



# Urban Pathways

Development of renewable energy systems (Biogas for cooking and solar energy for lighting) in Second Cycle Educational Institutions in Ghana - Ga North Municipal Assembly (urban) and Atwima Nwabiagya Municipal Assembly (rural)

## Participants and roles

1. Akenten Appiah-Menka University Of Skills Training and Entrepreneurial Development (AAMUSTED, Kumasi) (Local Demonstrator)
2. Leitao Technological Center, Spain (Technology provider - bioelectrochemical system)
3. Technalia, Spain (Technology provider - solar PV - micro smart grids)
4. Local SMEs (Support in local implementation of demonstration activities)

## Context, motivation and objectives

1. National electricity coverage has expanded over the years but there is still over-reliance on hydropower sources and fossil-fuel (thermal) energy sources.
2. In Ghana, though electricity remains the main source of power for lighting for 88.6% of urban households, electricity use for lighting in rural households is less than 50%.
3. Nationally, energy for cooking is largely dependent on the use of wood (41.3%), charcoal (31.5%) and gas (22.3%). In urban areas 43.6% of households use charcoal for cooking.
4. The demonstration will explore clean cooking through waste-to-energy solutions and solar lighting

## Challenge

1. Institutional use of energy for cooking and lighting is not largely different from the above situation. Most educational institutions still depend on firewood and charcoal for cooking for students.
2. Increasing electricity bills and costs associated with charcoal and firewood and Liquefied Petroleum Gas (LPG), as well as expenditures on dislodging sewage systems.
3. Sewage is usually disposed-of into the Ocean or sometimes at unauthorized places owing to the inadequacy of Sewage Treatment Plants. This poses health hazards to communities near disposal sites.
4. Heavy reliance on firewood and charcoal for cooking meals for students negatively works against the goal of - reducing carbon emissions, pollution and the rate of deforestation in the country.

## Innovative approach and contribution to the project

1. The initial scope of the demonstration will involve setting up waste-to-biogas plants for cooking and solar systems for lighting in four (4) public Second Cycle Schools
2. The demonstration will encompass business models, capacity building on construction and maintenance of the plants, and other activities to deliver a complete value chain.

## Expected results

1. Provide clean and reliable energy for cooking and ensure adequate availability of electricity for productive use including lighting for night-time learning activities and illuminating school compounds to ensure security at night.

## Sustainability, replicability

1. The solutions can be replicated in all the Senior High Schools in the Greater Accra and Ashanti Regions and where practicable in the over 100 Government Boarding Schools in Ghana.

## Expected impacts

1. Maximize productive use of clean energy (link to SDG 7 - Affordable and clean energy)
2. Reduce GHG emissions and rate of deforestation (link to SDG 13- Climate Action)
3. Help improve water and sanitation hygiene (link to SDG 6 - Clean water and Sanitation)
4. Contribute to delivering quality education (link to SDG 4 - Quality Education)
5. Provide economic benefits such as employment to local innovators (link to SDG 8 - Decent work and economic growth)

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