

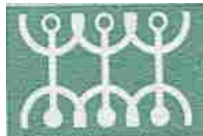
PROMOTING RENEWABLE ENERGY
AND ENERGY EFFICIENCY IN
NIGERIA

*The Report of a one-day Conference which Held at the University
of Calabar Hotel and Conference Centre
21st November 2007*

The Conference was convened by the Community Research and Development Centre (CREDC) with financial support from the Global Greengrants Fund and the Environmental Rights Action/Friends of the Earth Nigeria



GGF



ERA/FoEN



CREDC

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Many inaccuracies, misquotes and misinterpretation may have occurred in the course of the conference. We apologize for any of such errors that may have occurred.

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The views expressed during the conference proceedings do not imply those of the Global Greengrants Fund and the Environmental Rights Action/Friends of the Earth Nigeria.

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The efforts of Etiosa Uyigue, Matthew Agho and Ms. Agharese Edevbaro of the CREDC are greatly appreciated.

ABBREVIATIONS

CDM	Clean Development Mechanism
CO ₂	Carbon dioxide
CREDC	Community Research and Development Centre
CSOs	Civil society organizations
ECN	Energy Commission of Nigeria
ERA/FoEN	Environmental Rights Action/Friends of the Earth Nigeria
GGF	Global Greengrants Fund
GHGs	Greenhouse gases
HOME	Human Orientation Movement for Environment
IEA	International Energy Agency
IFIs	International Finance Institutions
IPCC	Intergovernmental Panel on Climate Change
LGAs	Local Government Areas
MDGs	Millennium Development Goals
NEEDS	National Economic Empowerment and Development Strategy
NEPA	National Electric Power Authority
NGO	Non-governmental organization
NGOCE	NGO Coalition for the Environment
NIPP	National Integrated Power Project
NNPC	Nigerian National Petroleum Corporation
NNRA	National Nuclear Regulatory Authority
PHCN	Power Holding Company of Nigeria
PREEEN	Promoting Renewable Energy and Energy Efficiency in Nigeria
PWYP	Publish What You Pay
SEPA	Stockholm Environmental Protection Agency
SPDC	Shell Petroleum Development Corporation
UNDP	United Nations Development Programme
UNEP	United Nations Environmental Programme
UNFCCC	United Nations Framework Convention on Climate Change
WAGP	West Africa Gas Pipeline
WAGPCO	West African Gas Pipeline Company

BACKGROUND

Energy is fundamental to all human activities. The existing MDGs cannot be achieved without access to energy. Energy is inevitable for poverty alleviation and the production of goods and services. Globally, more than 1.6 billion people live without access to electricity and 2.4 billion people are without modern energy services for cooking and heating. Majority of the world poor live in Sub-Sahara Africa. Nigeria is the most populous country in Sub-Saharan Africa, nearly one quarter of Sub-Sahara Africa's population and is one of the poorest countries in the world despite the huge resources from crude oil export. An estimated 60-70% of the Nigerian population does not have access to electricity. Energy demand in Nigeria is dominated by fuelwood and women and children are the most affected in the energy crisis.

The project "Promoting Renewable Energy and Energy Efficiency in Nigeria (PREEEN)" was designed to address the energy crisis in Nigeria. The overall goal of the PREEEN project is to increase Nigerians' access to electricity and modern energy services using renewable energy facilities and to promote energy efficiency. The vision of the project is to provide renewable energy facilities to 10 million people in a period of 5-6 years.

The PREEEN project is in two phases – the Advocacy Phase and the Implementation Phase. The Advocacy Phase has the specific objectives to create awareness on renewable energy and energy efficiency in Nigeria; and to develop policies and enhance civil society participation in the development of these policies to foster the development of renewable energy and energy efficiency in Nigeria. The Advocacy Phase will help to create the right policy environment to embark on the Implementation Phase.

Under the Advocacy Phase, three regional conferences and a national conference will be held. So far, two regional conferences have been held, the first took place in Benin City in southern Nigeria on the 18th July 2006 (full report can be downloaded in CREDC website). The second regional conference took place in Calabar on the 21st November, 2007 and the report is being presented in this document. The third regional conference will hold in Kano State, northern Nigeria at the first quarter of 2008.

The implementation Phase will involve the provision of energy services using renewable energy products to members of the Nigerian population using revolving funds. Under the Implementation Phase, the CREDC is expected to provide energy services for 10 million Nigerian in a targeted period of 5-6 years.

The Calabar regional conference was attended by Twenty-eight participants drawn from the government, academics, NGOs, private sectors, student bodies, and the media. The event was an exciting time for the participants, papers were presented by experts, there was robust discussion on the conference issues and resolutions were made.

The challenge is to build a sustainable energy future that simultaneously meets the energy needs of the growing population, enhancing the quality of life of the Nigerian people and addressing environmental concerns especially climate change. So we encourage individuals and organizations that share the objectives of the PREEEN project to join and support us.

EXECUTIVE SUMMARY

Access to energy is fundamental for socio-economic development and for poverty alleviation. A huge development challenge in Nigeria is reaching out to the 60-70% of the Nigerian population that does not have access to electricity and modern energy services. Renewable energy technology is a promising solution to the energy crisis in Nigeria. Renewable energy, apart from being sustainable and inexhaustible, they can be set up in small units and is therefore suitable for community management and ownership. We cannot talk about renewable energy without energy efficiency. To achieve sustainability in the development of renewable energy, it should be promoted along side with energy efficiency.

On the 21st of November, 2007 the Community Research and Development Centre (CREDC) with supported from the Global Greengrants Fund and the Environmental Rights Action/Friends of the Earth Nigeria organized a one-day conference “Promoting Renewable Energy and Energy Efficiency in Nigeria”. The event took place at the University of Calabar Hotel and Conference Centre in Calabar, Cross River State, Nigeria. The conference was attended by Twenty-eight participants drawn from the government, academics, NGOs, private sectors, student bodies, and the media. The event featured paper presentations, discussions and resolutions.

Etiosa Uyigue, the Executive Director of the CREDC in a welcome speech said that the project “Promoting Renewable Energy and Energy Efficiency in Nigeria (PREEEN)” was conceptualized by the CREDC to reach out to the numerous members of the Nigerian population that do not have access to electricity and modern energy services. According to him, the vision of the PREEEN project is to provide renewable energy facilities to 10 million households within a period of 5-6 years through the use of revolving fund. The PREEEN project is designed to address the energy crisis in Nigeria and at the same time contribute to the reduction in the emission of GHGs.

Mr. Uyigue said that to achieve this vision the CREDC needs the right and favorable policy environment to operate, hence that is that is why CREDC is embarking on the current conference which is part of the Advocacy Phase of the project. The specific objectives of the Advocacy Phase of the project are to increase public awareness of renewable energy and energy efficiency and its potential for sustainable development; and to develop policies and enhance civil society participation in the development of these policies to foster the development of renewable energy and energy efficiency in Nigeria.

He said the Advocacy Phase of the project started in 2006 with a conference in Benin City and in the first quarter of 2008, CREDC will be organizing another conference in the northern part of the country. The conferences are being organized to get stakeholders from different parts of the country and build their capacity to advocate for renewable energy and energy efficiency, in preparation for a national forum where the stakeholders will dialogue with policy makers. The national forum is proposed to hold in 2008 in the Federal Capital Territory, Abuja.

Surveyor Efik, the Director of Human Orientation Movement for Environment (HOME) presented the first paper titled “Energy, Development and Climate Change: The Nigerian Considerations”. The paper provides details on climate change risk and vulnerability and development effort so far in Nigeria. The paper drew a link between renewable energy and energy efficiency and climate change and revealed that the issue of climate change

reinforced the need to advocate for renewable energy and energy efficiency. According to him, Nigeria is highly vulnerable to climate change and renewable energy and energy efficiency will help to lessen the risk/vulnerability to climate change.

He said that there is energy poverty in Nigeria irrespective of the enormous energy potential of the country. According to him, to achieve energy efficiency in Nigeria, the flaring of natural gas by the multinational oil companies should cease. He said that efforts to stop gas flaring on the part of the government have been discouraging. According to him, Nigeria flares 75% of her natural gas because of lack of processing facilities and this account for 20% of flared gas worldwide. The flare-out deadline set by the Nigerian government by 2008 is unrealistic because government could not meet up with the financial obligation towards the process. He frowned at the low budgetary allocation to the energy sector by the Nigerian government and advocate for transparency in the extractive industries. He then informed participants of the about-to-inaugurate network called Civil Society Action Network on Climate Change. Concluding, he called on government and the multinational oil companies operating in Nigeria to put an end to gas flaring. He urged that the forum be used as a platform to launch End Gas Flaring Campaign in Nigeria.

Etiosa Uyigüe presented the second paper titled “Renewable Energy and Energy Efficiency and Sustainable Development in Nigeria”. The paper revealed that there are strong links between energy and poverty and that about 60-70% of the people in Nigerian do not have access to electricity and modern energy services. The incidence of poverty in Nigeria is on the increase; about 91% of Nigerians live below \$2 per day. According to him the use of renewable energy sources will reduce over dependency on fossil fuel and moreover, instead of flaring gas in Nigeria, he advocated that the gases be converted to methanol and used as fuel for both domestic and industrial use.

The paper revealed that Nigeria has high potential to harness energy from renewable sources. To achieve sustainability in the development of renewable energy, it should be promoted along side with energy efficiency. Renewable energy and energy efficiency are two components that must be integrated into the energy policy of Nigeria for sustainable energy development. He highlighted the advantages of renewable energy as: 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. 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.

He said that with energy efficiency practices and products, the nation can save over 50% of the present energy consumed. Using energy more efficiently would: reduce electricity bills; leave more energy available to extend energy supply to all parts of the population; increase the efficiency and resilience of the economy – including reduced reliance on oil and thus improve balance of payments; improve industries’ competitiveness internationally; minimize the building of new power stations and thus free up capital for other investments like health and welfare; reduce the negative environmental and human health impacts from energy production and use; and increase employment through interventions. He recommended that Nigeria should develop policies on energy efficiency and integrate them into current energy policies; promote energy efficiency products and practices at the side of end users and energy generation; create awareness on renewable energy and energy efficiency; establish agency to promote the

use of energy efficiency products and ensure energy efficiency practices; develop and adopt energy efficiency technologies; develop appropriate drivers for the implementation of energy efficiency policy

Ms. Omeyemen Lucia Odigie-Emanuel representing **Rev. Nnimmo Bassey** the Executive Director of ERA/FoEN spoke on “Gender and the Energy Crisis in Developing Economies”. The paper revealed that the key challenges facing the energy sector in developing economies is the provision of modern energy services of over 60% of it population. According to her, existing policies in Nigeria are gender neutral i.e. did not put into consideration gender issues and the consequence of this is the neglect of issues affecting women. Energy crisis is one of the characteristics of developing countries and that significant proportion of the population in developing countries relies on traditional energy sources. She said that lack of access to electricity inflate production cost and make competition in the global market difficult for developing countries. Women make up 70% of the 1.3 billion poor people in the world and they suffer most in the energy crisis and women’s livelihood can only be sustained by access to energy.

She advocated for gender mainstreaming as a key for developing an energy policy that promotes even development of men and women. Gender sensitive energy programme can ease the double burden of lack of energy and poverty on women and provide opportunity for education, income generation and improve the social and economic status of families. The Renewable Energy Master Plan of the Nigerian Government is gender neutral. She advocated the need to have a gender analysis framework aimed at understanding gender issues. She recommended that the capacity of decision makers, policy makers, women, planners, implementers and researchers should be built to integrate gender issues in sustainable development especially in the energy policy, and that there should be a shift from the government-only approach to an approach that embraces partnership amongst government, private and the civil society.

WELCOME ADDRESS

Etiosa Uyigue
Executive Director
Community Research and Development Centre

The Honorable Commissioners present, members of the academic community, clergy, representatives of the NGOs, the media, students, distinguish ladies and gentlemen. On behalf of the Community Research and Development Centre (CREDC) and her partners - the Global Greengrants Fund and the Environmental Rights Action/Friends of the Earth Nigeria, I welcome you to this occasion of a one-day conference on Promoting Renewable Energy and Energy Efficiency in Nigeria.

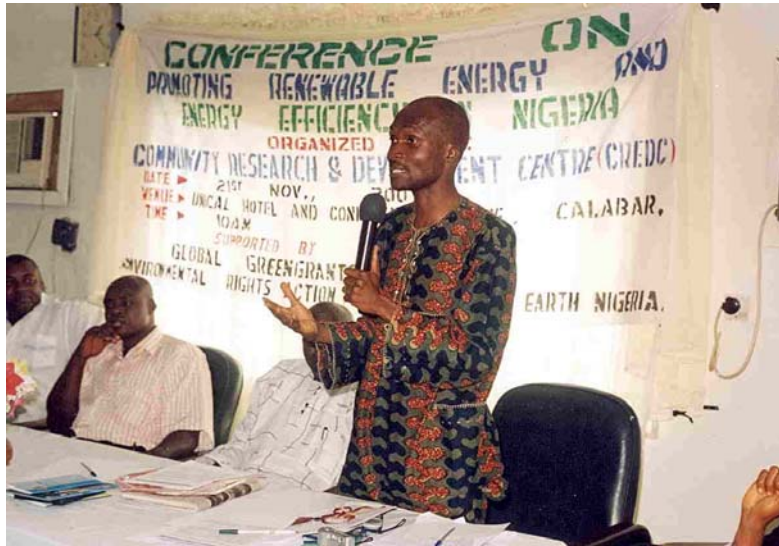
When you move from the Niger Delta in the southern part of Nigeria, a region where many communities are surrounded with water and in many cases, their only means of transportation is through water, to the middle belt and then to the extreme north, you would agree with me that many communities do not have access to electricity, that is they are not connected to the national electricity grid. You would also see that connecting many of these communities to the national grid is prohibitively expensive. The question is how do we reach out to these communities? We discovered that one possible option was the use of renewable energy facilities. Hence the project "Promoting Renewable Energy and Energy Efficiency in Nigeria" (PREEEN) was conceptualized by the CREDC.

Our vision is to provide renewable energy facilities to 10 million households within a period of 5-6 years through the use of revolving fund, and as you will see later, we cannot talk about renewable energy without energy efficiency. But first we need the right policy environment to operate. Hence that is why we are here today. The first phase of this project, which is the Advocacy Phase started last year in Benin City with a similar conference and has the objectives to increase public awareness of renewable energy and energy efficiency and its potential for sustainable development; and to develop policies and enhance civil society participation in the development of these policies to foster the development of renewable energy and energy efficiency in Nigeria. Thus, the PREEEN project is designed to address the energy crisis in Nigeria and at the same time contributing to the reduction in the emission of greenhouse gases.

In the Advocacy Phase, we are working towards a national forum where the civil society will dialogue with policy makers on the issue of renewable energy and energy efficiency and formulate policies. What we are doing today is that we are empowering stakeholders before hand. To engage government and policy makers in effective dialogue requires a certain level of advocacy skills and knowledge of the issues involved. So we are building the capacity of stakeholder on the issue. Later, in the early part of next year we would be carrying out a similar forum in the northern part of the country.

Once again, I welcome you all and wish a fruitful deliberation.

Thanks you!



Speaking, Mr. Etiosa Uyigue



Some participants at the conference

ENERGY, DEVELOPMENT AND CLIMATE CHANGE: THE NIGERIAN CONSIDERATION

Surveyor Efik

Executive Director

Human Orientation Movement for Environment

PREAMBLE

Why I chose this topic is to provide detail understanding that renewable energy and energy efficiency is one of the means of fighting climate change. (See Article 3 of Kyoto Protocol/UNFCCC).

It is to elucidate details on the climate change risks and vulnerabilities and the development effort so far made to buttress Nigeria's national commitment, especially from the energy sector. This will help us in this forum to understand the involvement of the energy sector as a critical component of mitigation and adaptation to climate change. It would also help in broadening our knowledge and understanding of the work we need to do on the issue of renewable energy and energy efficiency in Nigeria as civil society actors.

DEFINING THE TOPIC

Let me define each of the components in this topic in relation to climate change. Renewable energy came to the limelight of the global discourse and attention due to increasing and devastating effects that the predominate use of fossil energy resources caused on Climate change. Energy efficiency, which is the process of reducing the energy used by specific end-use devices and systems, was borne from the need for effective development and utilization of energy with low GHGs emissions.

Renewable energy is that form energy obtained from sources that are essentially inexhaustible, unlimited and rapidly replenished or naturally renewable such as wind, water, sun, wave, refuse, biofuels etc. It has brought about the need for technology innovation as a means to addressing climate change challenges that is, by reducing the rate and volume of GHGs emissions/ concentration in the atmosphere and saves the ozone layer from on-going depletion, which eventual collapse would spell catastrophe to the world. This has however brought about the need for technology innovation which indeed, requires skilled manpower, especially in the developing nations where technology advancement is a desideratum. Although, according to IPIECA's observation; *"there has been a decline in engineers, geoscientists, etc. that are being graduated in developed countries even though action to reduce GHG emissions is expanding. Meanwhile there is strong growth in the number of those graduating in developing countries, such as China, where the issue is of lower importance on the domestic agenda than other priorities"*. In Nigeria, technology innovation/transfer in terms of climate change mitigation or in terms of renewable energy and energy efficiency is Zero.

Development is the process, ethical steps and strategies/options to ensure healthy implementation, transformation of human and societal growth.

Climate Change

Climate change is like the Sword of Damocles hanging over humanity. It is simply the process by which human emissions of Greenhouse Gases are believed to be causing changes in the Earth's climate system. The emission of Green House Gases (mostly from anthropogenic activities) into the atmosphere, turn out to deplete the ozone layer that absorbs/shields the atmosphere of intensive sun radiation and in turn makes the planet earth unduly warm with resultant variations in climate conditions. This phenomenon is known as climate change. It brings about global warming that is responsible for increases in extreme weather conditions, rise in sea level, storms, floods, decrease in rainfalls, droughts, impairment of the ecosystems and its biodiversities which human life depends on, rapidly melting glaciers, destabilization of major ice sheets, desertification, decrease in agricultural produce etc.

THE NIGERIAN ENERGY SITUATION

From HOME development based assessment report on the Niger Delta Environment, it was identified that water and oil which are the two rich natural resources in the region are the sources and causes of abject poverty. The same can be said about energy resources such as gas, coal etc. in Nigeria, which is in huge abundance, yet there is energy poverty in the country.

Government effort

Government effort in the area of developing energy sector to the improvement of the poor status quo is on-going as seen in the current legislative process on national energy bill for an act that will lead to the establishment of a national agency that will take charge of regulating, enforcing policies and developing the energy sector in Nigeria. Just as we now have the National Nuclear Regulatory Authority (NNRA), so we hope to have the national energy regulatory agency when the bill is enacted into law.

Yet, if we must achieve energy efficiency, gas flaring must not exist and in the face of government's discouraging effort in that direction, much is expected to be done, particularly by the civil society. Although the issuance of deadline for flares-out, January 2008 is reasonable, whereas its commitment to realizing it is absolutely discouraging due to lack of compliance on cash calls to the tune of \$4billion (N508 billion) yearly for joint venture projects (JVP). This is due to the fact that the Federal Government through NNPC owns the largest stake in the JVP. The oil/gas sector have since been working on various gas utilization projects, by way of using gas for power generation to, at least, improve epileptic nature of power supply in the country, while some are working on exporting the gas.

On Gas-to-Power Project

The International Finance Institutions (IFIs) and the World Bank are currently assisting the Agip's Kwale Partners' Flaring-Reduction to use the natural gas to generate electricity. The project is further supported by Global Gas Flaring Reduction (GGFR) – a Public Private Partnership (PPP) project and is to be registered as a Clean Development Mechanism (CDM) project under the Kyoto Protocol. The Kwale Partners' Flaring Reduction Project which is 40% stake to Nigerian AGIP and 60% to NNPC, will be the first to put associated natural gas into generating electricity in Nigeria and will eliminate 1.5 million tons of CO₂ - thus becoming the 10th largest in the 2,160 projects in CDP pipeline of Kyoto Protocol.

There are also plans to build a \$10billion (N1.27 trillion) gas pipeline network across the Sahara Desert through Niger, Algeria, across the Mediterranean for export of gas from Nigeria to Europe by Shell. In addition to that, the West Africa Gas Pipeline (WAGP) project spearheaded by Chevron is to also export gas from Nigeria to Benin, Togo and Ghana, with capacity of 75 billion cubic feet a year and would cost \$590 million (N74.6 billion). SPDC, NNPC are equally partners in the project. And for Ghana Pipeline stretch, the World Bank has already provided guarantee for \$50 million (N6.3 billion) while \$75million (N9.5billion) political risk guarantee has also been provided for West African Gas Pipeline Company (WAGPCO) – that will operate the project. Chevron has 36.7 % stake in WAGPCO, Shell, Tokoradi Power Company Limited of Ghana, Togolaise de Gaz and Societe Beninoise de Gaz are other shareholders in the company.

Impacts and Statistics

Meanwhile, United States National Oceanic and Atmospheric Administration (NOAA) in its studies revealed that Nigeria flares 75% of its Natural gas for lack of processing facilities and that amounted to 20% of flared gas Worldwide. Secondly, according to Earth Trend Country Profile 2003, its report on Nigeria shows that Nigeria flares 2.5billion cubic feet per day of associated gas and that represents 40% of all natural gas consumed in the continent of Africa and further represents the single largest sources of GHG emissions on planet earth.

On that note the Nigerian Government is doubling its effort in seeking support on how to tackle the issue of flares-out. Presently, the Government is seeking assistance from Norway, while World Bank is presently mediating between it and the Multinational oil/gas companies for a compromise on the ultimatum to end gas flaring January 2008.

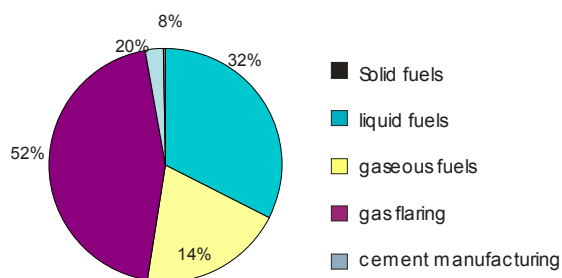
Budget Issue:

The Federal Government in principle is serious but in deed, it does not. The 2008 budget bespeaks of Federal Government's lean effort in addressing the energy issue in the country. According to the Editorial of Daily Independent Newspaper, *"granted that the President has declared that the National Integrated Power Project (NIPP) is excluded from the budget as it is to be implemented through 'alternative funding', we still consider the allocation to the vital energy sector as grossly inadequate"*.

Climate Change Risks in Nigeria

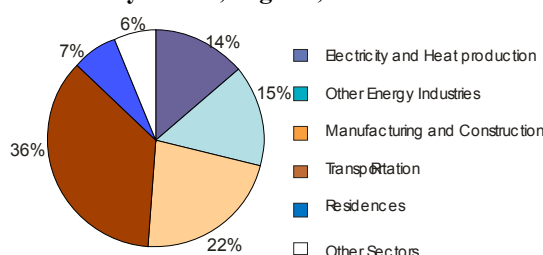
The former Minister of Environment, Chief (Mrs.) Helen Esuene rightly stated that "Nigeria is extremely vulnerable to climate change". In fact, let me re-iterate here that the work and indeed the achieving of renewable energy and energy efficiency will lessen the risk/vulnerability of Nigeria in climate change and by implication that of Africa and the World at large. This summation is hinged on the fact that every statistics of GHG emissions in Nigeria (Climate change risks) shows that the energy sector is greatly involved. From the chart below, it is evident that the fight against climate change in Nigeria is greatly dependent on energy efficiency and renewable energy.

CO2 Emissions by source, Nigeria, 1998



Emissions in 1998 from:	Nigeria	Sub-Sahara Africa	World
Solid fuels	172	292, 852	8, 654, 368
Liquid fuels	25, 410	151, 843	10, 160, 272
Gaseous fuels	11, 325	16, 330	4, 470, 080
Gas flaring	40, 203	42, 110	172, 208
Cement manufacturing	1, 345	11, 865	758, 448

CO2 Emissions by Sector, Nigeria, 1999



CO2 Emissions by Sector, 1999 (in million metric tons of CO2)	Nigeria	Sub-Sahara Africa	World
Public electricity, Heat production & Auto-producers	6	x	8, 693
Other Energy Industries	6	x	1, 205
Manufacturing industries & construction	9	x	4, 337
Transportation	16	x	5, 505
Residential	3	x	1, 802
Other sectors	2	x	5, 640
Total emissions all sectors	43	x	27, 180

Source: © Earth Trends Country Profile 2003

So far, the Federal Government has raised penalty payment for gas flare from N10, 000 to N12,700 (\$100) per Million Standard Cubic Feet of gas (MSCF) with effect from January 2008. Further penalty stipulates that any company that makes false declaration of volume of gas flared shall pay the sum of \$500 (63,500) per million standard cubic feet as sanction.

GLOBAL EFFORT

Globally, the United Nations Environment Programme (UNEP) and the World Meteorological Organization, in 1988, set up the Intergovernmental Panel on Climate Change (IPCC) which deals with assessments of the available scientific, technical and socio-economic information in the field of climate change; the potential impacts of changes in climate and options for adaptation and mitigation of climate change. The UN established the United Nations Framework Convention on Climate Change (UNFCCC) as an international environmental treaty produced at the Earth Summit, held in Rio de Janeiro in 1992. The treaty is aimed at reducing emissions of GHGs in order to combat global warming or climate change but because originally it didn't set mandatory limits on greenhouse gas emissions for individual nations and contained no enforcement provisions, it was improved upon with provisions for updates (called "protocol") that would set mandatory emission limits, which became known as "The Kyoto Protocol" declared at Kyoto, Japan on 11th December, 1997.

Another global effort of fighting climate change is the Clean Development Mechanism (CDM), which is an arrangement under the Kyoto Protocol (Article 12) allowing industrialized nations with a greenhouse gas reduction commitment (called Annex 1 countries) to invest in projects that reduce emissions in developing countries as an alternative to more expensive reductions in their own countries.

THE CIVIL SOCIETY EFFORTS

This has compelled HOME to intensify effort on the issue of climate change and strong advocacy for its mitigation, adaptation as well as orientating and re-orientating stakeholders and the people on it. This area of orientation of the stakeholders is a major role that this forum of renewable energy and energy efficiency would have to work seriously on and eventually as a network, it would form a critical area of focus. The effort of the organizers (CREDC and ERA/Friends of the Earth) of this forum is towards a climate change solution since renewable energy and energy efficiency is both a mitigating and adapting mechanisms for climate change vulnerability.

On climate change, HOME took steps to set a network to be of CSOs coalition known as Nigeria Action Network on Climate Change (NANOCC) with the aim to achieve popular advocacy and down-to-earth implementation of programs/projects. But members suggest that it should be changed to Civil Society Action Network on Climate Change (CiSANOCC) and that has been responsible for the delay in inauguration.

CONCLUSION

Let me borrow that statement of Lar-Erik Liljelund, Director-General of Stockholm Environmental Protection Agency (SEPA) which states that **“One of the greatest challenges today is to bridge the gap between environmental awareness and behaviour (orientation) in Situations where environmental concern is at stake”**. In the case of the renewable energy and energy efficiency in Nigeria, more remain to be done for awareness and constructive engagement of the stakeholders, civic education of the people and capacity building for the needed orientation to be forged for renewable energy and energy efficiency to be deep-rooted.

I hereby recommend that the organizers endeavour to carry the advocacy/awareness torchlight on this issue of renewable energy and energy efficiency to the grassroots through programmes such as Town Hal Meetings in the LGAs, where traditional rulers, community groups, youths, women and Local Government would be involved. Another sustainable development angle to this campaign for renewable energy and energy efficiency is the mainstreaming of gender into the process of advocacy, capacity building, orientation building etc.

Moreover, the import of this forum serves as a means of finding solutions to climate change challenges from the angle of implementing Article 2, 1a (i) of Kyoto Protocol which underlined the “enhancement of energy efficiency in relevant sectors of the national economy” as a way of limiting and reducing emissions in order to achieve sustainable development. Therefore, for energy efficiency to prevail in Nigeria, gas flaring must be eliminated. This brings us to the need for creating End-Gas-Flaring campaign and using it to get involved in settling the on-going Flares-out imbroglio between Federal Government and the Multinational oil/gas companies. Since this issue of gas flaring contributes to energy poverty in Nigeria, then advocates of renewable energy and energy efficiency are equally major stakeholders. Just as they must all be

members CiSAN OCC. Thank God, this Conference is taking place in Niger Delta, where gas flaring is found.

Presently, the campaign for revenue transparency in the extractive industry (oil, gas and mining) has deep involvement of the civil society through Publish What You Pay (PWYP) Campaign Nigeria – a coalition of over 150 CSOs in Nigeria. Therefore, as energy advocates, it is pertinent for us to create civil society network on renewable energy and energy efficiency in Nigeria today.

Thank you.

REFERENCES

IPIECA Summary Report – *“Increasing the pace of technology innovation and application: enabling climate change solutions”*. International Petroleum Industry Environmental Conservation Association (IPIECA) Workshop, September 2006.

IPIECA, *“A Guide to the Intergovernmental Panel on Climate Change”*, 4th Edition, May 2006.

UNFCCC, *“Kyoto Protocol to the United Nations Framework Convention on Climate Change”*, December 1997.

Daily Independent, *“2008 Flares-Out Deadline: Between Rhetoric and Reality”*, Page c6, Tuesday, November 20, 2007.

Daily Independent, *“The 2008 Budget: Matters Arising”*, Editorial, page B4, Tuesday, November 20, 2007.

BUSINESSDAY, *“Revisiting January 2008 gas flare deadline”*, page 19, Tuesday November 6, 2007.

Earth Trends, Country Profile, 2003.

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Surveyor Efik (2nd right) making his presentation



Some participants during the conference

Questions and Comments on the First Presentation

Comment: Mr. Richard Ingwe

Mr. Ingwe was on the opinion that the government and the multinational oil companies operating in Nigeria will be unable to stop gas flaring at the deadline of 2008 because of corrupt practices. He also warned that the presenter should be careful about promoting the CDM because in his opinion, the CDM is a corrupt mechanism.

Response: On the issue that was raise about the CDM being a corrupt practice, well, it is our duty to criticize it so that policy makers will know whether it will work or not.

Questions: Mr. Richard Ingwe

How will you react to:

- a. the failure of the Nigerian government to pay cash calls to the multinational oil companies in order to stop gas flaring?
- b. the fines imposed on oil companies for failing to stop the emission of GHGs?
- c. indigenous spoliation by Nigeria Government bureaucrats

Response: Nigeria is weak in terms of addressing sustainable development issues such as GHG reduction and related issues.

Comment: Mr. Etiosa Uyique

Though the CDM of the Kyoto Protocol was designed to benefit the developing world, Africa is not yet benefiting from the provision of the CDM. For instance, very few CDM projects have been registered in Africa and they are all in South Africa. Moreover, the CDM allows the developed countries to continue with their emissions while they invest in clean projects that reduce the emission of GHGs in developing countries. In essence, CDM gives license to the developed countries to continue with the emission of GHGs. The developed countries are the major emitters of GHGs; Africa only contributes about 4% to the total amount of GHGs emitted into the atmosphere. Participants are encouraged to do all they can in their capacity to contribute to measures to check climate change.

Comment: Mr. Odey Oyama

The issue of climate change is strange to a lot of people in the society and I would have appreciated it if the speaker had dwelt on climate change vulnerability in regions such as the forest zone. Also the speaker ought to have dwelt more emphatically on water and oil and on how they cause problem in Nigeria. The geography text books we have now in Nigeria should be reviewed and updated to reflect the actual climatic conditions.

Questions: Mr. Odey Oyama

- a. You mentioned that access to portable water and oil exploitation are the causes of abject poverty in the Niger Delta. How?
- b. How much of the gases emitted to the atmosphere actually remain hanging in the Nigeria airspace since there is the tendency for the wind to blow such gases far away from the shores of Nigeria?
- c. What also is the impact of climate change on the Rain Forest?
- d. How accurate is the GDP of a country like Nigeria when the contributions from its local economies are not considered in the calculations?

Response: In the Niger Delta region, there is no good water for domestic use as a result of the oil exploration activities.

Climate change is a global phenomenon; we share the same air space. Global warming will lead to over precipitation in some parts of the world and drought in other parts. In Nigeria, climate change will cause flooding in southern part and lead to drought the northern part.

The sea level is rising. From the research we conducted in the Niger Delta, it was found that the sea level along the coast of Nigeria has risen for about 40cm in a period of ten years precisely between 1960 and 1970. The sea is moving landward into the Niger Delta and some oil wells have been taken over by the sea.

The other issue is that of acid rain, which is causing much damage to the environment. For instance, it was observed that in Benin City that people change their roofs earlier than anticipated.

Questions: Omini Oden

My question is a follow up to Mr. Odey Oyama's question. What is the way forward towards sustainable efforts to overcome renewable energy, energy efficiency and climate change challenges?

Response: At this stage, what we need is advocacy. Our own advocacy should not be at the national level alone, we should get to the grassroots. Every network should take the advocacy to its own end to enable effectiveness of the campaign. At the grassroots level, it may be done as a town hall meeting to educate the people on the effects of climate change.

Question: Vitalis Oqoh

Is the media not part of this campaign? If they are, how often have you carried them along?

Response: In this conference, the media is present. Also, the journalists may form a coalition to advocate for climate change mitigation and adaptation.

Comment: Emmanuel Urang

Considering the importance of forest in climate change issues and the over dependence of the rural populace on wood for energy, there is need therefore for issues concerning community forest conservation to be included in the efforts towards promoting renewable energy and energy efficiency in Nigeria.

Comment: Edem O. Edem

We should consider the impact of climate change on the mangrove forest ecosystem of Nigeria. Also, the presenter should help us list some home-base practices that lead to climate change, for example the use certain refrigerators that emit GHGs.

Response: It is appropriate that people be advised when procuring electrical devices such as fridges, there is the need to purchase types that do not emit dangerous chemicals into the atmosphere. This is also applicable to electrical bulbs, to purchase bulbs that consume less energy.

Question: Felix Ukan

On the issue of gas flaring penalty which was increased from ₦10, 000 to ₦12, 000 for oil companies, is it really a penalty or a levy because I know that it will be difficult to stop gas flaring in Nigeria.

Response: The legislative arm of government has been doing its own part. The executive arm should implement these policies with particular reference to penalty for gas flaring which will come into effect in January 2008. It is because of the liberal penalty for gas flaring that the act is still persistent. The effective date of 2008 is not feasible; hence there is plan to extend the flare out date to 2015.

Comment: Mr. Richard Ingwe

Africa is the most vulnerable to global warming. In September 2007, 17 countries in Africa were flooded. Several persons will be displaced as a result of this climate change.

RENEWABLE ENERGY AND ENERGY EFFICIENCY AND SUSTAINABLE DEVELOPMENT IN NIGERIA

Etiosa Uyigue
Executive Director
Community Research and Development Centre

Introduction

Energy is central to all human activities and it is needed to support development. Access to energy is inevitable for poverty alleviation and if we must achieve developmental targets and meet the millennium development goals (MDGs). There are apparently links between poverty and access to energy; the citizens of many poor nations of the world have extremely low access to energy and the richer countries consume far more energy than the poor countries, suggesting that access to energy is the dividing line between the rich and the poor countries of the world. Apparently access to energy is directly proportional to good living standard. Yet about 2 billion people globally live without access to modern energy services¹ and they are concentrated mainly in rural and peri-urban areas in developing countries in Africa and Asia. The energy-deprived people are the world's most impoverished, living on less than \$2 per day¹ with majority living in sub-Sahara Africa.

The African continent accounts for 3% of world energy consumption, the lowest per capita modern energy consumption in the world. In terms of biomass energy consumption, the African continent has the highest share in the world; 59% of total energy consumed is biomass². There is considerable variation in energy consumption among the different regions and countries in Africa (Table 1). Sub-Sahara Africa continues to rely heavily on biomass and traditional energy sources. This over reliance on traditional energy sources leads to low level of energy efficiency, deforestation and biodiversity loss, greater health hazard due to indoor air pollution and reduced capacity to mitigate climate change. Africa's electricity consumption remains low; majority of the population have no access to electricity. In the year 2000, only 22.6% of the population in sub-Sahara Africa had access to electricity, compared with Asia – 40.8%, Latin America – 86.6% and Middle East – 91.1%³. Africa's energy profile show low production and huge untapped potential².

Table 1: Energy Consumption by type in % in 2001

Region/country	Biomass	Petroleum Products	Electricity	Gas	Coal
North Africa	4.1	61.5	15.1	18.0	1.3
Sub-Sahara Africa	81.2	14.5	2.9	1.0	0.5
South Africa	16.5	29.3	25.9	1.6	26.8

Source: IEA, 2003 and Karekezi et al, 2004³

Nigeria is the most populous country in Sub-Saharan Africa, nearly one quarter of Sub-Saharan Africa's population and is one of the poorest countries in the world despite the huge resource from crude oil export. The country is facing formidable economic, social and human development challenges. The incidence of poverty increased from 28.1% in 1980 to 65.5% in 1996. More current studies revealed that about 70% of the population live below \$1 per day while about 91% of the population live below \$2 per day⁴. At present, the nominal electricity generating capacity in Nigeria is less than 6000MW. The actual capacity is about half of the installed capacity. Energy demand is dominated by fuelwood; household consume about 95% of fuelwood⁴.

Table 2: Nigeria's Development Profile (2005)

Population	133 million
GDP (2002)	\$45 billion
GDP (1980)	\$93 billion
GDP per capital (2002)	\$290
GDP per capital (1980)	\$890
Life expectancy at birth	47 years
Under 5 mortality per 1000 births	153
Under 5 malnutrition	36%
Adult illiteracy rate	36%
Population below \$1	70%
Population below \$2	91%

Source: ECN and UNDP⁴

In Nigeria, with a rural population of over 60%, centralized energy system exists. The country has been solely dependent on the exploitation of oil to meet its development expenditure; in 2001, oil revenue alone accounted for 98.7% of total export contributing only 10.6% to GDP. Irrespective of Nigeria's position as the sixth largest petroleum oil exporter and a leading gas exporter, the nation suffers enormous energy crisis manifesting in various forms: about 60 -70 % of the nation's population are excluded from the national electricity grid⁵. Moreover, the grid is plagued by rather frequent power outages that last for several hours daily in places that are connected to the grid. Still, the grid electrical energy is generated from unsustainable sources (large hydro power stations and a growing number of thermal gas stations).

Over 60% of the country's population depends on fuelwood for cooking and other domestic uses⁶. The consumption of fuelwood is worsened by the use of inefficient cookstoves, which have very low thermal efficiency and produce smoke hazardous to human health. Increasing fuelwood consumption contributes to deforestation leading to desertification and soil erosion. Women and children are most affected making them vulnerable to respiratory disorders and other adverse health conditions. Worldwide, 1.6 million people die each year due to the health and respiratory effects from indoor air pollution⁷. When fuels become scarcer, female children over male children are withdrawn from school to support family energy needs. Illiterate women have more children, larger and poorer families and this reinforces the cycle of poverty and under development. The provision of accessible energy options will therefore save them time and hard labour. Time previously used for wood collection and related chores can then be applied in other productive activities such as adult literacy and skills training.

The World Summit on Sustainable Development (WSSD) in Johannesburg in 2002 recognized the important role of energy for reaching the millennium development goals. Access to affordable, reliable and sustainable energy is essential to sustainable development. An adequate solving of energy problems will contribute to achieving progress across all pillars of sustainable development: economic, social and environmental and in meeting the UN Millennium Goals. Although there are no MDGs on access to energy, WSSD recognized that inadequate access to energy is both a cause and an effect of poverty, and recommended the following:

"Take joint actions and improve efforts to work together at all levels to improve access to reliable and affordable energy services for sustainable development sufficient to facilitate the achievement of the Millennium Development Goals, including the goal of halving the proportion of people in poverty by 2015, and as a means to generate other important services that mitigate poverty, bearing in mind that access to energy facilitates the eradication of poverty".

Renewable Energy and Energy Efficiency

We cannot talk about renewable energy without energy efficiency. Let me illustrate the relationship between them with an equation as shown below:

$$\text{Renewable Energy} + \text{Energy Efficiency} = \text{Sustainable Development}$$

The relationship can be compared to a biological relation where it takes a man and a woman to produce children. To achieve sustainability in the development of renewable energy, it should go along side with 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 energy 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 could be stated as follows:

- 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.

Unlike the nuclear and fossil fuels plants, which belong to big companies, governments, or state owned enterprises, renewable energy can be set up in small units and is therefore suitable for community management and ownership. In this way, value from renewable energy projects can be kept in the community. In Nigeria, this has particular relevance since the electricity grid does not extend to many rural areas and it is prohibitively expensive to extend the grid to remote areas. This presents a unique opportunity to construct power plants closer to where they are actually needed. In this way, much needed income, skill transfer and manufacturing opportunities for small businesses would be injected into rural communities.

Transition from fossil fuels to renewable energy will not result in net job losses or cause harm to the economy. Renewable energy technologies (RETs) are labour intensive, and can produce more jobs than fossil fuel or nuclear industries. When RETs are properly integrated into national development plans and implemented, they can substantially reduce greenhouse gas emission and simultaneously increase employment. Moreover, it will also enhance energy security by reducing reliance on oil, preserve the competitiveness of energy, lead to savings for consumers and provide transitional assistance to workers in negatively affected industries and communities. With the right approach, the interests of working families and the environment can come together.

What is Energy Efficiency?

Energy efficiency means improvement in practices and products that reduce the energy necessary to provide services like lighting, cooling, heating, manufacturing, cooking, transport, entertainment etc. Energy efficiency products essentially help to do more work with less energy⁸. Thus, the efficiency of an appliance or technology is determined by the amount of energy needed to provide the energy service. For instance, to light a room with an incandescent light bulb of 60 W for one hour requires 60 W/h (that is 60 watts per hour). A compact fluorescent light bulb would provide the same or better lighting at 11 W and only use 11 W/h. This means that 49 W (82% of energy) is saved for each hour the light is turned on. An old refrigerator would use around 250-300 kWh per year whereas the new model would use around 100 kWh per year.

In Nigeria today, a lot of energy is wasted because industries, power companies, offices and households use more energy than is actually necessary to fulfill their needs. The reason is because they use old and inefficient equipment and production processes; buildings are poorly designed; and because of bad practices or habits. With energy efficiency practices and products, the nation can save over 50% of the present energy consumed in the country. The energy presently generated in our country could be sufficient for the entire Nigerian population. Using energy more efficiently would:

- Reduce electricity bills
- Leave more energy available to extend energy supply to all parts of the population
- Increase the efficiency and resilience of the economy – including reduced reliance on oil and thus improve balance of payments
- Improve industries' competitiveness internationally
- Minimize the building of new power stations and thus free up capital for other investments like health and welfare
- Reduce the negative environmental and human health impacts from energy production and use
- Increase employment through interventions e.g. in industry, housing, transport.

End-use Efficiency: End-use efficiency refers to technologies, appliances or practices that improve energy efficiency at the level of the final user. It includes electricity-using and thermal technologies such as motors, lighting, heating, air conditioning. It also includes technologies that help to conserve or better use energy such as insulation. End-use efficiency covers measure from improving the ability of houses to absorb and retain heat in winter and keep out heat in the summer to changing individual and business behaviour to include maintenance and repair of industrial production equipment.

Demand-side Management: refers to practices or policies usually implemented by utilities and energy planners that encourage users to use energy more efficiently or to move their energy use away from peak demands. The later is known as load shifting. Load shifting allows for more effective use of generating capacity and can significantly defer the need for building new generating stations.

Energy Management

Good energy management can contribute to energy efficiency and it includes:

- Ensuring that spare heat are not vented away but put into use
- Lighting is activated when required
- Carrying out energy audits i.e. measuring and analyzing the amount of energy used by a building or company to ensure that all aspects of energy management are optimized

Dispersed Generation

In Nigeria and in some parts of the world, energy is generated from a central location and distributed through long distances to other parts of the country. Energy is lost when transmitted through long distances. Energy losses due to grid transmission over long distances could be minimized if energy generation is dispersed. That is energy is generated locally and fed directly into distribution systems.

Energy Conservation

This refers to reducing the need for energy particularly electricity to achieve greater overall efficiency. For example the use of solar water heater, which helps to capture thermal energy of the sun in panels and connected to a well insulated storage tank. With the solar heater, the use of electricity to heat water will be minimized. Another example of energy conservation practices is the locating work places closer to public transport or closer to living areas.

Energy Efficiency in Transportation

An efficient and well organized public transport would help to conserve the use of energy in the transport sector. It will cut down the number of cars on the road thereby reducing congestion and travel time. If buses were on time, regular and comfortable, more people would use them.

Passive Designs in Energy Efficiency Houses

Passive designs in buildings means making use of nature to reduce energy consumption and other cost. This involves the correct orientation of buildings and roof design in order to use natural light during the day. It also involves the use of overhangs to keep out light during period of high sunlight intensity. Energy efficiency designs have other possibilities such as designs that will enhance natural air flow, use of materials that will minimize heat flow etc.

Use of Incentives

Tariff structures can be used to encourage people to use less electricity and defer the use of appliances to periods when it is in least demand. Varying the rate of charge according to time of day encourage load-shifting for example the use of timers to activate appliances prior to peak demand. Change in behaviour can also help to conserve energy e.g. reducing the temperature in the washing machine will reduce energy consumption or use of modern appliances. Energy efficiency habits include turning off appliances when they are not in use.

Industrial Energy Use

Heavy industry is usually responsible for most energy consumption in many countries with consumption typically ten times higher than consumption in other areas. With energy efficiency improvement in production processes could reduce energy consumption. Improvement in efficiency at the point of electricity generation is possible with recent developments in plant conception and design.

Renewable Energy and Energy Efficiency as Climate Change Mitigation Measures

The Intergovernmental Panel on Climate Change, a body set up in 1988 by the World Meteorological Organization (WMO) and the United Nations Environmental Program (UNEP) to provide authoritative information about climate change phenomenon, asserts that the warming of the last 100 years was unusual and unlikely to be natural in origin. IPCC has attributed the warming of at least the second half of the century to an increase in the emission of greenhouse gases into the atmosphere. Human activity is largely responsible for the emission of these gases into the atmosphere: CO₂ is produced by the burning of fossil fuels (coal, oil and gas) as well as land-use activities such as deforestation; methane is produced by cattle, rice agriculture, fossil fuel use and landfills; and nitrous oxide is produced by the chemical industry, cattle feed lots and agricultural soils. As humans have increased their levels of production and consumption, greenhouse gas emissions have also increased; since 1750, at the time

of the Industrial Revolution, CO₂ emission has increased by 31 %, methane by 151 % and nitrous oxide by 17%. Moreover, the emissions of these gases continue to rise steadily⁹.

Nigeria is one of the highest emitter of green house gases in Africa. The practice of flaring gas by the oil companies operating in Nigeria has been a major means through which GHGs are released into the atmosphere. Carbon dioxide emissions in this area are among the highest in the world¹⁰. Some 45.8 billion kilowatts of heat are discharged into the atmosphere of the Niger Delta from flaring 1.8 billion cubic feet of gas every day¹⁰. Gas flaring has raised temperatures and rendered large areas uninhabitable. Between 1970 and 1986, a total of about 125.5 million cubic meters of gas was produced in the Niger Delta region, about 102.3 (81.7%) million cubic meters were flared while only 2.6 million cubic meters were used as fuel by oil producing companies and about 14.6 million cubic meters were sold to other consumers¹². The use of renewable energy sources will reduce over dependency on the burning of fossil fuel. Moreover, instead of flaring gas in Nigeria, the gases can be converted to methanol and used as fuel for both domestic and industrial use. With good energy efficiency practices and products, the burning of fossil fuel for energy will be greatly minimized.

Renewable Energy Potential in Nigeria

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. Furthermore, unlike the conventional energy resources, solar energy development is not as capital intensive. Therefore, it is fundamental to proffer the strategy of diversifying energy resource development outside the conventional energy resource. This means that, the proceeds of the sale of the conventional energy resources which are in high demand should directly be channeled towards the development of other non-conventional, less capital intensive and non-hazardous energy resources in Nigeria. With the abundance supply of solar energy in Nigeria, efforts need to be geared towards research and development of solar electricity conversion by both direct and indirect methods.

Wind energy is a secondary form of solar energy. Experts reported that approximately 2.5% of solar energy captured by the atmosphere is being converted into wind. The development of wind power plants is being undertaken by many countries for the generation of electricity in their quest to exploit renewable energy sources and Nigeria should not be left out. With wind energy available at an annual average speed of 2.0 m/s near the coast to 4.0 m/s at the northern borders, the country possess enormous potential to develop and utilize energy from the wind for electricity generation. The coastal regions of the south and the northern part of the country are possible suitable sites for wind energy exploitation. There is need to embark on research to determine actual values for wind energy potential.

The potential for bioenergy development is high. Nigeria has all the vegetational regions of West Africa except that of the desert. Agriculture is the dominant economic activity, which contributes 41% of Nigeria's GDP and employs the highest labour in Nigeria. Roughly 75 percent (74 million hectares) of Nigeria's total land (98 million hectares) is arable and about 40 percent of this is cultivated, leaving the remaining 60% of arable land idle. If Nigeria's farmland is cultivable, it would have medium for good productivity if properly managed. Policy, institutional and technological approach is inevitable to harness bioenergy potential in Nigeria.

What are our challenges?

1. lack of policies
2. lack of awareness creation
3. lack of trained personnel in the relevant governmental agencies
4. attitudinal change of policy makers and end users of energy

5. lack of energy efficiency agency

Conclusion and Recommendation

It is obvious that there is need for Nigeria to explore alternative source of energy especially to reach out to the people that do not have access to electricity and other modern energy services. It is also established that renewable energy and energy efficiency are two components that should go together to achieve sustainable development. The need to conserve the present energy generated in the country using energy efficiency products and practices is essential for sustainable development. It is recommended therefore that the country should:

- Develop policies on energy efficiency and integrate them into current energy policies
- Promote energy efficiency products and practices at the side of end users and energy generation
- Create awareness on renewable energy and energy efficiency
- Establish agency to promote the use of energy efficiency products and ensure energy efficiency practices
- Develop and imbibe energy efficiency technologies
- Develop appropriate drivers for the implementation of energy efficiency policy

References

1. Timothy E. Wirth (2005). Forward to : *Rethinking the Energy Paradigm: Global Opportunities for Trade, Development and Sustainability*. The proceedings of the public symposium of the World Trade Organization (WTO) held on 21st April, 2005 in Geneva.
2. Mersie Ejigu (2005). An African Perspective. In: *Rethinking the Energy Paradigm: Global Opportunities for Trade, Development and Sustainability*. The proceedings of the public symposium of the World Trade Organization (WTO) held on 21st April, 2005 in Geneva.
3. Karkezi, Stephen, Jennifer Wangeci and Ezkiel Manyara (2004). *Sustainable Energy Consumption in Africa*. UNDESA Report, 14th May 2004
4. Energy Commission of Nigeria and United Nations Development Programme (2005). *Federal Republic of Nigeria Renewable Energy Master Plan*. Published by the ECN and UNDP.
5. Richard Ingwe (2004). *Renewable Energy Research and Development: A Case Study of Obudu Ranch Plateau in Cross River State, Nigeria*. Paper presented during the Conference *Energetic Solutions: An International Conference on Making Renewable Energy a Reality* which held in Calabar, Abuja and the Niger Delta in Nigeria from November 21 to 27, 2004.
6. Energy Commission of Nigeria (2003). National Energy Policy of the Federal Republic of Nigeria.
7. Gerald Scholz (2006). *Modern Energy Services and the MDGs in East Africa*. In: Renewable Energy for Development: Stockholm Environmental Institute – Newsletter of the Energy Programme. May 2006 Edition, Vol 19. No. 2.
8. SECCP (2002). *Getting to Grips with Sustainable Energy*. Publication of the Sustainable Energy and Climate Change Partnership (SECCP).
9. Sarah La Trobe(2002). *Climate Change and Poverty*. A publication of Tearfund

10. Iyayi, F. (2004). *An integrated approach to development in the Niger Delta*. A paper prepared for the Centre for Democracy and Development (CDD)
11. Agbola, T. and Olurin, T. A. (2003) *Landuse and Landcover Change in the Niger Delta*. Excerpts from a Research Report presented to the Centre for Democracy and Development, July, 2003
12. Awosika, L. F. (1995). Impacts of global climate change and sea level rise on coastal resources and energy development in Nigeria. In: Umolu, J. C. (ed). *Global Climate Change: Impact on Energy Development*. DAMTECH Nigeria Limited, Nigeria.

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Group Photograph



Some Participants during the conference

Questions and Comments on the Second Presentation

Comment: Emmaunel Urang

Community forest cultivation should be seriously considered. Cultivation of “Jetropha” and “Neem” plants which are important in the production of biofuels should be encouraged. Alternative means of livelihood should be provided to the people in areas where community forest conservation is considered.

Question: Ekiel Asuquo

How can we carry out energy audit?

Response: The wattage of every appliance is written on it. When one is to procure an appliance, it is proper and advisable to take note of the amount of energy it consumes.

Question: Vitalis Ugoh

How do you actually know how much energy you use in your house?

Response: To know how much energy you consume in your house, you have to carry out an energy audit, that is, you add up the wattages of your electrical appliances.

Comment: Mr. Odey Oyama

I am impressed at the expertise delivery of the presentation of Mr. Etiosa Uyigue. I have learnt that when appliances are not in use, they should be switched off. Also houses should be designed in a way that we rely less on electricity for lighting, cooling and heating.

Question: Odey Oyama

Power outages in Nigeria, are they energy efficiency practices?

Response: Power outages in Nigeria are not energy efficiency practices.

Question: Mr. Richard Ingwe

To what extent is PHCN adopting energy efficiency? In what way is NNPC adopting the use of biofuel?

Response: Many of our policy makers do not know what to do when it comes to development issues. That is why, as NGOs, we need to tell them what to do. On the issue of NNPC adoption the use of biofuel, this may affect food security. There is the tendency for local farmers to prefer selling their products for the production of biofuel rather than for food. PHCN does not know anything about energy efficiency.

Comment: Surveyor Efik

Using cassava for biofuel may result in inflation. Poverty may deepen and death rate will increase.

Response: Before we begin to think of using cassava for biofuel, there is the need for proper regulatory policies. Policies that will help us create a balance on the quantity that will be exported for Biofuel and the quantity that will be used for food.

Question: Basse Anthony

What is the level of your partnership with the government towards actualizing these laudable ideas?

Response: At present, we are working with the government. We have contact at the Energy Commission of Nigeria. The Energy Commission of Nigeria invited me for a conference taking place later in the month. We will organize another conference in Kano State early next year. After that we shall work towards a national conference.

Question: Omini Odem

- a. Throw more light on energy management and energy security
- b. What is the Nigeria Atomic Nuclear Energy Commission?
- c. Is Nuclear energy a renewable energy?

Response: When we talk about energy management, we are talking about those practices that help to conserve the amount of energy we consume. For example, activating lighting only when require. Energy security talks about the availability and accessibility of energy to the populace.

The use of atomic energy all over the world is not sustainable as there are a lot of problems associated with it. The ideology behind the use nuclear power in African is a deception. Our President has been deceived by those promoting the need to build nuclear power stations. Thus nuclear energy is not renewable and it is not sustainable.

Comment: Mr. Godwin Ilem

I urge the CREDC to assist government in sourcing for businessmen that will invest in renewable energy sector. Cross River State needs organizations that can help provide renewable energy facilities in the various communities.

GENDER AND THE ENERGY CRISIS IN DEVELOPING ECONOMIES

Omoyemen Lucia Odigie-Emmanuel

Representing

Rev. Nnimmo Bassey

Executive Director

Environmental Rights Action/Friends of the Earth Nigeria

Introduction

Energy is used for cooking, illumination, pumping and grinding, business development and generating opportunities. The fact that energy is central to sustainable human development has become of public notoriety, weighed against the World Bank's assertion that about two billion in the world still lack access to energy services (2000), it becomes imperative that energy planning is given more attention like never and the needs of all stake holders integrated in research, policy, planning and implementation. There is a link between poverty and access to energy. Energy is a vital ingredient for socio-economic and technological development. What obtains is that while the developed countries have been able to provide their citizens with energy, the citizens of developing countries have low access to energy.

In Nigeria, many of its citizens suffer lack of access to clean and affordable energy. According to Uyigue (2006), about 60-70 percent of the nation's population is excluded from the nation's electricity grid. The survival strategy for the affected population is to resort to unsustainable sources of tradition energy whose usage is linked to a myriad of social and health problems including global warming and cancer.

Existing policies has not put into consideration the gender issues of energy. The consequence has been neglect of issues that affect women. Women have been the worst hit by the global energy crisis. The burden of providing energy for household usage falls on the women. This exposes them to undue hardship, diseases, loss of time and sometimes death.

The move towards engendering the energy policy stems from the strong believe, and fear that the move towards exploring renewable energy options, and development of this sector will like in time past be gender neutral and blind. Planning, intervention and budget needs the involvement of stakeholders. The starting point seems to be having a clear understanding of the gender issues in the energy crisis.

This paper shall attempt to draw out these issues, a gender analysis of some aspect of the renewable energy master plan shall be undertaken, and an exposition of how planners and policy makers in the energy sector should mainstream gender shall be attempted. The conclusion shall be an examination of the role of different stakeholders in the process.

Definitions

Gender

While sex means the biological determination of an individual based on chromosomes, Gender refers to the socially and culturally determined roles, rights, duties, resources,

and interests of men and women. In other words gender refers to a system of socially defined roles, privileges, attributes and relationships between men and women which are learned and not biologically determined. Gender roles shape our identity, determining how we are perceived, how we are expected to think and act as women and men. Gender plays a critical role in determining who does what within a society with regard to the production of goods and services. It also determines who controls these vital energy resources.

Developing Economies

There is no single definition of a small economy, but size of population and level of GDP generally underlie almost all definitions. Developing economies are characterized by:

- Low levels of living
- Low Per capita income
- High growth rate and dependency burdens
- High level of poverty
- High mortality rate
- Extent of poverty
- Health
- Education
- Substantial dependence on primary-product exports
- Dependence and vulnerability
- Environmental vulnerability
- Energy Crisis

The Energy Crisis

Energy is used for household work like cooking, fetching water and agriculture, transportation and small-scale productive activities. The key challenge facing the energy sector in developing economies is the provision of modern energy services to over 60 percent of its population, to facilitate economic development and poverty reduction. A significant proportion of the populations of developing countries rely predominantly on traditional energy source. Wood fuel still accounts for about 65% of the total primary energy consumption.

In rural areas, households, farmers, fishers and foresters still rely on traditional fuels like wood, charcoal and dung, for cooking, heating and lighting. The burning of these traditional energy source results in harmful emissions which culminates in environmental and health hazards. The current situation in the energy sector is anything but unsatisfactory. In fact, economic activities are gradually grinding to a halt. All of these have robbed off on the cost of doing business and by extension overall cost of living. Lack of electricity for instance inflates production costs and makes competition in the global market difficult for developing countries. The problem with the energy sector is

quite complex and therefore requires careful examination and understanding in order to come up with a long term solution.

Gender Issues in Energy

- Both men and women need energy for increased food production, employment, clean water but because of women's gender role they suffer more for energy poverty.
- Women are estimated to make up 70 percent of the of the 1.3 billion people poor people living in the world. Energy poverty further impoverishes women.
- Women manage a large percentage of the energy system through the gathering of fuel wood.
- Women walk long distances to fetch wood and water, this robs them of time and energy.
- Women are the major users and suppliers of energy.
- Use of primary sources of energy including fuel wood expose women to indoor air pollution associated with health hazards including respiratory diseases.
- Absence of women from decision making on energy planning and implementation has resulted to the neglect of their views and needs.
- Women's livelihood can only be sustained by access to energy. E.g. energy is needed for productive enterprises including food processing and for accessing markets.
- Energy is necessary to improve women's live.

Mainstreaming Gender in Energy

Having accepted that the energy sector is central to human development, the first expectation of a gender-aware energy policy would be that it recognizes the different needs, role, responsibilities and realities of women and men. With this in view, the gender-aware policy would ensure that the policy statement, planning and strategies for intervention promote equality and equity. The Key to having an energy policy that promotes even development of men and women while also providing remediation of past discriminations in the sector is to undertake gender mainstreaming in the sector.

This means that gender analysis must be undertaken to assess the implications of any course of action or intervention on men and women. This also means that budgetary allocations must be sufficient to address the needs of men and women. More women need to come into influential position in the energy sector. This also means that there must be a balance in representation of men and women in decision making bodies on energy and the only way to achieve this is to empower women especially those in the sector. The capacity of energy policy makers, decision makers, planners, project

implementation staff and project managers should be built tools and methodologies for gender-aware policies.

Gender-Aware Energy Policy

Gender-sensitive energy programmes can ease the double burden of lack of sufficient energy and poverty that women endure as they perform traditional household and community roles. They can also provide opportunities for education and income generation that will allow women to improve their social and economic status and raise the living standards of their families and communities. However, if energy policies are to become more gender sensitive, not only will women themselves have to become more empowered to make choices about energy, but the energy sector will also have to become more responsive to women's energy needs (Dutta, 2003).

A gender-aware energy policy must support the energy needs of all classes of women and men, boys and girls. Such a policy must have the following features:

- Such a policy must support gender consideration in the policy setting, gender equity and the participation of women and women's group in the formation and implementation process.
- Such a policy must address the energy needs of women by supporting technological development and dissemination in sectors where women are most active.
- Such a policy must support energy service financing and credit facilities to promote women's energy dependent businesses.
- Such a policy must provide information on markets and consumer demands for energy products to assist women in becoming entrepreneurs.
- Such a policy must support the availability of cleaner energy to address women's energy needs for cooking and food processing.
- Such a policy must remove barriers to the full participation of women in decision bodies especially as regards energy.
- Such a policy must support the availability of energy for energy using production device.

Looking at the Renewable Energy Master Plan through a Gender Lens

The Renewable Energy Master Plan (REMP) articulates Nigeria's vision and sets a road map for increasing the role of renewable energy in achieving sustainable development. The overall objective of the REMP is to articulate a national vision, targets and a road map for addressing key development issues facing Nigeria through the accelerated development and exploitation of the renewable energy.

REMP has the following specific objectives:

- Expanding access to energy services and raising the standard of living especially in the rural areas.
- Stimulating economic growth, employment and empowerment.

- Increasing the scope and quality of rural services, including schools, health services, water supply, information, entertainment and stemming the migration to urban areas.
- Reducing environmental degradation and health risks, particularly to vulnerable groups such as women.
- Improving learning, capacity building, research and development on various renewable energy technologies in the country.

Providing a road map for achieving a substantial share of the energy supply through renewable energy technologies

Planned Activities and milestone

The REMP sets out six activities organized around the following programmes:

- Framework Programme for Renewable Energy Promotion
- Nigeria Solar Programme
- Nigeria small Hydro Programme
- Nigeria Wind Programme
- Nigeria Biomass Programme
- New Energy Research and Development Programme

Strategies for Implementation

The Federal Government is committed to addressing key implementation issues as well as developing adequate strategies to enable realization of the vision of renewable energy. Key among strategies to be adopted includes:

- To evolve a participatory process in identifying necessary interventions that must be put in place.(involves the mobilization of key stakeholders in realizing a sustainable future)
- Levying of the playing field in the energy market (removing subsidies and internalizing external cost).
- Adoption of a renewable portfolio standard.
- Creation of innovative fiscal and market incentive to encourage renewable energy technology supply industry (proposes a moratorium on import duties for renewable energy technologies).
- Recommends the establishment of a renewable energy fund to be managed by a Renewable Energy Agency to provide resources for incentives, micro credit schemes, training, research and development.

Financial Implications

In realization that meeting the targets of the renewable energy master plan will demand significant investments in renewable energy systems, an estimated cost for investment for activities outlined were given.

Looking through a Gender Lens

- The only mention of women is in its objective in respect of reducing environmental degradation and health risks, particularly to vulnerable groups such as women.
- The energy plan assumes gender neutrality and fails in incorporating the energy needs of women.
- The objective, strategies for implementation, activities and financial planning ought to clearly incorporate gender mainstreaming.
- The gender composition of energy sector policy making body should be clear.

The Way Forward

The Key to having an energy policy that promotes even development of men and women while also providing remediation of past discriminations in the sector is to undertake gender mainstreaming in the sector. This can be best achieved through the gender analysis framework. Analysis should be aimed at understanding gender issues in energy, observing current trend including division of labour, promoting access to resources, ensuring that budgetary allocation is sufficient to achieve set goals. The capacity of decision makers, policy makers, women, planners, implementators and researchers should be built to integrate gender issues in sustainable development especially in the energy policy.

Lobbying and advocacy aimed at influencing decision making should highlight the importance of integrating gender in energy policies and promoting the participation of women and women's group in the formation and implementation process. There should be a shift from the only approach to an approach that embraces partnership amongst government-private and civil society. We should support a policy which addresses the energy needs of women by supporting technological development and dissemination in sectors where women are most active and also provide financing and credit facilities to promote women's energy dependent business while also making available cleaner energy to address women's' energy needs for cooking and food processing.

References

Njeri Wamukonya 2002. A Critical look at Gender and Energy Mainstreaming in Africa. UNDESA: 1-14

Khamati-Njenga, B. and Clancy, J
Energia: 5-76

Concepts and Issues in Gender and Energy.

Etiosa Uyigue 2006. Proceedings of a One Day seminar on Renewable Energy: The Key to Sustainable Energy Development in Nigeria. CREDC: 37-44

Clancy, J. and Feenstra, M. 2006. How to Engender Energy Policy. ENERGIA: 1-47

Renewable Energy Master Plan 2005. FRN: 1-20

Parikh, J. Mainstreaming Gender in Energy Policy. IRAD: 6-28

Lopes, C. Energy and Women .Bureau for Development Policy.

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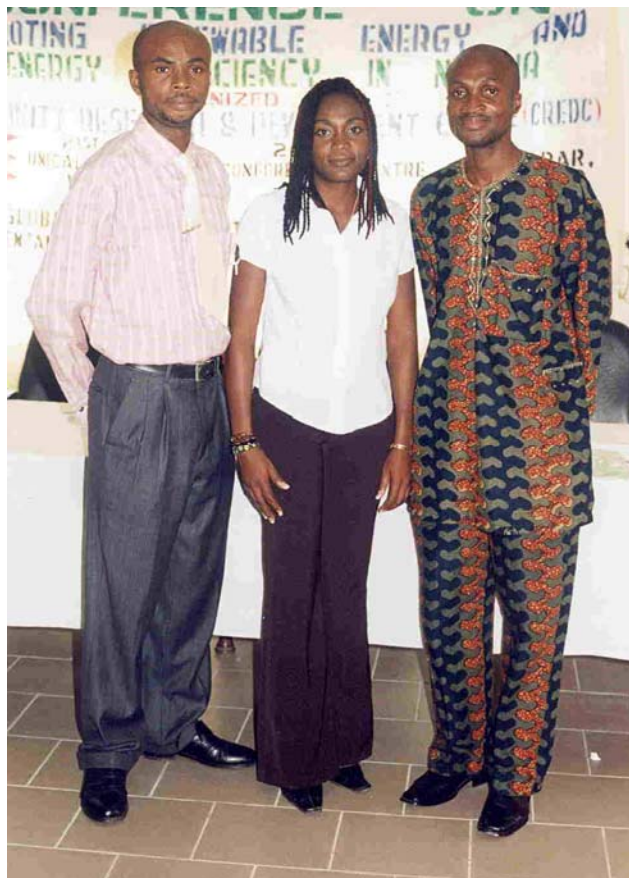
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Comments and Questions on the Third Presentation

Question: Mr. Matthew Agho

You said that women are more vulnerable to the hazard of fetching and using fuelwood. What about the man that goes out there looking for money to cater for the woman and the children? Are they not complimenting each other?

Response: Yes, the men and women complement one another. In some communities, the men provide the money and own the land but it is the woman that is exposed to the hazards associated with energy consumption. The women go about collecting fire wood for domestic energy consumption.

Question: Monica Sumec

The Council for Renewable Energy of Nigeria has been advocating for gender issues on renewable energy policy but some of the feedbacks have suggested that they are yet to see practical ways which gender can be promoted in renewable energy. Could you expand upon or suggest some examples of practical policy measures to accomplish this?

Response: There is need for capacity building programmes for women. There are young women in schools today being educated. A time will come when we will no longer see an energy sector dominated by men. If the woman is empowered, it will rub off on the man and the society in general.

Question: Omini Odem

My question is on the cultural issues on gender and the energy crisis in developing Economies. How can we mainstream cultural issues in the areas highlighted?

Response: The issue of gender and culture will be addressed by way of organizing capacity building programmes. This issue will be addressed if we make policy makers become aware of the effect of this energy consumption on women.

Question: Vitalis Ugoh

From the religious perspective, the man is the head of the family. Currently, the present government allows 30% of political positions to be given to women but unfortunately, the former speaker of the House of Representatives did not represent the women very well. Are women ready to meet up with the challenges like the men?

Response: The Bible does not state that women are inferior to men. The Purpose of our discourse is not gender but the effect of energy use on gender.

Question: Richard Ingwe

- a. Have you assessed the extent to which NEEDS addressed energy generally and also how gender balanced it is?
- b. What success stories in developed nations can we learn from?

Response: When we talk of gender, the men become defensive. A gender analysis framework is necessary. NEEDS is not an energy policy, but an economic policy that identifies energy.

Comment: Ben Usang

You talked about women fetching firewood, but I fetch gas for my home because we do not use firewood in my house. In my opinion, a man and a woman are the same since both can choose and pursue careers. Gender issues in the Energy Master Plan should be properly addressed. The National Energy Master Plan should be conscious of the changing roles of men and women within the family. Men and women outside of the family face fundamentally the same energy challenges except of course women who due to their unprivileged background are particularly vulnerable.

PLENARY SESSION

Participants in the conference were divided into two groups. Each group was asked to make policy statements on renewable energy and energy efficiency. It was agreed upon that the policy statements from the two groups will be synthesized to draft the communiqué.

Report from Group One

Presenter: Emmanuel Urang,

1. The state government are not encouraged to exploit alternative energy sources
2. The use of solar energy should be encouraged
3. Wind mapping was contracted out with the aim of installing wind turbine, but the contract was abandoned
4. The use of “Jatropha” and “Neem” plant in the production of biofuel should be incorporated into national energy strategy
5. The government should set up the Ministry of Renewable Energy and Energy Efficiency
6. Inadequate policies on renewable energy and energy efficiency should be addressed
7. Civil society, NGOs should be involved in the planning and implementation of renewable energy policies and projects
8. We should strengthen the capacity of stakeholders on renewable energy and energy efficiency and develop partnership with international agencies
9. The importation of renewable energy technologies should be duty free
10. Government should promote the mapping of renewable energy and energy efficiency centers
11. Nigeria government should mainstream gender in renewable energy and energy efficiency issues and women should be involved in policy formulation, planning and decision making

Report from Group Two

Presenter: Anietie Ben Akpan

1. The government should enhance the strategic integration of relevant stakeholders groups into all policies on renewable energy
2. Policy formulated should be targeted towards the use of sustainable eco-friendly alternative energy sources
3. Advocacy and capacity building should be intensified to ensure community empowerment to participate in initiatives on renewable energy and energy efficiency
4. Government should develop effective regulatory framework and pass the National Gas Act into law by the National Assembly
5. The government should increase the budgetary allocation to the energy sector for research and development of alternative energy
6. Government should mainstream gender in the energy sector in the areas of policy formulation and implementation



Group discussion



Group discussion

CLOSING FORMALITIES

Ms Agharese Edevbaro, the Programme Manager of the CREDC delivered the vote of thanks on behalf of the CREDC. She expressed her gratitude to the participants for making out time to attend the conference. She also thanked the partners of CREDC, the Global Greengrants Fund and the Environment Rights Action/Friends of the Earth, Nigeria (ERA/FoEN) for their support. She thanked the various NGOs represented and the media representatives that attended the occasion. The vote of thanks was followed by the closing prayer said by Godwin Ugah of the Council for Renewable Energy of Nigeria.

Appendix 1: Communiqué

Communiqué Issued at a One-Day Seminar Titled Promoting Renewable Energy and Energy Efficiency in Nigeria Organized by the Community Research and Development Centre (CREDC) at the University of Calabar Hotel and Conference Centre on 21st November 2007

Preamble

A one-day seminar titled “Promoting Renewable Energy and Energy Efficiency in Nigeria” , organized by the Community Research and Development Centre, with support from the Global Greengrants Fund and the Environmental Rights Action/Friends of the Earth Nigeria (CREDC) held on the 21 November 2007 at the University of Calabar Hotel and Conference. The event was attended by Twenty-eight participants drawn from the government, academics, NGOs, private sectors, student bodies, and the media. Among the government officials present is the Commissioner of the Cross River State Ministry of Environment. The event featured paper presentations, observations, discussions and resolutions.

Observations

1. Though there are policies on renewable energy, there are no policies on energy efficiency
2. Nigeria can save over 50% of the energy presently consumed if we imbibe energy efficiency practices and products
3. To achieve sustainability in energy development in Nigeria, renewable energy and energy efficiency should be promoted along side with each other.
4. There is no agency in Nigeria specially created to promote energy efficiency
5. The Renewable Energy Master Plan of the Nigerian government does not mainstream gender in it strategies.
6. The energy sector was not given adequate budgetary allocation in the 2008 budget
7. That renewable energy and energy efficiency are mitigation strategies for climate change
8. Low access to energy have more impart on women and children.
9. There is low awareness in Nigeria on the Kyoto Protocol and it flexible mechanism especially the Clean Development Mechanism (CDM) and that the CDM is currently not benefiting developing countries in sub-Sahara Africa.
10. Nigeria flares 75% of natural gas because of lack of processing facilities, and this accounts for 20% of flared gas worldwide

Having observed these, our **concerns** are:

1. The poor development of renewable energy and energy efficiency in Nigeria
2. The extremely low access to energy in Nigeria, especially the rural populace

3. The energy loss through inefficient energy practices and products
5. Low investment by the government in renewable energy technologies in Nigeria
6. Inadequate policies to develop renewable energy and energy efficiency in Nigeria
7. The adverse social and environmental impacts of gas flaring on rural populace in the Niger Delta.

Resolutions

1. Policy strategies should be targeted towards sustainable, eco-friendly alternative energy sources
2. The government should set up the Ministry of Renewable Energy and Energy Efficiency
3. Develop adequate policies with input from the civil society to address renewable energy and energy efficiency
4. Nigerian government should encourage the use of solar energy to provide electricity for her populace
5. State government be encourage to generate alternative energy sources
6. Civil society and NGOs must be involved in the planning and implementation of renewable energy and energy efficiency policy
7. Capacity build should be intensified to empower communities to advocate for renewable energy and energy efficiency
8. Nigerian government and local NGOs should develop partnership with international agencies to develop renewable energy and energy efficiency
9. The importation of renewable energy products should be duty free to encourage the development in Nigeria
10. The government should promote the mapping of renewable energy and energy efficiency centers
11. Mainstream gender in the energy sector through policy formulation and implementation
12. The government should increase budgetary allocation to energy sector for research and development of alternative energy in Nigeria
13. Enhance strategic integration of relevant stakeholders groups into all policies on renewable energy
14. Government should develop effective regulatory framework and pass the National Gas Act into law by the National Assembly
15. Youths and community opinion leaders should be involved in the promotion of renewable energy and energy efficiency in Nigeria

Signed:

Etiosa Uyigue
For Organizer

Surveyor Efik
For Participants

Appendix 2: List of Participants

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