GHANA SEforALL NEWS

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PROGRESS ON HIGH IMPACT PRIORITY AREAS

ENSURE UNIVERSAL ACCESS TO MODERN ENERGY SERVICES

* **Improve Access to Clean Cooking Solutions**

Implementation of the National LPG Promotion Policy

The National Petroleum Authority (NPA) is making progress in the preparatory activities toward the full implementation of the LPG Cylinder Recirculation Model (CRM) in Ghana. The Authority has: issued license to six (6) companies to operate as bottling plants; developed Operational, Health and Safety Guidelines for bottling plants, auto gas retail outlets, cylinder transport and cylinder exchange point operations; completed a nationwide risk assessment exercise covering 659 outlets of which 77.4% are classified as high risk, 17.5% medium risk, and 5.1% low risk; and commenced training and capacity building for LPG truck drivers (in collaboration with Road Safety Limited), safety and compliance officers of LPG Marketing Companies (LPGMCs) and Oil Marketing Companies (OMCs), and 54 LPG installers. Nationwide stakeholder engagement is ongoing for electronic and print media firms.

Nationwide Stakeholder Engagements (Photo credit: NPA)

Training and Capacity Building (Photo credit: NPA)

GHANA SEforALL SECRETARIAT

GHANA'S SEforALL ACTION AGENDA SEEKS TO:

- Ensure Universal Access to Modern Energy Services
- Increase the Share of Renewable Energy in the National Energy Mix
- Increase the National Rate of Improvement in Energy Efficiency

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The NPA is also working on a new LPG price build-up which covers bottling plant margin and revised marketers margin. The CRM will first be piloted in Obuasi and Kwabibirem in the Ashanti and Eastern regions of Ghana, respectively, before being extended nationwide.

The new value chain for the LPG market and roles of key players is shown in the Table.

No.	Player	New Roles
1	Bulk Distribution Company (BDC)	a) Imports products; b) Stores; and c) Distributes in bulk to LPGMCs and Bottling Plants.
2	Bulk LPG Transporter	Transport LPG in bulk from BDC storage to bottling plant, bulk customer facility or to autogas retail outlets.
3	Bottling Plant (BP)	a) Procure LPG from BDCs and resells to LPGMCs; b) Refills cylinders for LPGMCs; c) Tests cylinders; and d) Undertake maintenance of cylinders with minor defects and refer cylinders with major defects to Manufacturing & Maintenance Facility.
4	LPG Marketing Company (LPGMC)	a) Procure LPG from BDCs for supply to Auto Gas outlets and Bulk Commercial Customers; b) Own and brand cylinders; c) Transport refilled and empty cylinders; d) Manage entire supply chain between BP and consumers; and e) Maintain cylinders.
5	Cylinder Transporter	Transports filled and empty cylinders between bottling plant and cylinder exchange points.
6	Dealer/ Distributor	a) Operate cylinder exchange points on behalf of LPGMCs; b) Operate Auto gas facilities on behalf of LPGMCs; and c) Manage LPGMC safety and regulatory protocols and customer relations on behalf of LPGMCs.
7	Cylinder Re-distributor	Responsible for distribution of filled cylinders, in order to make the product further accessible in residential neighborhoods.
8	Manufacturing & Maintenance Company	a) Manufacture cylinders; b) Undertake major maintenance of cylinders; and c) Disposal of cylinders.
9	Consumer	Domestic Customer exchanges an empty cylinder for a filled one at the cylinder exchange point; A bulk customer is supplied with LPG at a private storage facility that is branded by an LPGMC and certified by NPA.

Ministry of Energy and Climate Change Centre of South Korea to Distribute 500,000 Improved Biomass Cookstoves for Poor and Urban Households in Ghana

In October 2018, the Ministry of Energy entered into a deal with the Climate Change Center (CCC) of South Korea to mobilize private capital to fund the promotion of 500,000 units of improved charcoal cookstoves targeted at urban and peri-urban households by 2020. The investment would be paid back using the carbon credit architecture.

The project builds on the success of the local improved biomass cookstove industry and

creates the needed incentives for scale-up along the cookstove value chain.

The project complements government efforts to increase access to clean cooking solutions and technology diffusion as well as accelerate the attainment of its commitments under the Paris Agreement.

Hon. John Peter Amewu, Minister for Energy (left) with Delegates from Korea during the Project Inception Mission earlier this year (Photo credit: Ministry of Energy)

The Ministry of Energy and CCC signed the Memorandum of Understanding (MOU) in November 2018 which paved the way for the development and implementation of the ICS programme. Under the MOU, the CCC will mobilize private investment funds from multiple large corporation covered by Korea Emissions Trading Scheme (KETS) who want to get foreign Certified Emissions Reductions (CERs) that will become eligible for compliance offsets from 2018 for the project implementation cost. The project is in the preparatory phase and expected to receive Cabinet Approval by the end of the third quarter of this year.

There are two major components – production and warehousing, and distribution of the cookstoves to households. Cookstoves distributed under the project would be given distinct attributes to enhance accounting in line with the UNFCCC Frameworks.

Mopping of cookstoves from the local market would be done by WOOAM contracted by the CCC and the distribution component would be carried out by the Ministry of Energy.

Photo above & below: Project Delegates from Korea Visiting Gyapa Cookstove Production Hubs in Accra (Photo credit: Ministry of Energy)

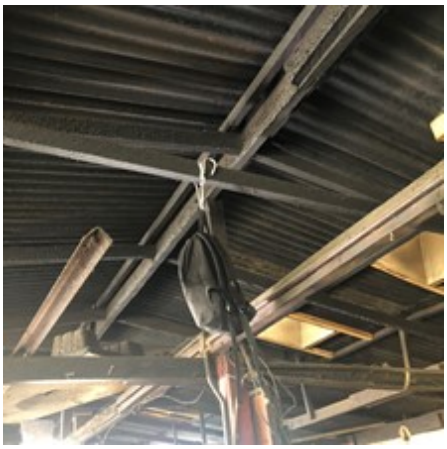
The "Gyapa" brand, a locally manufactured ceramic lined cookstove has been selected for this project. In addition, the Ministry will also support other brands tested and recommended by the nation's two cookstove test laboratories.

Osu Night Market Gets New Improved Biomass Cookstoves

The Member of Parliament (MP) for Klottey Korley in her effort to improve the carbon foot print in her constituency has started a clean cooking programme at the Osu night market. The MP, Hon. Zanetor Rawlings provided support for four efficient biomass cookstoves and three fish ovens to be built for food vendors at the Osu night market. It is estimated that the introduction of these efficient cooking devices has seen a reduction in the outdoor air pollution in the market environ by about 33%.

The night market which is located on Lokko street,, Osu, is an old popular market where foods such as Kenkey, rice, kelewele, fried yam, fufu and soup, porridge, smoked fish and meat, etc. are sold to the public from 3pm through to 2am.

A private research firm, Commeh and Associates was contracted to assess the air quality of the cooking environment due to emissions from the biomass cookstoves and provide more efficient cookstoves.

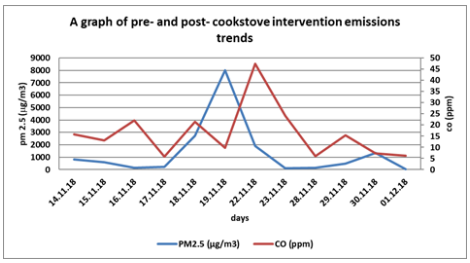


Emissions Measurement during a Cooking Event (Photo credit: Michael Commeh & Eugene Appiah Sefa)

Emissions measured over a period of six (6) days in the cooking environment prior to the intervention had particulate matter ($PM_{2.5}$) ranging from 152µg/m^3 to 8026µg/m^3; and carbon monoxide (CO) ranging from of 9.7ppm to 47.4ppm.

The post-intervention measurement showed $PM_{2.5}$ and CO emissions dropping to 35µg/m^3 and 6ppm, respectively. The graph shows the trend in emissions over a 12-day period: 14-19 November 2018 being the pre-intervention

emissions; and 22 November to 1 December 2018 covering the intervention installation and use period. The estimated thermal efficiency and fuel savings of the new cookstove and fish smoker is about 45% and 60%, respectively.



Trends in Emissions Measured in Cooking Environment Pre– and Post-Intervention (Source: Michael Commeh)

Pre-intervention Cookstoves (Photo credit: Michael Commeh & Daniella Fritzi)

The cookstoves were installed with chimneys to direct emissions away from the cooks and customers.

Even though not all the stoves had been replaced the reduction in emission is significant, indicating an improvement in the carbon foot print of the night market. Savings in cooking time were also realized resulting in other non-direct beneficiaries being given the opportunity to use the cookstove after the beneficiaries are done with their cooking.

Commeh and Associates recommend some structural re-design of the market's cooking facility to ensure proper ventilation and a healthier business environment.

Photo above: Efficient Biomass Cookstoves with Chimney and below, Improved Fish Smoker Built by Commeh and Associates (Photo credit: Michael Commeh)

Osu Night Market during Peak Period (Photo credit: Internet)

INCREASE THE SHARE OF RENEWABLE ENERGY IN THE NATIONAL ENERGY MIX

Creation of a €30m Facility to Support the Implementation of Renewable Energy and Energy Efficiency Projects in Ghana

On Thursday, 20 June, 2019, Agence Française de Développement (AFD) and the Energy Commission (EC) signed a Technical Assistance Facility (TAF) to support local banks and energy businesses in Ghana. The facility, Sustainable Use of Natural Resources and Energy Finance (SUNREF) programme is one of the largest green finance projects to be deployed in Ghana.

The SUNREF programme has three pillars:

a) Credit lines of up to €30m from AFD disbursed through local banks;

b) A Technical Assistance Facility (TAF) of €1.8m from the European Union Africa Infrastructure Trust Fund (EU-AITF); and

c) An investment grant scheme €2.4m from the EU-AITF to provide additional incentives to green investments.

The programme is designed to support small and medium-sized companies in Ghana to invest in renewable energy and energy efficiency interventions. It is expected to contribute up to 7GWh per year reduction in energy consumption, increase the share of renewable energy in the overall energy mix and contribute to CO_2 emissions reduction.

The programme will also support the Energy Commission to perform its function of promoting the development and implementation of renewable energy and energy efficiency initiatives in Ghana.

The SUNREF TAF is a 3-year programme jointly developed by AFD and the Commission, supported by the European Union.

The Commission will host and manage the TAF and AFD will provide the funds.

Photo above: Signing of the Contract by the French Ambassador and Executive Secretary of the Energy Commission

Below: Key Dignitaries at the Event

(Photo credit: Energy Commission)

The signing ceremony was attended by H.E. Mrs. Diana Acconcia, European Union (EU) Ambassador; H.E. Mrs. Anne-Sophie Avé, the French Ambassador; Prof. George Panyin Hagan, Energy Commission Board Chairman and representatives; Dr. Alfred Ofosu Ahenkorah, Executive Secretary, Energy Commission; Kofi Adu Agyarko, Director for Renewable Energy, Energy Efficiency and Climate Change, Energy Commission; Senior Officials from the European Union, the French Embassy, AFD and the Energy Commission.

A North-South Cooperation on Cocoa Husk to Energy Research

A team of researchers from SRH University in Berlin, Germany; Kwame Nkrumah University of Science and Technology (KNUST), Ghana; Cocoa Research Institute, Ghana; Ghana Cocoa Board; and the University of Ghana are working in a cocoa growing area to assess the potential of converting cocoa pod husk to heat and electrical energy for use by the community.

The project has received €59,933 funding from the Ministry of Research, Germany. The research project seeks to:

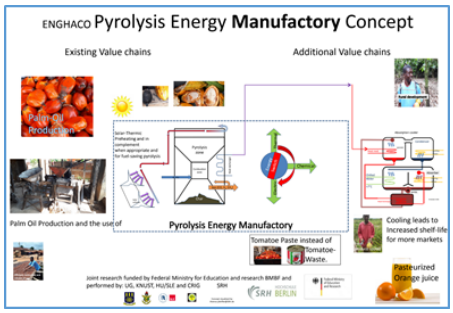
a) assess the feasibility of pyrolysis as an appropriate, effective and sustainable means of demand-point power supply that can play a role in rural development, while contributing to climate protection;

b) establish the potential value chains of the Ghana Cocoa; and

c) gather valuable data for further research on technology transfer to rural areas.

The concept is to use municipal and agricultural waste (cocoa pod husk) to produce biofuel, bio-gas, wood vinegar, bio-char for soil improvements, mineral processing, soap making and carbon and ash as bio-composite for concrete and cement mortar production.

The diagram below demonstrates the project concept.



Source: Thomas Pfeiffer, SRH University, Germany

Research conducted under the project showed that cocoa husk left after the extraction of the bean contains about 19 MJ/kg (Mega joule of energy per kilogramme).

Work has already started with gas samples, bio-char, wood vinegar and bio-oil produced from the cocoa husk being analysed at the SRH University in Berlin. A pyrolysis system has been set-up at the KNUST and products are being produced. The gas currently is running on a two stroke ICE with 1kw out power and gas stoves using an improve cookstove with thermal efficiency of 55.9%. The project is expected to raise funds up to €3m and last over five (5) years.

Stakeholders being Shown Pyrolysis Techniques for the Cocoa Pod Husk at KNUST (Photo credit: Fritzi Ziebel and Eugene Sefa-Appiah)

Cocoa Pod Husk (Photo credit: Fritzi Ziebel and Eugene Sefa-Appiah)

From left, Blue Gas Flame; next, Two Stroke ICE being Powered by the Gas Generated from the Pyrolysis Process (Photo credit: Fritzi Ziebel and Eugene Sefa-Appiah)

SEforALL RELATED EVENT HELD IN THIS QUARTER

GHANA HOSTS 5TH MINI GRIDS ACTION LEARNING EVENT

The World Bank's 5th Mini Grids Action Learning Event was held in Accra, Ghana from 24-28 June, 2019 at the Mövenpick Ambassador Hotel. The main objective of the event is to bring stakeholders together to discuss building blocks and market drivers for accelerating energy access through mini grid electrification.

The event was used to share success, challenges and lessons learned from the use of national policies and programmes to facilitate mini grid electrification in countries like Bangladesh, Ghana, Kenya, Mali, Nigeria, Rwanda, Sierra Leone, Somali, Tanzania, and Zambia, Workable business models, access to financing, gender considerations, integration of productive uses to stimulate socio-economic development and improve viability of mini grids, etc. were also discussed.

Hon. Mohammed Amin Adam, Deputy Minister Responsible for Petroleum, Ministry of Energy, Ghana, giving Key Note Address at the Event (Source: Internet)

A number of side events and parallel meetings were also organised to maximize the output and outcome of the Conference. Key among them are:

- Ghana Clean Cooking Forum; organised in collaboration with the Ministry of Energy and Energy Commission of Ghana, Clean Cooking Alliance and the Ghana Alliance for Clean Cookstoves and Fuels (GHACCO) to discuss cooking energy and technology transitions in Ghana and plans by the World Bank to support the country's transition to clean cooking.
- Hands-on-training on HOMER ENERGY and ODYSSEY app for designing hybrid energy systems.

Caroline Adongo Chieng, Energy Specialist, World Bank making a Presentation at the Ghana Clean Cooking Forum (Photo credit: Phish eye)

HOMER Energy Training Participants (Source: Microgridnews.com)

The Event was used to launch the WB/ESMAP Technical Report 014/19: Mini Grids for Half a Billion People – Market Outlook and Handbook for Decision Makers (available at: https://openknowledge.worldbank.org/handle/10986/31926).

The event was organised by the WB Group (under the Energy Sector Management Assistance Programme, ESMAP); Ministry of Energy, Ghana; Climate Investment Funds; and UK Aid. Over 250 participants attended the conference from government and non-governmental organisations, energy businesses, finance institutions, and the development community from 31 countries across Africa, Asia, Europe, United States and Canada.

It is envision that the overall lessons generated through the event will inform future efforts in the global mini grid sector on how to effectively scale-up. Earlier similar events were organised in Kenya, Myanmar and Nigeria.

Digital versions of the conference material is available at: http://bit.ly/WBGhanaMaterials

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Link to the Ghana SEforALL Action Plan: http://energycom.gov.gh/renewables/se4all

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