

Envirofit Cookstove Programme of Activities (PoA) for Africa FIRST CDM PROGRAMME ACTIVITY (CPA) FOR GHANA

Managing Entity for Programme:
Envirofit International

Coordinator for First CPA in Ghana:
Centre for Energy, Environment and Sustainable Development (CEESD)

BACKGROUND

The Clean Development Mechanism is an arrangement under the Kyoto Protocol that bind developed countries to promote investment in developing countries in projects that reduce greenhouse gas emissions. By taking advantage of the CDM, a developing country could gain benefits such as transfer of technology and know-how, promotion of foreign direct investment in areas that would not have received support without the CDM, creation of job opportunities and new markets, and strengthening of ties between developed and developing countries.

For a project to qualify under the CDM, it must lead to emission reductions, it must promote sustainable development in the beneficiary developing country, and it must lead to technology transfer. Some of the projects that qualify for the CDM are related to renewable energy and energy efficiency.

ENVIROFIT COOKSTOVE PROGRAMME FOR GHANA

Envirofit is a global leader in the development and promotion of efficient charcoal and firewood cookstoves. Established as a U.S. tax-exempt corporation, Envirofit's mission is to create products that reduce pollution and energy dependency while yielding health, environmental and economic improvements.

In order to take advantage of the CDM, Envirofit has partnered CEESD to promote wide dissemination of Envirofit stoves in Ghana. The use of Envirofit stoves relative to traditional stoves used in Ghana has the following benefits:

- Improvement in the combustion resulting in an efficiency of up to 40%
- Reduction in biomass fuel consumption by 60%
- Reduction of smoke and toxic emissions by up to 80%

- Aesthetic appeal and ease of use

ENVIROFIT COOKSTOVE TO BE PROMOTED UNDER THE PROJECT

CEESD will promote the CH2200 Envirofit cookstove, the world’s most efficient charcoal stove produced. The CH2200 boasts of ultra-low carbon monoxide and particulate emissions—up to a 30% carbon monoxide reduction over a typical or traditional type stove and passes the WHO standard for 60 minute CO exposure limits. It weighs 2.5 kg and lasts for over 5 years.



Fig. 1. The CH2200 Envirofit stove seen from several angles

PROGRAMME OBJECTIVES

The main objective of this project is to use the CDM to distribute 12,000 efficient, clean-burning, and durable Envirofit CH2200 stove at an affordable price in three selected districts – Ejisu-Juaben, Asanti-Akim north, and Bosomtwe. The specific objectives are to:

- Create the platform for people to own, use and benefit from the stoves by subsidizing the market cost of the stoves by over 77%;
- Reduce the cost of expenditure on charcoal by beneficiary households
- Reduce the tonnage of charcoal used in the selected districts
- Reduce pressure on forest resources through reduced charcoal usage
- Reduce indoor air pollution (IAP) and the incidence of acute respiratory Infections (ARIs) especially among women and children
- Reduce emissions from the use of charcoal through reduction in the use of inefficient charcoal stoves

IMPLEMENTATION

CEESD will distribute 12,000 charcoal stoves under the project in the two selected districts.

The following stakeholders will be expected to support the project at the district level:

- District assemblies and local community members
- Traditional authorities
- Local and rural banks
- Local entrepreneurs
- Local NGOs, CBOs, and media

Stakeholders will be invited to attend a Consultative forum on 14th October, 2011. The distribution of the stoves is expected to begin on February and distributors/retailers will be trained and accredited by CEESD to sell the stoves and to record relevant information of users. Beneficiaries will be monitored to ascertain whether they are using the stoves and to report their feedback to Envirofit.

BENEFITS

The programme will lead to the following benefits:

- Creation of job opportunities for local entrepreneurs
- Creation of platform to that allows relatively poor people to own the stoves via microfinancing
- Improvement in local forest cover and environment
- Reduction in indoor air pollution and ARIs
- Savings on expenditure made on charcoal
- Flow of foreign direct investment through the earnings on carbon emission reduction

CONCLUSION

CEESD is proud to be associated with this project. The successful implementation of the project will lead to the sustainable development of the target districts and will create the platform for replication in other districts in Ghana. It will create job opportunities for young people and local business groups while ensuring that the environment is protected via reduction in forest degradation and greenhouse gas emissions. CEESD counts on the cooperation and support of all stakeholders.

CONTACT INFORMATION: ENVIROFIT INTERNATIONAL

Website: www.envirofit.org

Executive Team:

Ron Bills –Chairman & CEO
ron.bills@envirofit.org

Tim Bauer –Vice President, Operations
tim.bauer@envirofit.org

Nathan Lorenz –Vice President, Engineering and Product Development
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CENTRE FOR ENERGY, ENVIRONMENT AND SUSTAINABLE DEVELOPMENT
(CEESD)
www.ceesdghana.org

PROFILE

Legal name	Centre for Energy, Environment and Sustainable Development (CEESD)
Date of registration	October 20, 2009
Registration number	G-29,959
Type of organization	Non-Governmental Organization (Non-profit)
Website	www.ceesdghana.org
Email	info@ceesdghana.org ; ceesdghana@gmail.com
Postal address	P. O. Box 793, Kumasi, Ghana
Physical address	No. N.T.E.R 307, Bimper Hill, Osei Tutu BLVD. Near Asafo SSNIT, Amakom, Kumasi, Ghana
Objective	To disseminate technologies that promote sustainable development through research and development, capacity building, and project development in clean energy, environmental friendly technologies, and climate change adaptation and mitigation in Ghana and Africa.
Vision	Our vision is to become a global centre of excellence in the development and dissemination of clean energy and environmental-friendly technologies in Ghana and Africa.
Thematic areas	<ul style="list-style-type: none">• First and second generation biofuels• Solar thermal and photovoltaic• Energy Conversion, Utilization, Efficiency and Policy• Environmental Pollution and Sanitation• Climate Change Mitigation and Adaptation• Sustainable agriculture• Technologies for sustainable livelihoods
Current projects	<ol style="list-style-type: none">1. Research and development of second generation bio-oil reactors for large scale application in farming communities2. Decentralised solar water stills for fluorosis mitigation in Bongo district3. Development and promotion of gel-ethanol as household fuel in Domeabra (Asanti-Akim district) and Akawli (Yilo Krobo district)4. Development of CDM project on anaerobic waste treatment plant for Kumasi abattoir5. Climate change awareness programme for Teacher Training Colleges

6. Promotion of twig lights in rural communities
7. Development of solar crop dryers for drying of agricultural produce

Governing board:

1. Prof. Fred Akuffo, Mechanical Engineering Department, KNUST
2. Dr. Osei-Wusu Achaw, Chemical Engineering Department, Kumasi Polytechnic
3. Nana Opoku Agyemang, Former Managing Director, Kumasi Abattoir

Key Personnel Information

<p>Director</p>  <p>Julius Ahiekpor</p>	<p>Education</p> <p>MSc (Chemical Engineering) BSc(Chemical Engineering)</p> <p>Work Experience and Areas of Interest</p> <p>Mr Ahiekpor is a lecturer at the Department of Chemical Engineering of Kumasi Polytechnic and a founding member of CEESD. He is the Current Director of CEESD. He has been passionate and involved in projects aimed at providing affordable and sustainable source of energy for rural communities in Ghana; a passion which won him a Mondialogo award supported by Daimler and UNESCO in 2009. Julius has experience in the design and construction of solar water distiller. He was involved in the installation of the first community solar water distiller at Bongo. He is a researcher in the field of renewable energy technologies, environmental and waste management and sustainability.</p> <p>Recent Publication</p> <ul style="list-style-type: none"> • Antwi, E., Ahiekpor J., Arthur, R., Bensah, E.C., and Quansah, A.D., (2010). Ghana's Liquid Biofuel Policy: Challenges and The Way Forward. <i>IJEE</i>, 1 (5), pp 805 – 814. • Ahiekpor, J.C. and Kuwornoo, D.K. (2010). Optimization of Factors Affecting the Transesterification of Crude Palm Kernel Oil. <i>IJEE</i>, 1(4), pp 675 – 622. • Ahiekpor, J.C. and Kuwornoo, D.K. (2010). Kinetics of Palm Kernel Oil and Ethanol Transesterification. <i>IJEE</i>, 1(6), pp 1097 – 1108.
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Assistant director



Ing. Edward Antwi

Education

MSc (Thermofluids and Energy Systems)
BSc(Chemical Engineering)

Work Experience and Areas of Interest

Ing. Antwi is a lecturer at the Mechanical Engineering Department of Kumasi Polytechnic. He has been involved in conducting participatory rural appraisal to assess and prioritise the needs of rural communities in Ghana. He is presently working on efficient woodfuels cookstoves, the use of biodiesel in vehicles and review of national energy policy.

Recent Publications

- **Antwi, E.**, Arthur, R., Bensah, E.C., Ahiekpor J.C., and Quansah, A.D., (2010). Ghana's Liquid Biofuel Policy: Challenges and The Way Forward. *IJEE*, 1 (5), pp 805 – 814.
- **Antwi, E.** and Brew- Hammond, A. (2008) "Experimental Analysis of Vegetable oil blends in Compression Ignition Engines". 3rd Agricultural Eng. Conference, UCC, Cape Coast
- Co-Author, "Guidebook of Modern Bioenergy Conversion Technologies in Africa". UNIDO project, The Energy Centre, KNUST

Coordinator – environment



Mizpah Asase (Miss)

Education

BSc. Chemical Engineering
PhD Chemical Engineering (On-going)

Work Experience and Areas of Interest

Miss Asase is awaiting the defence of her Ph.D thesis at the Chemical Engineering Department, Kwame Nkrumah University of Science and Technology. Her research interests are in the areas of Development of Local Capacity for separate collection, handling and treatment of solid wastes, Life Cycle Assessment (LCA), Polymer Technology and recycling and environmental sustainability.

Recent Publications

- **Mizpah Asase**, Ernest K. Yanful, Moses Mensah, Jay Stanford, Samuel Amponsah, (2009). Comparison of Municipal Solid Waste Management Systems in Canada and Ghana:A Case Study of the Cities of London, Ontario, and Kumasi, Ghana. *Waste Management* 29 (2009) 2779–2786
- **Mizpah A.D. Asase**, Moses Y. Mensah, Samuel K. Amponsah (2008). Organised Source Separation of Household Waste – Pilot Study of University Staff Residences in Ghana. In Conference proceedings: 6th International conference **ORBIT** (Organic Recovery and Biological Treatment) **2008** - 13 - 15th of Oct. 2008, Wageningen, The Netherlands.

**Coordinator –
bioenergy**



Ing. Edem C. Bensah

Education

MSc – Mechanical Engineering (Thermodynamics)

BSc – Chemical Engineering

Work Experience and Areas of Interest

Ing. Bensah is a lecturer at the Chemical Engineering Department of Kumasi Polytechnic. He has been involved in the development of decentralized bio-oil reactors of use in farming communities. His research interests are in technologies for climate change mitigation and adaptation, biofuels, biosanitation and solar thermal.

Recent Publications

- Bensah E. C., Brew-Hammond A. Biogas technology dissemination in Ghana: history, current status, future prospects, and policy implications. International Journal on Energy and Environment, Volume 1, Issue 2, 2010; pp. 277 – 294.
- Bensah E. C., Mensah M., Antwi E. (2011). Status and prospects for household biogas plants in Ghana – lessons, barriers, potential, and way forward. International Journal on Energy and Environment. Accepted for publication; IJEE-243-21012011.

**Coordinator – solar
energy**



David Ato Quansah

Education

Msc Mechanical Engineering (Thermofluids and Energy Systems)

Msc Genie Energetique Mastere Specialiste, 2iE

Work Experience and Areas of Interest

Mr Quansah lectures at the Mechanical Engineering Department of KNUST. He is also a research engineer at The Energy Center (TEC) of KNUST and has additional responsibility for coordinating short courses under a Renewable Energy Education Project (REEP) with support from the EU-ACP EDULINK Programme. His areas of interest are Electricity Storage Batteries for Small Solar Photovoltaic (PV) Systems, Energy Efficiency in buildings and Industry, Economics of Solar Photovoltaic Systems (grid-tied and off-grid), Climate Change Mitigation and Adaptation Strategies, Policies for dissemination of Renewable Energy Technologies in developing countries.

Recent Publications

- Review of Strategic National Energy Plan-SNEP (2007)-Project Report to the Energy Center-KNUST
- Pre-feasibility study on the generation of biogas from the KNUST sewage treatment plant (2007)-Project Report to the Energy Centre-KNUST