WaterAid & NewEnergy

Urban Work in Tamale

- **Mechanized High-yielding Water Systems**
- **Household Latrine Promotion**
- **Hygiene Promotion**

Achievements, Challenges and Lessons

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Introduction

Background of study

This is a case study on WaterAid Ghana and NewEnergy's urban work in Tamale, Ghana. The study aims at coming out with lessons and challenges recorded over the two years of starting urban work. Both partners – WaterAid Ghana and NewEnergy – are new in urban work, having worked exclusively on rural projects over two decades and a decade respectively. The Tamale urban project therefore presents learning opportunities to feed into more strategic and larger scale urban interventions in future.

WaterAid

WaterAid is an international NGO dedicated exclusively to the provision of safe domestic water, sanitation and hygiene education to the world's poorest people. The Ghana Country Programme was established in 1985. WaterAid Ghana operates through partnerships with local NGOs and institutions closer to the target beneficiary communities. Currently WaterAid Ghana implements projects through eight Ghanaian NGOs located in five Political Regions. Nonetheless, WaterAid Ghana projects are spread across eight regions in Ghana. NewEnergy is one such of the eight partners, having worked with WaterAid since 1994.

NewEnergy

NewEnergy is a Ghanaian NGO based in Tamale. The organization specializes in domestic water supply mainly through the provision of boreholes, hand-dug wells, and rainwater harvesting; household and institutional latrine promotion, and hygiene promotion. NewEnergy also provides renewable energy and micro finance services. Its projects are spread across four districts in the Northern Region, including the Tamale Metropolis. The organization is one of WaterAid's strategic partners due to its location in one of the poorest regions in the country and its potential for urban work.

WaterAid Ghana Urban Work

WaterAid Ghana's development intervention focus had been on rural water, sanitation and hygiene promotion since 1985. A new three-year Country Strategy, drawn in 2003, however, made mention of starting urban work. The strategy only mentioned the initiation of water, sanitation and hygiene promotion work with 10,000 urban dwellers by 2004 by which time a strategy would have been developed[1].

With funding from WaterAid in 2000, the then Tamale Municipal Assembly conducted a study into the water, sanitation and hygiene situation in the Tamale Municipality. The study concluded that the provision, expansion and extension of water supply and sanitation services in the then Municipality had been constrained by factors such as finance, inadequate collaboration between stakeholders, policy inconsistencies, uncooperative attitude of the public, low public participation and awareness, and weak institutional arrangement among governmental service providers. This had resulted in irregular service delivery and hence public dissatisfaction etc. According the report, there was therefore an increasing demand by the public on the Tamale Municipal Assembly to provide

[1] WaterAid Ghana Country Strategy – 2003 - 2005

qualitative and quantitative water, sanitation and hygiene service, which the Assembly and the Ghana Water Company alone could not provide.

The study therefore called for the two government agencies (TAMA and GWCL) to facilitate a process to enable the private sector (and CSOs) to participate in water supply sanitation service[2].

Consequently in 2002, the TAMA approached WaterAid for support in improving some old hand-dug wells identified to be very high yielding to befit the status of a municipality. It was therefore an opportunity, as well as a challenge for WaterAid to begin urban work. WaterAid was able to establish strategic funding partnership with USAID, Conrad Hilton Foundation, and the International Trachoma Initiative to support the Tamale urban programme. NewEnergy, through its rich experience in rural water, sanitation and hygiene service delivery, and its long standing partnership with WaterAid, became the implementing organization for the initiative. It must be noted that NewEnergy itself had very limited experience in urban work. The only experience had been on a project in 1998 to rehabilitate the same high-yielding hand-dug wells for the TAMA by lining and installing hand pumps on them. Late in 2003, NewEnergy began work on the project through the integrated water, sanitation and hygiene promotion approach.

Tamale Metropolitan Area

Tamale, the Northern Regional Capital, has an area of 922 square kilometers and a population of about 301,000[3]. Its population density is about 356 persons/square kilometer and population growth rate of 4%. There are about 190 communities in the Metropolis.

The topography, the geology, the lack of vegetation and climate do not favour afforestation. Most of the precipitation runs off or evaporates. However, some aquifers can be found locally and some people rely on wells in certain parts of the city like Dohinayili and the central business district[4]. Tamale has a number of small streams and dams on which many citizens rely for water needs but most of which dry up very fast during the dry season.

The TAMA study on water, sanitation and hygiene situation in the Tamale Municipality, 2000, indicates that incomes levels are generally low in Tamale, the fourth poorest region in Ghana, with the average annual income of about ¢1,552,000 (about $172) per capita.

Only about 44% of residents in Tamale were covered by the GWCL as at 2002. These supplies are mostly rationed. In many areas the tap flows just once or twice a week for a few hours. In indigenous low class residential areas, only about 20% of people have access to piped water, according to the TAMA report. When people cannot afford to store enough water, they resort to dams and dugouts for water for all uses including drinking. Resort to these unsafe sources

[2] Water and Sanitation and Hygiene Situation in the Tamale Municipality, Tamale Municipal Assembly, 2000

[3] 2000 Population and Housing Census - Provisional report

[4] Messrs Asafo Boakye / BCEOM – May 1992

have contributed to the spread of guinea worm in the Region, making it the most endemic region in Ghana as at 2003.

The mechanized well water systems

After carefully studying some 13 high-yielding hand-dug wells constructed before Ghana's independence, WaterAid and NewEnergy decided to improve the various parameters like the depth, walls, water quality and the aprons and install high capacity overhead water reservoirs on them. There would be electronic pumping devices to pump the water into the reservoirs. The water would then flow through pipes through gravitational force. The people would therefore fetch the water through taps. These activities, however, came with a couple of challenges, problems and lessons, including siting and land acquisition, stakeholder collaboration, construction, funding, water quality, tariff setting and pro-poor considerations, facility demand and facility management.

Siting and land acquisition

All the facilities so far mechanized already existed as hand-dug open wells constructed about five decades ago. There were therefore no major dealings with the Lands Commission. However, the Town and Country Planning Department was an indispensable stakeholder. NewEnergy had to seek clearance especially for the Post Office and the Nyohini systems. A major obstacle was the fact that the Nyohini site had been demarcated for the CAN 2008 Football Tournament. There had to be meetings and contacts and a lot of time had to be spent before the clearance was finally released for work to commence.

There was also the need to engage both the traditional authorities concerned and the Tamale Municipal Assembly for the release of the wells for the upgrade. In Tishigu (P&T), it was believed that the well was sited on the piece of land belonging to Ghana Post so the company was also consulted during negotiations for the release of the well.

It must be emphasized that the Tamale Municipal Assembly was very instrumental in these negotiations since some of the traditional authorities were indeed finding it difficult to release the facilities probably for fear of losing their traditional grips on the ownership of the wells.

A major challenge was when, in some of the communities, certain urban farmers and gardeners, who were using the well water free of charge for farming attempted to dissuade their chiefs from accepting to transfer them. This attempt notwithstanding, there were no open confrontations as all the facilities were released.

Another challenge was getting the Volta River Authority to install electricity at the water points. This was mainly caused by their limited staff time and a couple of bureaucratic bottlenecks. This indeed delayed the completion of some of the facilities.

Stakeholder/Community collaboration

The project conception, planning and implementation have been a collaborative effort involving NewEnergy and several other institutions and organizations:

WaterAid
WaterAid has been involved in the project since 1998 when the organisation sought funding from DfID to rehabilitate the old wells. WaterAid again heeded to the request from the TAMA and funded a research into the Tamale water situation in 2002. WaterAid again wrote proposals to the International Trachoma Initiative (ITI), USAID and the Conrad Hilton Foundation (CHF) for funding support for the urban project, which would also involve sanitation and hygiene promotion. Once these proposals succeeded, the project took off in 2003. WaterAid still manages all the funds from these donors for the project and reports to them in collaboration with NewEnergy.

DfID
In 1998, the British Department for International Development provided funds through WaterAid to rehabilitate the then four-decade-old open wells in Tamale. They were eight in all. NewEnergy desilted and rehabilitated the linings of the wells and fitted them with Nira hand pumps.

The Tamale Metropolitan Assembly
In 2003, The TAMA sent a request to WaterAid and NewEnergy to upgrade the same wells into more modern systems befitting the status of a metropolis. The Assembly also took part in implementing a feasibility study into the Tamale water situation that later served as the basis for the mechanization of the wells. In identifying the priority sites and negotiating with the traditional authorities and the P&T to release the wells for NewEnergy to start the work, the TAMA was very instrumental. The Assembly also committed some staff to work in direct collaboration with NewEnergy and one of them actually spent 100% of his daily time to the project.

The TAMA also served on the technical team that did the area study of the geology and also the design of the systems.

Challenges working with the TAMA
The state of emergency arising from the Yendi civil crises during the period made it difficult for the TAMA to coordinate the project. The Assembly was virtually inexistent and Assembly members almost lost their authority. There had also been a change from one political regime to another nationally, resulting in changes in political appointments at the Assembly. This means that some staff originally committed to the project and who had understood the real context of the project had been changed and substituted with new ones. One of the staff who were serving permanently on the project also passed away and had to be replaced.

Another great challenge was that once Tamale graduated from a district to a municipality, it no more qualified for a District Water and Sanitation Team. It took several months before an MWST was established. The services of a DWST were

still needed since most of the communities where these water systems were built had a lot of rural characteristics.

The GWCL and the WRI

The Ghana Water Company Limited (GWCL) has not provided any technical and financial support so far. Probably it is because NewEnergy has made no such requests yet. The company has, however, shown a great deal of moral support to the initiative by allowing NewEnergy to 'penetrate its territory,' and by participating in the commissioning of some of the completed projects in 2004. The same applies to the Water Research Institute (WRI) of the Council for Scientific and Industrial Research (CSIR). NewEnergy has, however, used the laboratories of these institutions for the water quality tests but at commercial rates. The Community Water and Sanitation Agency (CWSA) has also provided support especially in terms of the provision of data.

Community collaboration

Unlike the rural communities, it has been very difficult to identify the various user groups in Tamale. This is due to the heterogeneous nature of the society. Therefore mobilizing these groups for labour or financial contribution has not been possible especially with the P&T area water system, which is located in the heart of the city. However, the Dohinayili and Nyohini communities appear to be a little homogeneous and this enabled NewEnergy to mobilize some of them to provide labour. There was no 5% upfront cash contribution for any of the three systems already completed, neither was there any material contribution from the communities. These are all because of difficulties or NewEnergy's inability to mobilize the people around these facilities. For instance how would you isolate people from afar from using the facilities and draw user boundaries around the facilities? Now if that is not possible then who are you going to force to pay for the installation of the facility if you cannot prevent non-contributors from using the facility?

The only way to get the community contribution is therefore to sell the water to whoever uses it after construction in order to build up funds for operation and maintenance of the facility. The communities have so far not complained about the sale of the water, whose rates are 50% below that of the GWCL. They seem to have appreciated the improved value of the systems and have not posed any problems with the sale and pricing.

The major challenge posed in user collaboration has been the temperament during acute water crises in the Metropolis. When the GWCL systems breakdown there is more pressure on the water systems and tempers usually go high. It takes a lot of patience and tact to deal with such situations. People just want to jump the queue and do anything to get a share of the water. When this happens the attendants would have to work longer hours. Sometimes they need assistance else people would fetch and refuse to pay.

Another challenge is in the area of shortfalls in the revenue collected as against expected. It has been recognized that some very little children come along to fetch water with small containers very often and they come with no money on them. Sometimes there are so many of them and the caretaker finds it difficult to turn them away because of their age. It is highly suspected that their parents

deliberately send them in order to get water free. Given the socio-cultural setting of the area it is usually difficult to turn away such children from fetching water, especially given the size of the containers they bring. This 'trick' is actually believed to be one of the contributing factors to the shortfalls.

Construction

The systems and the project were the first of their kind in the Region. There was therefore no reference point to facilitate the design, construction and management of the project. Staff of NewEnergy, together with other collaborators especially from the TAMA had to do their own designs and initiate everything concerning the project.

Another challenge was that it was not possible to blast rocks and difficult soil structures in order to deepen the wells. This is because they are all located inside the city where there are various kinds of residential, economic and industrial installations. Jack hammers had to serve as alternatives to blasting and this slowed down progress and in some places, simply made it impossible to deepen the wells. At the Woriziehi well (whose construction had just begun at the time of this study) recharge rate was so high that scooping was very difficult. This was because as the workers tried to clear all the silt from the well, water continued to fill up the well.

The well diameter was wider than the tripod diameter therefore it could not be used to drop the caissons. Dropping the caissons was therefore very tedious and sometimes life-threatening. At the Woriziehi site, since the well was deeper than the thread of the crane, an improvised method of dropping a caisson resulted in damaging it after it fell off the improvised thread.

Some construction lessons

- The first two systems – P&T and Dohinaayili – were backfilled and a sanitary seal constructed. It was later realized that it would be difficult to do any remedial work since all the backfill would have to be removed. With the subsequent ones therefore, caissons were rather used with filter media, making it possible and easier to do remedial work should the need arise.
- Only one outlet of the overhead reservoir was used for the taps at the first two sites. It was realized later that tap delivery was slow. With subsequent ones therefore both reservoir outlets have been connected to improve tap delivery. A sixth tap had also been added to the new ones to reduce queuing.
- Since there will always be a revenue collector, a room for the collector has also been added to the design and has therefore become part of the construction process.

Cost and funding

The total construction cost for the P&T and Dohinaayili systems was about ¢225million while the Nyohini system cost about ¢92,645,000. As mentioned earlier, several donors contributed funds to the project: these include WaterAid, DfID, ITI, CHF and the USAID under the West Africa Water Initiative (WAWI). The funds are managed by WaterAid while NewEnergy also manages the project implementation.

The major challenge associated with funding for the project has been with late release of funds from the major donors. This indeed caused difficulties in meeting deadlines, coupled with incidents of battling with price increases emanating from rising inflation rates.

Water quality

NewEnergy has its own water quality policy called NewEnergy Water Quality System. Based on this policy, tests are generally conducted before starting the construction work in collaboration with the Ghana Water Company and the Water Research Institute. Immediately after construction the well water is flushed (disinfected) again before it is pumped into the overhead reservoir and fetched through the taps. This is done as a compulsory assignment because a number of activities must have taken place during construction and these must definitely have generated some level of pollution. This disinfection is also done in collaboration with the GWCL.

After about two weeks of use the first water quality test is conducted to ascertain the level of contamination, if any.

Problems

Some of the water systems have shown unacceptable levels of faecal coliform. This has thrown a challenge to the organisation as to how to minimize these pollution levels and raise the water quality to acceptable standards. By WHO standards, faecal coliform for any sort of drinking water must be zero. In Ghana, GWCL allows up to a maximum of five faecal coliforms for ground water. However, some of the water systems have shown as many as 21.

Another problem has been the high cost of hiring experts to conduct water quality tests. It costs between ¢1 million and ¢1,500,000 to conduct a basic test. NewEnergy has qualified staff to conduct water quality tests. However, the organisation has no test kits and has always resorted to hiring external experts to do it. This obviously reduces the frequency of tests that must be conducted. To acquire its own set of laboratory kits to conduct water quality tests, it would cost the organisation about ₤6,000.

Other state agencies like the Water Research Institute have been doing their own independent tests. They have, however, not shown any interest in helping NewEnergy to find solutions to the water quality problem. Instead of showing them the result of their test and probably coming up with suggestions on improving the quality, they have on some occasions rather raised the issue in the form of a reproach on different platforms. On its part too, NewEnergy is yet to approach the WRI for any form of support be it technical or financial.

Lessons

It has been realized that unlike in rural areas, so many activities go on daily around the water point in the urban area. There are hotels, restaurants, fuel stations, shops, lorry parks, and banks etc within some distance from the facilities. It is suspected that some of the activities at these places can contribute to the high contamination rate. For instance fuel leakage from fuel and lorry

stations, sewerage from hotels etc can all cause pollution to the ground water and make it difficult to maintain high water quality.

Another lesson is that people and state agencies show greater concern in the water quality in the urban area than they do in rural areas.

Challenges

The number one challenge is how to maintain high water quality in the face of so many external factors contributing to pollution.

Another challenge is how to establish a better working relationship with state agencies in a way that will help to find solutions to water quality problems and avoid the current policing approach by some of the agencies.

There is also the challenge of acquiring test kits in order to minimize cost of conducting water quality tests. This entails a lot of capital investment. It is however, believed that it would be more cost effective to own their own set of test equipment.

Way forward

NewEnergy is currently considering finding a system of automatic disinfection system that will operate 24hrs everyday. This system would always ensure that the water is always safe before it is fetched. The system would, however, introduce yet another challenge of high investment cost.

Secondly, NewEnergy has compiled a water quality profile based on the several tests it had conducted. The next step is to organize discussion forums with the GWCL, Ghana Standards Board, Water Research Institute, and users to find a solution to the water quality problem.

Important note!

No matter the level of pollution so far noticed, one should not lose sight of the fact that the wells had remained open for several decades and they still served as the only reliable source of drinking water for thousands of people. Therefore even in this polluted state, it is still better than it was previously in terms of quality. What needs to be done is total collaboration with all stakeholders in order to find a lasting solution to the problem of water quality.

Facility performance

With the P&T and Dohinayili systems, there have never been shortages. The recharge rates have always been above the abstraction rate.

Well Specification, recharge and abstraction rates

System	Diameter	Depth	Recharge rate	Average daily abstraction rate
P&T	3.8m	11.7m	282 litres/min	18,300 litres
Dohinayili	3.7m	12.4m	263 litres/min	6,000 litres
Nyohini	3.0m	10.2m	242 litres/min	-

With the Nyohini system, however, the abstraction rate suddenly went up after the upgrade. Many more users have joined the traditional users and it usually dries up in the afternoon as people from very far away come and fetch water with very big containers in their cars. When this happens the attendant has to close down the system and allow it to recharge.

There had not been any mechanical malfunction as at the time of this study; neither had there been any serious power outages to deny access to the water. Since there are people almost always fetching, the frequency of turning the taps was low therefore there had not been any problems with damaged taps.

NewEnergy had nevertheless designed a procedure to do routine inspection of key components of the systems for early detection of any damages.

Facility demand

Unfortunately, no data were recorded during the pre-mechanization stage concerning the actual extraction rates. There was simple observation of the number of people who used the open wells. There is therefore no documented evidence to prove that demand for the water has increased. However, post mechanization observation shows that many more people from far and near patronize the water now. At the P&T well site for instance, there was an average extraction rate of about 23,000 litres per day in February 2005 (Ref: Appendix F). Hitherto, information gathered indicates that only the people living within a very limited radius from the well patronized it. During a greater part of 2003 before the upgrade started in early 2004, the well had even caved in as a result of ramping during a road rehabilitation work close-by and was simply abandoned. Currently, people come along with big drums and jelly cans in their pick-ups and other trucks to fetch. Between the hours of 6am and 6pm there is an average of about four people by the site every minute either fetching or waiting for their turn to fetch.

The situation is even more pronounced at the Nyohini site. The well, before the mechanization, was mostly idle with only a few people in the vicinity patronizing it. After the upgrade, the average number of people at the site per minute between 6am and 4pm is about 15. At 4pm the caretaker is compelled to close the taps to allow for recharge since all the water is extracted by 4pm each day.

During periods when the GWCL systems are down, the wells become the premier choice for almost the whole city. Sometimes there is real chaos at the sites. There are very long queues around the systems. Everybody struggles so hard in order to get a share. People actually quarrel or even fight in the process. The caretakers would then have no closing time until the crowd disappears.

These are clear indications that the people of Tamale have indeed accepted the systems and this has resulted in a very sharp rise in the demand for the facilities.

Key lesson: It is very important to document abstraction rates and indicators like average number of people who fetch the water per day, water quality parameters etc before the intervention. This will facilitate comparison and advocacy work.

Tariff setting and pro-poor considerations
Tariff setting in a cosmopolitan area like Tamale is difficult. Users of the facilities are from different cultural, political and socio-economic backgrounds. Though the region as a whole is one of the poorest on the poverty ladder in Ghana, one cannot rule out the fact that there are very affluent people among the poor lot. However, when it comes to water shortage it is sometimes very difficult to differentiate between people according to wealth.

For NewEnergy and of course her donors, the target beneficiaries for the water facilities are the very poor. But who controls who has the right to fetch water from the systems? In order to enable the poor have access therefore, an 18-litre (popularly referred to as size 34) bucket costs ¢200 at Tishegu, while the same costs ¢100 at Dohinaayili. The same volume from GWCL sources costs ¢400. This price "discrimination" was based on two major factors. Firstly, Tishegu is right in the heart of the city – where all sorts of commercial activities go on. Affordability is therefore quite high even though there was still a majority poor. Secondly, community contribution at the construction stage at Tishegu was very minimal unlike Dohinaayili, where the people provided communal labour to support the project. Comparatively, Tishegu looks more urban than Dohinaayili.

NewEnergy however admits that a more scientific calculation of tariffs would be ideal. Advocacy on electricity billing by the Electricity Company could also help reduce the price of water further since those with direct household connection to the GWCL pipes paid about ¢80 for the same volume of water.

Facility management
NewEnergy adopted the Build, Operate and Transfer project implementation approach. This means that the organisation, in collaboration with all partners involved, decided to do everything from the research and physical construction, as well as the installation of all electrical, mechanical and any other material involved. Since the project is the first of its kind in the Metropolis, there was virtually no reference point. For the sake of enough data collection to inform an efficient management of the facilities, NewEnergy initially decided to operate the systems for six months. This period was later extended to 12 months in order to monitor and document facility performance across all the climatic conditions (both dry and rainy seasons) within a year. This period will end in March 2005.

Nevertheless, there has already been some level of community collaboration in terms of facility management during this monitoring stage. In Dohinaayili for instance, where there was some level of community involvement during the construction stage, the caretaker was picked from the community, together with another citizen from the same community, with general supervision by the chief and NewEnergy to constitute an interim management structure. This community nominee usually crosschecks all the daily sales made by the caretaker before the latter sends the amount to NewEnergy, who deposits it in a special account.

At the P&T area, the original management structure proposed composed of a representative from the Gukpegnu (Paramount Chief of Tamale) Palace, the Police, the Tishigu Palace, P&T, and the Moslem user group. This structure, however, had to be substituted by a more neutral and independent group (see

proposed structure below) for fear of generating more conflicts over who controls what in the community.

Proposed independent management board structure for all the systems[5]

Community representatives	2 places
The Assembly person	1 place
The Metropolitan Assembly	1 place
NewEnergy	1 place
CWSA	1 place
Private operator	1 place

Challenges
Some people from some of the communities have shown too much interest in managing the facilities; some have even proposed to buy and own it and turn it into commercial ventures.

In Tishigu (P&T) there were some accusations leveled against the community representative for 'selling out' the well to NewEnergy especially when the decision to transfer the management within six months was changed.

Way forward for managing the systems
Given the proposed structure above, various roles for the members of the management structure are being spelt out for a take off in April 2005. It is expected that by the end of March, a year after inaugurating the first two systems, there would have been enough lessons to inform the new management structure in making decisions.

Latrine promotion

Latrine coverage in Tamale
According to sources at the Tamale Metropolitan Assembly, latrine coverage in the Tamale Metropolitan Area is only about 11%.

The lack of both public and household latrines in Tamale has resulted in rampant open defecation in the Metropolis and this is evident in any open space available. The consequences of this behaviour are obvious: dangerous smells emanating from bushes and drains everywhere and the resultant diarrhea and other related diseases.

As part of the Tamale Urban Project under WAWI, NewEnergy started promoting VIP household latrines in the city in 2003. Latrine promotion strategies, latrine demand and challenges, as compared with rural experiences, are varied.

Strategies and demand
Though in the rural areas, the strategy for latrine promotion has been the emphasis on health and danger in defecating in the bush, in Tamale, the strategy has been to emphasize convenience. This is because there are hardly any

[5] Roles and responsibilities of each proposed member of the Management Team were not yet defined during the study period.

bushes around to provide 'free rangers' with obscure places to defecate. That message actually touches them very much and over the two years, NewEnergy has been able to provide about 1,040 household latrines. In some communities there have been 100% coverage. Demand for household latrines has been very high. Also contributing to the high demand is the fact that Tamale is now a metropolis and as a matter of policy, certain types of latrines like traditional pit latrines, are simply not allowed. Therefore the VIP latrine has become very popular.

Apart from community sessions on the need for latrines, radio programmes had also contributed to the education on latrines.

A very good strategy to promote latrines in the urban community had been the use of 'easy adapters.' These are people who show interest very early. Such people easily understand the messages and are willing to get their facilities as soon as possible. They are usually those who can also talk to convince others to own theirs. They show pride in their facility and quickly become models for others to emulate. Once these early adaptors are identified they are quickly supported to own theirs. They in turn continue with the promotion in their localities.

Challenges in latrine promotion

An emerging challenge with the VIP type of latrine is that when it is full, you would need to construct another one. In a fast growing city like Tamale, scarcity of land might not permit such type of latrines. At the same time NewEnergy's prime targets may not be capable of installing water closets. Even if people could afford, there is no water to flush them since most communities in Tamale have access to piped water only once or twice a week. To tackle this problem, NewEnergy has added an additional hole to the slab to make it possible to draw the latrine when it is full.

Other sanitation-related challenges

Apart from human waste-related problems, the Tamale Metropolitan Area, like all other major urban centres in Ghana, face many other sanitation challenges. These include sewerage and drainage systems, solid waste disposal, the polythene sac menace and many others. Sometimes one feels that over concentration on latrine promotion is not always very attractive to sector collaborators. Though it is good to provide services that one has high level expertise in, collaborator pressure for scope-widening needs to be given attention. According to NewEnergy, there is too little capacity to venture into other sanitation services. But given the needed support in the form of financial, logistical and human capacity building, NewEnergy would be prepared to support in finding solutions to some of these huge problems.

Hygiene promotion

In spite of being in a metropolitan area, many communities in Tamale have many rural characteristics and display similar hygiene behaviours. On the other side, they also display certain urban characteristics especially in terms of limited time for communal activities due to more stringent economic activities and other urban

pressures. The level of formal education is also comparatively higher in these peri-urban communities.

Hygiene promotion in these communities therefore demand certain variations in the strategies usually used in rural communities.

Challenges and strategies

It is more difficult to mobilize the people. This is due to the nature of economic activities that go on in the city and the question of time. Due to this fact NewEnergy has not been able to establish the Community's Own Resource Persons (CORPS) in the urban communities. They only have community contact persons in most of the areas where they work. These contact persons mainly help to organize meetings and household sessions unlike in the rural areas where the CORPS serve as resource persons who actually do hygiene promotion.

There is deeper criticism from the citizens who tend to be more enlightened than their rural counterparts. There may even be community or environmental health workers staying in those communities. This means that the hygiene promoter must actually prepare very well with all his facts before going to the field. It is even better to team up with environmental health personnel to do the hygiene promotion.

Class differences and ethnic diversity are more widespread than those in the rural areas. This has some implications on the choice of language to use and the style of animation that would befit all the different classes of people.

Another strategy has been to organize community or household sessions on Saturdays. It is usually more likely to meet more people even though a lot more would be doing other chores like washing their cloths, going to the market for shopping etc.

There has been more emphasis on household sessions since it is not easy to organize community durbars. Though quite effective, household sessions slow down the process.

Use of radio for hygiene promotion in Tamale

So far, the most useful and effective hygiene promotion strategy has been the use of radio. NewEnergy has taken advantage of very popular radio programmes on Radio Savannah to promote hygiene and household latrines in Tamale in collaboration with the Ghana Health Service. Given the time constraints this tool has become one of the best since the message covers several thousands of people at the same time. The phone in segment of the programme also provides some feedback indicating the interest that people show in the topic.

It is however quite expensive buying the airtime especially into those very popular talk shows. A 45–minute talk show in 2004 cost about ¢1,800,000 including VAT and NHIS levy. Another set back is that you might not get people from the very poor communities who are your primary targets to call into the programme so it is difficult to know if they are really listening and benefiting. Due

to time constraints too, it has not been possible to establish radio listening groups for discussion.

One remarkable feedback was when a local drama troupe came to wait for the panelists at the radio station while the programme went on. Their mission was that they would like to collaborate with NewEnergy by using drama to promote hygiene. What they needed were hygiene lessons and financial support. NewEnergy was still working out a strategy to team up with the troupe to produce some hygiene promotion series at the time of this study.

Though very effective, there has been very little budgetary allocation to the radio sessions. A higher budget is most likely to bring out very effective returns.

APPENDICES
A

Data summary on water systems – April to Sept 2004

Month	Water Abstracted (litres)		Power Consumed (Kwh)		Revenue Collected (¢)		Expenditure (¢)	
	Tishigu	Dohinayili	Tishigu	Dohinayili	Tishigu	Dohinayili		
April	-	-	-	-	851,800	175,300	Cleaning	34,000
May	-	-	-	-	1,048,150	77,000	Repairs	609,000
June	471385	122,213	88.3	20.2	1,566,450	185,300	Elect. Bills	334,000
July	687686	132,952	211.6	24.5	2,926,250	269,200	T&T	88,400
August	482006	119,033	79.6	19.9	1,642,950	208,750	Phone	31,000
September	556493	92,903	101.9	11.4	1,899,050	162,500		
Total	2,197,570	467,101	481.4	76	9,934,650	1,078,050		1,096,400
Average (M)	549,392	116,775	120.35	19	1,655,775	179,675		
Average (D)	18,013	3,828	3.95	0.62	81,431.55	8,836.48		

NEWENERGY
DATA SUMMARY ON WATER SYSTEMS

Month	Water abstracted (l)		Power Consumed (Kwh)		Revenue Collected (¢)		Expenditure (¢)	
	P & T	Do'naayili	P & T	Do'naayili	P & T	Do'naayili	P & T	Do'naayili
April '04					851,800	175,300		
May					1,048,150	77,000		
June	471385	122,213	88.3	20.2	1,566,450	185,300		
July	687686	132,952	211.6	24.5	2,926,250	269,200		
August	482006	119,033	79.6	19.9	1,642,950	208,750		
September	556493	92,903	101.9	11.4	1,899,050	162,500		
October	600433	269805	113.8	13.5	1,920,450	484250		
November	610727	244724	108.5	15.3	1,929,050	512,800		
December	890646	432810	180	53.6	3,417,300	751200		
January '05	774159	246798	164	26	2513700	407100		
Feb-05								
March '05								
Total	**5,073,535**	**1,661,238**	**1047.7**	**184.4**	**19,715,150**	**3,233,400**		
Average (M)	**634192**	**207,655**	**130.96**	**23.05**	**1,971,515**	**323,340**		
Average (D)	**18,382**	**6,019**	**3.80**	**0.67**	**71,431.70**	**11,715**		

B

NewEnergy Water Systems
Data Summary (Revenue) for Dohinayili and P&T Systems
April 2004 to January 2005

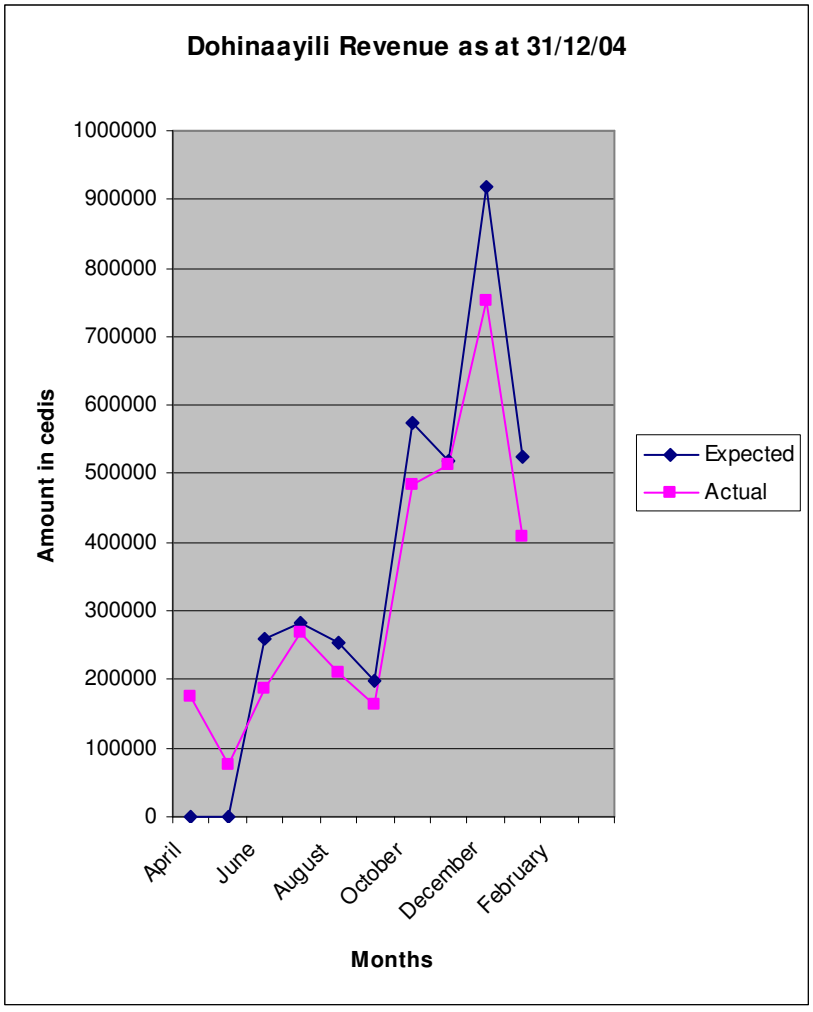
Tishigu

Month	Expected	Actual
April '04	0	851,800
May	0	1,048,150
June	2,003,386	1,566,450
July	2,922,666	2,926,250
August	2,048,526	1,642,950
September	2365095	1,899,050
October	2551840	1,920,450
November	2595590	1,929,050
December	3785246	3,417,300
January '05	3290181	2513700
February		
March '05		

Dohinayili

Month	Expected	Actual
April	0	175,300
May	0	77,000
June	259703	185,300
July	282523	269,200
August	252945	208,750
September	197419	162,500
October	573336	484250
November	520039	512,800
December	919722	751200
January '05	524477	407100
February		
March '05		

C


Dohinaayili Revenue as at 31/12/04
Amount in cedis
1000000
900000
800000
700000
600000
500000
400000
300000
200000
100000
0
April
June
August
October
December
February
Months
Expected
Actual

D

NEWENERGY

DOHINAAYILI WATER SYSTEM – Jan – March 2005

	Water meter reading		Elect. Meter reading		Revenue		
Date	Reading	Litres	Reading	Kw-h	Expected	Actual	Difference
01-Jan-05	1,514,273	22,510	8765.2	4	47,834	31,100	16,734
02-Jan-05	1536783	22,752	8769.5	5	48,348	42,500	5,848
03-Jan-05	1559535	9,539	8774.1	2	20,270	43,050	(22,780)
04-Jan-05	1569074	5,952	8775.7	2	12,648	9,200	3,448
05-Jan-05	1575026	7,860	8777.4	2	16,703	10,000	6,703
06-Jan-05	1582886	11,477	8779.2	2	24,389	16,100	8,289
07-Jan-05	1594363	17,743	8781.5	1	37,704	17500	20,204
08-Jan-05	1612106	21,360	8782	0	45,390	25,050	20,340
09-Jan-05	1633466	8,870	8782.4	0	18,849	40,050	(21,201)
10-Jan-05	1642336	3,639	8782.5	0	7,733	14,650	(6,917)
11-Jan-05	1645975	2,467	8782.6	-	5,242	4,550	692
12-Jan-05	1648442	7,175	8782.6	0	15,247	6,250	8,997
13-Jan-05	1655617	11,095	8782.7	0	23,577	11,700	11,877
14-Jan-05	1666712	15,734	8782.8	0	33,435	18,550	14,885
15-Jan-05	1682446	5,367	8783.1	0	11,405	10,450	955
16-Jan-05	1687813	3,088	8783.2	-	6,562	8,650	(2,088)
17-Jan-05	1690901	5,657	8783.2	0	12,021	0	12,021
18-Jan-05	1696558	1,865	8783.3	0	3,963	0	3,963
19-Jan-05	1698423	1,620	8783.4	-	3,443	0	3,443
20-Jan-05	1700043	8,290	8783.4	-	17,616	0	17,616
21-Jan-05	1708333	11,067	8783.4	2	23,517	14000	9,517
22-Jan-05	1719400	5,766	8785.2	1	12,253	17250	(4,997)
23-Jan-05	1725166	2,570	8786.5	1	5,461	14150	(8,689)
24-Jan-05	1727736	729	8787.6	1	1,549	4150	(2,601)
25-Jan-05	1728465	4,773	8788.5	2	10,143	1200	8,943
26-Jan-05	1733238	4,846	8790.2	1	10,298	11100	(802)
27-Jan-05	1738084	8,154	8791.2	0	17,327	8250	9,077
28-Jan-05	1746238	4,051	8791.3	0	8,608	7750	858
29-Jan-05	1750289	4,929	8791.4	0	10,474	5150	5,324
30-Jan-05	1755218	3,277	8791.5	0	6,964	10050	(3,086)
31-Jan-05	1758495	2,576	8791.6	-	5,474	4700	774
					524,477	**407,100**	(5,650)

NEWENERGY

DOHINAAYILI WATER SYSTEM DATA

Date	Water meter reading		Elect. Meter reading		Revenue		
	Reading	Litres	Reading	Kw-h	Expected	Actual	Difference
01-Mar-05	1,832,031	483	8792.6	-	1,026	5,000	(3,974)
02-Mar-05	1832514	1,298	8792.6	0	2,758	1,100	1,658
03-Mar-05	1833812	6,429	8792.7	-	13,662	2,300	11,362
04-Mar-05	1840241	11,906	8792.7	0	25,300	10,200	15,100
05-Mar-05	1852147	5,999	8792.8	0	12,748	17,500	(4,752)
06-Mar-05	1858146	3,071	8793.2	0	6,526	7,450	(924)
07-Mar-05	1861217	5,674	8793.4	1	12,057	6,650	5,407
08-Mar-05	1866891	2,717	8794.7	1	5,774	10050	(4,276)
09-Mar-05	1869608	4,327	8795.2	1	9,195	6,000	3,195
10-Mar-05	1873935	2,627	8796.2	1	5,582	9,650	(4,068)
11-Mar-05	1876562	3,216	8797.2	1	6,834	4,100	2,734
12-Mar-05	1879778	2,523	8798.2	-	5,361	6,350	(989)
13-Mar-05	1882301	1,608	8798.1	1	3,417	4,050	(633)
14-Mar-05	1883909	48	8799.5	-	102	4,000	(3,898)
15-Mar-05	1883957	93	8799.5	2	198	300	(102)
16-Mar-05	1884050	2,458	8801.3	0	5,223	500	4,723
17-Mar-05	1886508	9,092	8801.7	3	19,321	3,750	15,571
18-Mar-05	1895600	9,492	8804.5	1	20,171	12,900	7,271
19-Mar-05	1905092	9,019	8805.6	2	19,165	10700	8,465
20-Mar-05	1914111	3,741	8807.2	1	7,950	15500	(7,550)
21-Mar-05	1917852	-	8808.2	-	-	7200	(7,200)
22-Mar-05	1917852	11	8808.2	0	23	0	23
23-Mar-05	1917863	3,658	8808.3	1	7,773	0	7,773
24-Mar-05	1921521	7,729	8809.4	4	16,424	5250	11,174
25-Mar-05	1929250	5,949	8813	1	12,642	10500	2,142
26-Mar-05	1935199	6,462	8814.2	1	13,732	10200	3,532
27-Mar-05	1941661	3,066	8815.4		6,515	4950	1,565

				1				
28-Mar-05	1944727	2,745	8816.1	2		5,833	6750	(917)
29-Mar-05	1947472	2,073	8817.7	1		4,405	4100	305
30-Mar-05	1949545	2,156	8818.5	1		4,582	4100	482
31-Mar-05	1951701	2,173	8819.4	1		4,618	3900	718
01-Apr-05	1953874		8820.2			**258,916**	**195,000**	**63,916**

F