	Society for women and Aids in Africa	08038962747	swaanedo@yahoo.com
6	Harry Abolo	-	08034892559	harrybolo@yahoo.com
7	Johnson Uyigue	HIRETT	08036997871	-
8	Aibangbe Uyi	Auchi Poly	08063622288	-
9	Okungbowa Golden	CREDC	08038490387	osegloden@hahoo.com
10	Uyigue Osazee Paul	"	07040543475	osazee@credcentre.org
11	Eku Valentine	SE-Solar Co.	07036524201	eku.sesolar@gmail.com
12	Ikponmwosa Ugiagbe	ITV-RADIO BENIN	08058850965	eumk2000@yahoo.com
13	Iyengunmwena M.A	Health & Environ. Dev. Initiative	08038134168	hediorg.2010@yahoo.com
14	Jimoh Osazeme P.	Eagles Foundation	08066315038	eaglesfd@yahoo.com
15	Osamuyi Uhunamure	FORTRESS	08052127754	osamuyiinchrist@yahoo.com
16	Robert Ogbebor	EBS	08027909377	robnozabbr@yahoo.com
17	Mr. Andrew E.	Initiative for Comm. Development	08030556836	info@icdngo.org
18	DCN Omozopia Tony	The Correspondent	08072235778	omozokpiatony@yahoo.com
19	Engr. Eloefe	Initiative for Comm. Development	08063926513	colline4bch@yahoo.com
20	Williams Eosemwegie	Blue Beacon Initiative Africa	08075833613	bluebeacon-initiative@yahoo.co.uk
21	Matthew Agho	CREDC	08070718092	matthew@credcentre.org
22	Adetayo Jonathan	Deliso Multipurpose Company	07051187111	
23	Ebinum Charles	Koyenum Immalah Foundation	08064330940	kifgendev@yahoo.com
24	Ohima Daniel	12 Ibizugbe str.	07032452945	danielohimai@yahoo.com
25	Enaburekhan Faith	FRRRAG AGENCY	08033568312	osenab@yahoo.com
26	Obayuwana Joy	Funming	08033790275	-
27	Martha Ese			-
28	Marcus Obamina	Wealthgate Consultants Nig	08037190456	macswealth@yahoo.com
29	Olaye Kehinde O.	Odighi Community	08167412024	kennylogers@gmail.com
30	Mr. Efekomowan Sunday	"	07036242406	-
31	Evans Ogboe	ITV B/City	08056733424	-
32	Okonta Emeka	Asaba post News-wire	07063557099	asabapost@gmail.com
33	Anene O. Mercy	No 5,Obaseki Str,B/City	08138903558	-
34	Osajiele Lawrenta Itohan	Ambrose Ali University	08076706385	-
35	Oke Shedrack Ufuoma	FGBMFI	08070860209	okeufosky@yahoo.com
36	Ediale Johnson	Africa Petroleum	08053899080	jahmom2cate@yahoo.co.uk
37	Francis O.	Daily Independent	08039940620	-
38	Efeyinwa Efelokwu	IRRRAG	08038004572	-
39	Itohan Obanor	FUNMING	07052219755	-
40	Omozee Stalle	"	08097521002	-
41	Caro Upkowana	FUNWIP	08074420603	-
42	Eunice Orupke	"	07055679160	-
43	Uzema Eddy	"	08088077030	-

44	Oladipo Faith	"	07041545101	-
45	Mabel Nosakhare	"	08050862471	-
46	Obinyan Cosmas	Help encourage person with HIV/AIDS	08052183232	-
47	Ekhatior Timothy	Odighi Community	08138049623	-
48	Emezue Stella	RUPADI	08051294470	-
49	Aghedo Promise	PEDANET	08053556256	edopromise4jesus@yahoo.com
50	Egalase Akpomiemie O. A.	1 Egalase Av. Off BTC Rd, B/City	08038836519	akpgalaxy@live.com
51	Ns Lucy Dauad	FUNMING	08053285096	-
52	Mrs Helen Igri	"	08053166859	-
53	Mrs Omoruyi Abiodun	"	07053115728	-
54	Carol Obasuyi	"	08077542201	-
55	Mario Osasumwen	5 Nova Road Ugbowo	08070613517	-
56	Ehiagwina Daniel	1 Osifoh str. Agbor road B/City	08036227165	-
57	Osaro Ogbebor	Odighi Community	08066447250	-
58	Idemudia Kunle	"	08036368808	-
59	Erabor Mark	REHANCE NEWSPAPER	08034945959	-
60	Nosa Eghianruwe	Ovia North East L.G.A. Council	08095608851	-
61	Rosely Dauda	FUNWIP	07035217433	-
62	Josphine Ogbe	"	07053882265	-
63	Dolly Omoruyi	"	07033225727	-
64	Iyobosa Dauda	"	07058467618	-
65	Ogbede Helen	"	08072470582	-
66	Idehen Vincent	Odighi Community	08038672328	-
67	Egbrumi	"	08069381896	-
68	Umokoro Happy	No 7, 3rd Owegie str B/City	08065292102	-
69	Ogbemudia O. Godfrey	CREDC	08063505709	godfrey@credcentre.org
70	Osazuwa Osarumen	Odighi Community	08033822124	-
71	Uhuegho Hin	Min. of information & Orientation	08027674145	-
72	Rev S. O. Ohonba	Dept. of Community Dev. B/City	08059267960	-
73	Com. Ben inzugbe	Min. of information & Orientation	08023280599	billto2great@yahoo.com
74	Ugochukwu Georgeline	University of Benin	07064202371	japhet1luv@yahoo.com
75	Osagie Efe Japhet	Businessman	08052067099	j4realpopmail@yahoo.com
76	Mr Idahosa Junior	Benin traditional council	08025851946	-
77	Mr Osaigbon	No 5, Nova Road B/City	07025134834	-
78	Uyi F. Omosefe	NUJ	08038791648	-
79	Mrs Kate Aiyeye	Trader	07058999234	-
80	Enabulele I. Endurance	student AAU	07039112738	eddytheprof@yahoo.com
81	Elizabeth Iguma	No 18 Obasagboba	07035567447	-
82	Rita Ehiogie	Oaghe No 3 off Saint Saviour Rd	08075260402	-
83	Ogunmwonyi Nosakhare	Housing & Enterprise Foundation	08055846637	arconstruct1@yahoo.com
84	Barr. Alakwe Mbanefo	Ehima Chambers 19 Forestry Rd	08036666852	tultra2000@yahho.com
85	Omorodion O. Williams	Benin traditional council	08060691322	onome4success@yahoo.com

86	Micheal A.E	No 2 Borehole str	08037499208	m-aireloena@yahoo.com
87	Ikhayere Mark	No 6 Osagie str Igue-iyeha	08066290277	markyere09@yahoo.com
88	Idehen Esther	No 6 Osagie Odighi		-
89	Joy Esimiehe	No 6 Osagie Odighi		-
90	Osuide E. Emmanuel	1, Ighomo-Aihie str	07031636566	emma-eronns@yahoo.com
91	Osamudiamen Taiwo	Akenwan road	08055266020	-
92	Omhonriawo P.G.O	30 Ist East Circular road B/City	07035789973	-
93	Aibangbee Amos	-	08062362743	lalaamos4all@yahoo.com
94	Etuwewe Gbemi	Swaan Uselu Lagos road	07038229319	-
95	Patricia A.Ossai	Swaan Edo State	07025595586	hallabuddy@yahoo.com
96	Agbongiator Benard	AMAID	08074899220	
97	Issac Olanikan	Niger Delta Standard	08062086244	olanikan2000@yahoo.com
98	Ubaka Emeka	PEDANET	08028262702	pedanet@yahoo.com
99	Ubrei Joe	SEAN	08063894925	sea-nq@yahoo.com
100	Kir Daniel Aungwa	No 2, off Obayuwana str, B/City	07035763456	-
101	Princess F.Usiobaifo	FUNWIP	08023736426	-
102	Osamuyi Esther	Igbiyoko	08074310750	-
103	Adesina O.Sandra	Compassion Initiative for Dev.	08182242809	-
104	Osagiede Charles	215 2nd East Circular Rd, B/C	07033225755	-
105	Oyehi Martins	80B Aerodrome close B/C	08059518257	-
106	Tom Aneni	Sustainable Environ. Dev. Initiative	08055514010	tomaneni1@yahoo.com
107	Abu Bello	Benin Owena River Basin Dev. Authority	08053012493	-
108	Etuwewe V. N.	Society for women and Aids (SWAAN)	08078550976	-
109	Emoduefe	Life above Poverty Organisation	08063025391	-
110	Clark Frank	50 Uwasota str. B/C	08062375719	-
111	Charity Ogbemor	50Urubi str. B/C	07061989320	-
112	Faith Victor		0805413280	-
113	Oboh Oreva	The Balm Initiative	08073930479	thebalmintiative2004@yahoo.com
114	Gab E.	VANGUARD	08025687543	gabenos@yahoo.com
115	Anthony Elimhiaga	Com. Health Foundation	08036998846	-
116	Igbofako Nowinta	C. D.H.R.	08078703947	nowinta16@yahoo.com
117	Abolade Adeyemi	D. F. F. D	08054834326	-
118	Julie Osunde	FUNWIP	08056179422	-
119	Joy Osazuwa	Imayo str. Oghidi Comm.	08050909112	-
120	Osaikhuwomwan L.Nekpen	No 1 Okan str. Ugbowo	07067128872	-
121	Hon. Osayande Okungbowa	Ovia North East L.G.A. Council	08028779481	-
122	Aigbighiriase Micheal	Imade Foundation	08032750232	
123	Ezeadah Uche	Observer Newspaper	08063705072	uezeada@yahoo.com
124	Okundaye Josephine	ASWHAN 2nd East Cir. Rd B/C	08073600825	-
125	Odili Margaret Ose	Ekhartor street, Ekosodin	07067587069	-
126	Osuoha Dennis K.	University of Benin	08069721253	b2kdok@yahoo.com
127	Hon Mrs.Florence Gbinigie E.		Forum of Nig. Women in Politic FONWIP	08034922410
128	Hon. Asijie Victoria	Owan West Local Govt. Area	08036199064	-

129	Etuweh O. Sandra	Ekosodin	07032395766	-
130	Ochiagha Victor	University of Benin	08160560236	vbufor@yahoo.com
131	Erhwnmwense A. I	University of Benin	07064648461	amadiimarhiagbe@yahoo.com
132	Ogieseri Anthony	Ekosodin	08034496957	-
133	Ebose Matthew	University of Benin	08030432753	-
134	Onovughe Andrew	University of Benin	08038631746	-
135	Okpobrisi Eloho	University of Benin	08160189635	-
136	Isiwele Miracle	University of Benin	08033548969	-
137	Erhunmwunse Itohan	-	08073413708	-
138	Ojomor Beauty	-	08060384763	-
139	Ogbemudia Ernest	-	07067065166	-
140	Asemota O. Evans	-	08034553377	asemotaevans@yahoo.com
141	Anene N. Blessing	No 5, Obaseki Str. Evbuomore B/C	07081362571	nkirukab@yahoo.com
142	Anene N. Esther	"	07031948893	esthluvkd@yahoo.com