



Prospects of Biogas Toilets for Peri-Urban Poor: a retrospective view of the Kaase Biogas Project

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ABSTRACT

Liquid waste disposal is a real problem for the poor in Kumasi Peri-urban Interface. Due to the temporary nature of liquid waste, the Kumasi Metropolitan Authority (KMA), which is responsible for waste management, has not been able to track and manage liquid waste in peri-urban communities as effectively as it has done with solid waste. Both poor and rich groups in this area are culprits but the poor suffer the consequences more than the rich.

The Kaase Biogas Toilet was an attempt by Guinness Ghana Limited, a company at Kaase, a peri-urban community (now urbanized), to fulfill its social responsibility by assisting the poor in this community to manage liquid waste. The Waste Department of the KMA and the Centre for the Development of People (CEDEP), an NGO in Kumasi were asked to assist in the project implementation by providing technical backstopping and community enablement respectively.

Despite these efforts, the project never accomplished its final objective but has been of use to the community till date and holds lessons for and other peri-urban communities and stakeholders.

This paper is based on both primary and secondary data obtained from both published and unpublished sources. The Community Development Initiatives of the Centre for the Development of People and the KMA were the main institutions from which the data was collected. Key informant interviews were also conducted with some community members for first hand information.

A key finding is that for a project with several ends, a community is likely to stop where the first end is satisfied. The Kaase community was okay with the latrine and so did not pursue the biogas, which to them was of a smaller benefit.



DT2006 is an opportunity for CEDEP to share these experiences and learn from others about the prospects of projects of this kind.

INTRODUCTION

Toilets have been accepted as public good in Ghana and district assemblies, which are the implementers of development at the local level under Ghana's decentralization concept guided by the Local Government Act, Act 462. They have become the major stakeholders in the provision and management of toilet facilities on behalf of the state. Even where NGOs, Civil Society Organisations and private sector institutions provide public toilets, the district assemblies through the sub-district institutions like the Unit Committees remain important stakeholders. Despite the above, a community assessment of contribution of different groups to community sanitation in 12 communities in Kumasi peri-urban interface ranked government as third: indigenous people came first, then new entrants [1].

Issues relating to toilet differ in urban, peri-urban and rural environments. Whilst rural dwellers can decide to use the beach or a nearby bush as a community toilet, this becomes increasingly impossible as one gets closer and closer to the urban centre. Thus regulations on the type of structures that can be put up near or in the metropolis are stricter. As a matter of policy, the KMA discourages the use of KVIP in the peri-urban and urban centre. This however has implications for the poor and could be a contributor to the relegation of the poor groups to slums or to the peripheries of urban areas and perpetuation of insanitary behaviour (*ibid*).

The strict toilet policy of KMA has adverse implications for the poor because they cannot afford the cost involved and are thus forced to depend on nature. This overdependence on nature is not sustainable anymore [1] even in the rural areas. Thus in peri-urban communities, undeveloped plots, areas without light at night, especially along the roads, have become places of convenience where the poor (the young men especially) secretly defecate, hoping that the natural environment would absorb and recycle it into the soil. Some women take part in this but they do it in another way by defecating in polythene bags and throwing them onto undeveloped plots. This practice is even worse as nature is able to handle the liquid waste but not the polythene. These adverse implications have been realized by some local NGOs who are collaborating with Habitat, an international NGO, to assist the poor in urban slums and peri-urban communities to invest in better toilet facilities. The Social Investment Fund (SIF), the Community Water and Sanitation Project (CSWP) and the Community Based Poverty Reduction Project (CBPRP) are all initiatives that provide assistance in the area of household and institutional latrines.

In rural Ghana, toilets were often situated at the outskirts of the town. These toilets, where they were built through the communities' effort were normally constructed with cheaper materials than those used for human dwellings. Toilets provided by government were often



built with better materials than those used by the local people for their houses. Some communities do not like this as was expressed by Bulenga, where the people refused to patronize a toilet provided by their District Assembly on grounds that their 'shit' cannot sleep in concrete house roofed with roofing sheets whilst they themselves slept in thatched houses [2]. At Bulenga, there was the belief that adults and children should not use the same toilet facility and in other communities, it is a taboo for one person's excreta to land on that of another, so free range was preferred. These are just examples of the strong and diverse traditional and cultural beliefs and attitudes of Ghanaians towards liquid waste that converge at the peri-urban interface as a result of the human heterogeneity arising from urban attractions.

The need for community involvement in the management of public toilets led to the introduction of user fees, which motivates the fee collector to also take care of the toilet. This has gone a long way to improve sanitation at the toilet and its vicinity. The fee collector has added opportunity to also sell toilet papers and improve his income. This business has been found to be lucrative in the urban and peri-urban areas, where private people invested in building toilets and hiring it out to operators for daily returns. At Kwame Nkrumah Circle in Accra, even urinaries, which discharge urine directly into a dead river are highly patronized and have become a source of livelihood for some households.

It is common knowledge that liquid waste can be recycled to benefit man in other ways but it is new knowledge for some poor groups that energy can be generated from liquid waste. Thus any community in Ghana would be enthused to try the biogas technology; such enthusiasm may be driven by curiosity more than the need for the gas. The prospects of the biogas technology as narrated by specialists [3] were very attractive; however, although there are projects in the West African Sub-region, which have successfully demonstrated the biogas technology, successful community owned biogas projects are scarce. This paper therefore set out to learn about the Kaase Biogas plant to understand the critical inputs for a successful project in the urban and peri-urban environment, with the dual objective to provide an alternative means of handling liquid waste and providing a source of energy for domestic and industrial use. The paper then concludes on the potential for scaling up and replicating the technology in other urban and peri-urban setting in the Kumasi city and beyond.

METHODOLOGY

Research may be classified into fields of social science, life science, physical science, engineering science and humanities. Although the biogas may be studied in all the other fields, emphasis here is on the **social science** aspects and the purpose is to review what has gone on at Kaase since the project begun in 1998 and try to understand the implications. The research approach is thus neither a laboratory nor field experiment but a case study, which requires speaking to community members and stakeholders, and studying project documents for various views on the project execution and implementation.

PROJECT CYCLE

This portion looks at the logical step by step approach that was followed in planning the Kaase biogas project. The approach epitomizes the objective interaction between the planner, the society, other professionals (politicians, scientists and technologists). Lack of understanding of each of the attributes of the above stakeholders can interrupt success. In line with planning theory, CEDEP tried to facilitate a bottom-up process which empowers people and makes them the ends and means of the process.

Figure 1 below is a summary of the project's cycle with insight from the works of several project cycle experts such as Gosling and Edwards (1995), Rubin (1995), and others like Hagman and Rondineli, who argued variously about the cyclical and spiral nature of project cycles [5,6].

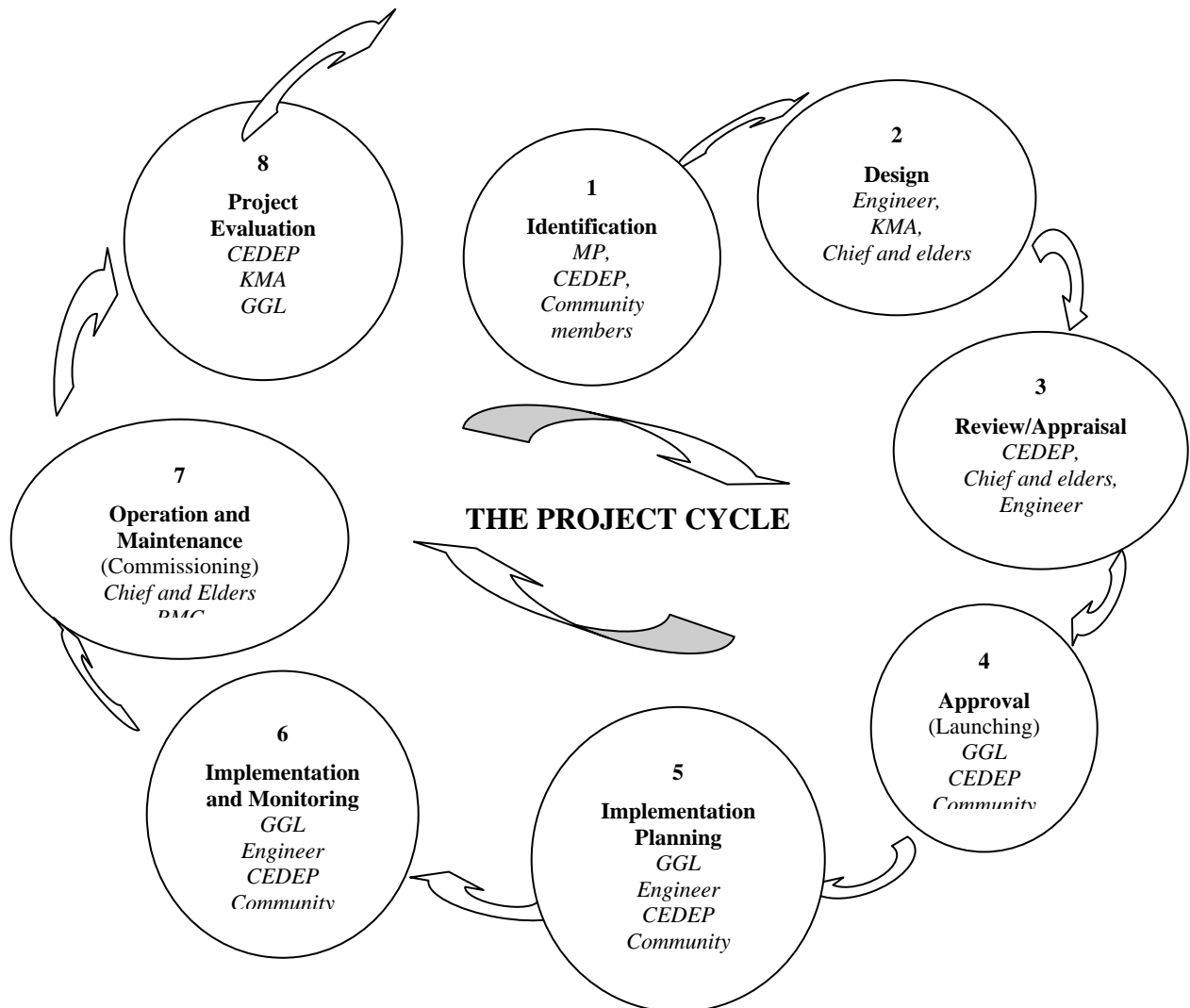


Figure 1. Project cycle for the Kaase Biogas Project.



Problem Identification

Kaase is an industrial suburb of Kumasi with a population of more than 7000 inhabitants. Lying in the industrial area of Asokwa West Constituency, it had a fast growing population as people moved to settle and work at the breweries and sawmills. There is a resultant disproportional supply of sanitation facilities relative to the population and as a result the inhabitants have improvised various methods (sometimes crude) to dispose of waste. The community interactions CEDEP had at the inception of the project noted from the community members, that there had been several health problems at Kaase in the late 1990's, which were linked to indiscriminate defecation of the inhabitants in the nearby bushes and the dumping of refuse in the River Subin by the inhabitants and KMA. Although the problem was well known to the inhabitants, it took a politician (the Member of Parliament for Asokwa West Constituency) to bring the problem to light and to get other stakeholders to join in taking action.

The Member of Parliament (MP) approached Guinness Ghana Limited (GGL), which had a factory at Kaase for assistance and his request received the necessary attention. GGL then contacted Water for Life, UK, and together they planned to support the Kaase community with 3 KVIP latrines in contribution to government effort towards the provision of improved sanitary facilities for the citizenry.

GGL contacted CEDEP to conduct community mobilisation and education on health and sanitation, and to facilitate the construction and management process of the KVIP. CEDEP proposed an idea to go beyond the Kaase community to carry out a further survey with other riparian communities such as Dompouse and Old Asokwa, in order to understand better the problem of insanitary conditions in the area, knowing hypothetically that constructing KVIP was not going to be the end of the problem. It was through the survey that it was noted that given that magnitude of waste generated and the growth rate of the population, a biogas plant linked with the KVIP would solve a greater part of the problem. Consequently, CEDEP facilitated the discussions on the design and established the relevant relationships leading to the management and commissioning of the biogas plant, a process that exhausted the entire project cycle. Details and lessons of experiences are discussed in the subsequent sections.

Project design

Although the initiators of the project saw KVIP as the intervention that would solve the problem, the community said that they preferred a water closet in a feasibility study and need assessment carried out by CEDEP. Yet they agreed from experience that running a water closet may be a problem because of irregular water supply [3] and proposed a bio latrine, which according to them will:

- Serve as a place of convenience



- Produce butane gas to provide fuel to a nearby community school and
- Be more cost effective to run because the effluent can be used for agriculture or it can be allowed to flow harmlessly away

After a series of meetings with the communities and the stakeholders, it was agreed that one 16-seater and one 12-seater bio latrine would be built for the community.

The necessary design documents were prepared and by October 1998 the actual construction work begun. In June 1999 the sod cutting ceremony was carried out, which was attended by important personalities such as the Managing Director of GGL and the Member of Parliament. The ceremony received full press coverage and was published in the Daily Graphic, Ghana's most popular paper.

Project review and appraisal

In order to effectively get awareness creation messages to the community members, knowing very well that most of them are illiterate, poor-friendly methods were used. One of these methods was the use of drama. The street theatre group and an urban youth network, called Youth In Action (YIA), prepared scenes to carry messages of indiscriminate defecation and its effect on community members. This was dramatized at a time when most community members have returned from work to ensure effective participation.

Due to the fact that the stakeholders at the point of the project design were not well versed in the operation of biogas systems, a consultant was engaged from the Kwame Nkrumah University of Science and Technology (KNUST), Kumasi and a company called Technologies for Improved Environment (TIE) to assist in creating awareness and sensitize communities about the biogas technology.

The above activities provided the necessary background information for the community and the stakeholders to objectively appraise the project. A workshop was held in this regard on June 23, 1999. After all these clarifications, awareness creation and sensitization on the biogas technology and bio latrines, the community opted for the technology.

Project Implementation Planning

To facilitate community involvement in project implementation, operation and maintenance, a Project Management Committee (PMC) was formed and trained. This committee was made up of 8 community members selected by the chief and elders of Kaase who were trained at workshops, seminars and meetings facilitated by CEDEP in leadership skills, bookkeeping, record keeping, effective communication and interpersonal skills, group dynamics and team building, conflict resolution and crises management.

A participatory work plan detailing out the objectives, activities, strategy, the time schedule, resource requirement and the time implications was developed to guide the



implementation of the project. This work plan was also to help in monitoring the progress of the project.

Project Implementation

The physical implementation of the project started in October 1998 but the commissioning was done in June 1999. This phase of the cycle involves disbursement of funds for the construction of the bio toilets, procurement, contracting, supervision and reporting of progress. Progress of work was good as reported by the Waste Management Engineer of KMA at the end of an evaluation exercise [4]. It was when it got to the purchase and installation of the gas balloons when a battle of accusation and counter accusation started between the community and the contractor on one hand and CEDEP and the contractor on the other. The contractor gave a condition that the community should first fulfil its promise of purchasing and installing the corn milling machine, which was supposed to be powered by the biogas. The community also wanted the balloons to be installed for them to see the gas before they purchased the corn mill. This battle continued on and the balloons, which were imported from Germany were never seen, neither was the corn mill bought nor installed. All attempts by CEDEP to get the contractor to act according to the contract failed. Thus when the latrine was completed, GGL decided to commission the project half way and the communities decided to also use the project half way.

Operation and Maintenance

The 8-member PMC supervised the use of the toilet by keeping records and banking the user fees. As at May 12, 2001, the PMC had collected and banked €7,000,000 and because the biogas plant was not fully operational, the PMC had to pay for periodic evacuation of the latrine. The evacuation was as frequent as bi-weekly but the PMC have been able to manage the evacuation with the money they accumulated from the user fee.

Later the engineer complained that the population of the community was underestimated and that the people did not heed to his advice that they should not dump rubber bags in the latrine. The women were especially guilty of this as they collect night soil of their babies and sick household members in polythene bags and dumped them in the latrine.

DISCUSSION

When the Member of Parliament approached Guinness Ghana Limited (GGL) for assistance to build a place of convenience, Guinness could have gone ahead to get a contractor to build the toilet and dash it to the community. GGL did not do it this way but made an effort to get the Kaase community to take part in deciding the kind of toilet they like best and also how they would manage it afterwards. To do this, GGL decided to CEDEP, which was then the participation guru on the KPUI and well recognized in Ghana for community mobilization. Not just CEDEP but GGL also decided to involve the Kumasi



Metropolitan Authority, which is, by Section 46 of Local Government Act, Act 462, the planning authority for the metropolis, from which permission must be sought before the development of any physical structure. Above all, well respected engineer in the area of biogas, trained abroad, who is a lecturer at the Kwame Nkrumah University of Science and Technology, Ghana's best institution of technology, was also mobilized to be part of the implementing team. With a Member of Parliament, a participation Guru and a critical actor in planning and the Chief, who is well respected, and a competent engineer mobilized for one project, one would have thought that GGL was set for a resounding success. However, this did not happen as the results reported here indicate.

Many things went well with this project, one of which was that the community was so empowered that the management committee was able to manage the money realized from user fees for a long time. The good thing they did was that they kept this money in a bank account, and with the training they received were able to keep records of their transactions. Just two years ago in 2004, a committee member approached CEDEP with a complaint that the community members were asking the committee to account to them. They were afraid that if they accounted to the community members, they will call for the gains realized to be shared. They were advised by CEDEP to account to the community members and together with them decide what the gains should be used for, not necessarily to share the gains.

This focus of this paper is, however, to concentrate on the challenges so that the stakeholders together with others can learn. Below were some of the challenges faced:

A myriad of suspicions

Right from the word "go", there were suspicions from many fronts. The Engineer of GGL suspected that the Chief of Kaase was putting stumbling blocks before the project because some royalties, which were paid earlier in form of drinks have ceased. The Chief of Kaase suspected that GGL gave the contract to CEDEP to facilitate capacity strengthening and community mobilization because the chief executive of GGL and that of CEDEP at that time were all from the same tribe. He therefore thought the amount paid to CEDEP was too much compared to the work CEDEP did, which he described as a "concert or joke". The engineer thought the chief of Kaase was trying to impede the project because he himself was a contractor and wanted to take the contract of building the toilet but his company was not offered the contract. With all these suspicions at the background, which only came to light at the close of the project, it was difficult to run the project smoothly.

Delays in release of money

There were complains during the life of the project about undue delays in release of money for the project. The contractor on several occasions sent memos to CEDEP to press for the timely release of money. His requests were buttressed with fears that if money was not released on time, the rains would set in and make the work difficult. CEDEP also sent several memos to GGL for timely release of money because the contractor wanted his



money. At a point in time, project funds got finished and funds had to be sought from other sources for the completion of the project. This brought further delays in the execution of the project.

Contracting challenges

One problem which was faced with contracts was the allowance of too much room for the community leaders to interact with the project design with what they wanted. The engineer complained bitterly that at the start of the project, one biogas toilet was supposed to be built. The design was such that it was very spacious and cozy with tiles and water closet. The Chief of the community thought it was too expensive and rationalized that the design should be modified to make room for two cheaper toilets. These ones were to have smaller cubicles, without water closet and tiles. The engineer agreed to this proposal and changed the design.

The second problem was that the engineer and the chief and elders made a gentleman agreement that they would use the biogas to run a corn-milling machine which would serve the school canteen. The engineer held on to this agreement, although it was not a written agreement and at a later date he made it a condition for installing the balloons for storing the biogas when he saw that the community was having difficulty purchasing the corn mill. He therefore blamed his failure to install the balloons to the failure of the community to purchase the corn-mill.

The question that keeps boggling the mind of CEDEP is the extent to which a development worker can go if people breeched contracts. Take them to court and have them prosecuted? This has been a problem for CEDEP because of the implications this may have for further community mobilization. The engineer was given the money to import the balloons, till date the balloons have not arrived and almost everybody seem to have forgotten but this is still on record.

Timely commissioning of the biogas toilet

This project received much press coverage both at the beginning and the end; this was because the launching and the commissioning were all covered by the press and reported in one of Ghana's best selling news paper (Launching in Daily Graphic on Thursday June 3, 1999 and commissioning on Wednesday, May 17, 2000). The slow progress of work due to delays with payments and the supply of balloons called for a late commissioning of the project. However, it was commissioned just on time for political and budgetary reasons in the interest of GGL. If the commissioning were to be delayed to ensure that the balloons have been installed, the project would have been forced to be completed but because GGL wanted the project commissioned so that their partners would see that the money has been used for a good cause and GGL will be promoted as supporting a good course, the timely commissioning of the project was forced. Just after the commissioning, the people who



really were in need of a toilet were forced to use it half way as a toilet instead of the biogas toilet planned.

Frustrations of engineer

The engineer complained bitterly that the community deceived him by giving him a lower population. He designed the toilet for 2000 people but about 8000 people were using it. The plant therefore needed more frequent maintenance than originally designed. The community was keeping the money realized from the user fees in a growing bank account and was reluctant to let go of some of this money for maintenance. They preferred to pay a tanker to come and evacuate the slurry but were not ready to release any of this money to the engineer so that he could clean the ducts of the biogas pipes. The community was also not ready to release some of this money for the purchase of the corn milling machine. This gave the impression that the community could have purchased the corn-milling machine if they wanted.

Disappointment by community members

Firstly the people complained that the cubicles were too small. Then later, those people living close by were infuriated by the untreated slurry that flowed in the gutters close by their houses and hailed insults at the engineer. Some called the Radio FM stations to complain about the toilet which CEDEP built wrongly, which is bringing them problems; they have forgotten about the contractor and GGL, it is only CEDEP that they now remember. The engineer also insulted them back that previously they did not have a toilet and were defecating about now that they have a toilet, their eyes are now open and that is why they are complaining.

Difficulty in pulling out

CEDEP was contracted to work on this project for a fee. Every project has a starting point and a finishing point. This was why GGL could not be blamed for ensuring that the launching and commissioning were done just as planned. However, it was not that easy for CEDEP, years after finishing the project, CEDEP, whose name the community remembered most was approached with every problem that cropped up and as a civil society organization, CEDEP had to live with this. Any time such a need arose; CEDEP detailed a staff and committed resources in the form of time and transport towards the solution.

CONCLUSION

Mobilizing powerful actors, observing detailed participatory methods and ensuring communities were involved in decision making, are good for successful community projects but in the case of biogas toilets, these may not be enough if the project should be fully operational in serving as a place of convenience, providing gas for energy and treated



waste, safe to use as manure. Further studies would be required to understand what makes it work in peri-urban and urban communities.

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REFERENCES

1. Quashie-Sam, S. J., Awudza, J. A. M., King, R. S., Kunfaa, E., Fosu-Adjei, B. & Ashong, K. *Contribution of new entrants in the middle and upper income groups to community development in the Kumasi peri-urban interface* [unpublished]. CEDEP: Ghana. 2005.
2. Ghanaian Times. P. 1. 1999.
3. CEDEP. *Minutes of Meeting with Officials from KMA Waste Management Department*, Unpublished, CEDEP: Kumasi, Ghana. 1998.
4. Mensah, T. *Report on Inspection of Biogas Utilisation Public Toilet Facility at Kaasi*, Unpublished, KMA: Kumasi, Ghana. 1999.

Other references:

Gosling, S. & Edwards, M. *A practical guide to Assessment, Monitoring, Review and Evaluation*. Development Manual 5, Save the Children: UK. 1995.
Rubin F. *Skills and Practice: A guide to Evaluation for Development Workers*, Oxfam: UK. 1995.