

Presentation

Potential of Biogas from Municipal Organic Waste and Wastewater

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**UMAWA-ARKOLIA
WEST AFRICA LTD**



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Who We Are

- **UMAWA-Arkolia is a Joint Venture between UMAWA Limited, a Ghanaian consultancy firm and Arkolia Energies, a French renewable energy project developer.**
- **Our vision is to spread the use of clean energy making the work processes of UMAWA-Arkolia the benchmarks for the renewable energy industry in Ghana.**
- **To employ innovative and international best practices in renewable energy to provide sustainable, reliable and cost-effective green energy solutions in the best interest of society and a better environment .**

Who We Are

- **Our Products and Solutions:**
 - **Biogas Plants:**
 - Municipal Solid Waste**
 - Industrial and Agricultural Waste**
 - **Solar Energy Solutions:**
 - Carport Systems**
 - Roof Mounted Photovoltaic Plants**
 - Ground Mounted Photovoltaic Plants**
 - **Wind Energy.**



Our Biogas Project - 1

- To use municipal waste to generate biogas through anaerobic digestion using the Arko-Metha.

STEPS:

- Mechanically sort the waste as much as possible, and place the organic matter components in crushers and thereafter into digesters for methanization. Anaerobic digestion allows the transformation of organic matter into biogas.
- This is a bacterial process that happens in 4 stages: **Hydrolysis, Acidogenesis, Acetogenesis and Methanogenesis**

The Arko-Metha Process

- A progressive flow of thick material piston type, such as a hallway avoiding mixture of different bacterial flora for a good biological balance.
- A digestion vessel divided into two compartments maintained at temperature levels at different PH. One compartment reserved for hydrolysis and acidogenesis and the other for acetogenesis and methanogenesis.
- Chimneys distributed in the two compartments of the fermenter to brew the thick material by sequential and intermittent injection of pressurized gas.

Advantages of the Arko-Metha Process

- High concentration of solids in digester (little or no dilution).
- A continuous process of self limiting manipulations.
- High yield of degradation of organic material and high generation of biogas.
- Digestate technically sanitized through thermophilic stage, holding the substrate at a temperatures that eradicate pathogenic bacteria and germs, automatically alleviating health risks.

Biogas Potential from Municipal Waste and Wastewater - 1

- Generation of energy for own consumption on-site or feed into the national grid.
- Promote energy security and stable energy supply (electricity, heat and fuel –CNG-).
- Cost-effective energy supply through optimum utilization of municipal solid waste and agro waste for energy generation and supply.



Biogas Potential from Municipal Waste and Wastewater - 2

- Production of compost, a valuable biological fertilizer to complement, and in certain cases even replace mineral fertilizer.
- Creation of green jobs and contracts within the engineering sector. Diversification in skills acquisition.
- Prevention of diseases like cholera through a cleaner environment.
- Reduces risk of tariff volatility through long term Power Purchase Agreements or Ownership.



Challenges Encountered in Our Operations

- **Unavailability of reliable and relevant information on waste characterization.**
- **Lack of readily available human and technical capacity to conduct project relevant tests and analysis e.g. BMP Tests.**
- **Administrative bottlenecks and high import tariffs for laboratory and other equipment.**
- **Lack of acceptance of this new technology.**



Conclusion

- **Generating renewable energy, reducing solid wastes, reducing GHG and mitigating pollution risks can be realized from a biogas facility in an economically sound and sustainable manner.**
- **Biogas technology is proven and reliable.**
- **Finally, biogas production generates diverse revenue streams and attractive investment opportunities that leverage multiple economic and environmental benefits.**

LET US NOT WASTE MUNICIPAL WASTE !!

THANK YOU



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