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Managing water adequacy, reliability and safety challenges through sustainable strategies in a mine-catchment community

John Baidoo, Ghana

Background
Newmont Ghana Gold Limited operates in two mine sites, namely; Ahafo and Akyem in the country. As part of its social responsibility and mitigation initiatives, the Ahafo site of the Company has supported the construction of small towns pipe water supply systems in a town called Kenyasi at Ahafo – a community comprising three major suburbs; namely, Kenyasi # 1, Kenyasi # 2 and OLA resettlement community. Key challenges encountered centered on water inadequacy due to population explosion, (The population has increased from 13,050 in 2008 to 20,568 in 2010 (according to 2008 Socio-economic monitoring survey, Ahafo Gold Operations, Republic of Ghana, December 2008 and ‘Water Engineering Services to review water supply systems in Asutifi’ June, 2010) , water safety and reliability, community management difficulties as pertained to support for tariff setting and revenue generation, poor water quality and frequent breakdowns of systems at the resettlement community resulting into demonstrations, road blocks to mine trucks and vehicles and threats to life were the key events encountered. Current population comprised Kenyasi natives, Newmont mine workers and illegal mining workers.

The community had drilled boreholes with submersible mechanized pump which have been developed into small towns pipe water supply systems. The first two suburbs had a common system, whilst OLA resettlement has its own pipe water supply system faced with poor water quality due to elements of clay in the water, always making it appear yellowish and turbid

Objectives of the paper
The objectives of this presentation are as follows: Strategies adopted to confront challenges identified, the outcome of adopted strategies in project implementation and all the lessons gathered before, during and after implementing all resolving initiatives.

Key challenges, proactive steps and outputs
An initial assessment of the seven (7) bolded challenges below was carried out by "Savanstar Limited on “Water Engineering Services to review water supply systems in Asutifi” (June, 2010). Proactive steps were
taken as outlined in addition. Table 1 for example, shows the analysis on water demand over a fifteen (15) year period.

- **Inadequate water supply** was experienced in all the sections of the Kenyasi community, simply because there was population explosion, frequent breakdowns of systems at Kenyasi # 1 and 2 and OLA resettlement. There were two main small towns pipe water supply systems, one for OLA and the other for Kenyasi # 1 and 2 suburbs. The abstraction facility of the water supply system at OLA resettlement community was decommissioned and the main transmission line was integrated into the upgraded Kenyasi system (Newly-constructed abstraction system with submersible pump in a 200m deep drilled borehole, with higher pumping capacity). Water quality and quantity challenges were thus resolved.

- **Infrequent power supply**; training needed to be carried out on effective management of the facility; The local government authority and the community liaised with the government institution in charge of electricity supply on information regarding power rationing schedules so as to plan their operations accordingly

- **Operation and Maintenance (O&M) issues**; lack of funds, unrealistic tariffs set, unrealistic budget for O&M hence delaying routine and periodic maintenance efforts. Unrealistic tariffs meant water was sold far below the required price; unrealistic budget is meant the budget sum was also too small to cater for effective operation and maintenances. Tariff had to be raised to nearly 100%.

- **Dissemination of Information**; no appropriate means of disseminating information to members of the community. Community annual forum, education, sensitization were therefore organized. Community information services for announcements, education, etc were considered as media of information.

- **Financial reporting challenges**; Training for account clerks on record keeping and reporting was implemented.

- **Technical support to boost adequate water supply**; Replaced 18meter cube pumping capacity to 59.0 meter cube pumping capacity; integration to OLA resettlement site; 100kva transformer was replaced with 200kva transformer.

- **Management re-organization**; The Water and Sanitation Management Team was reconstituted and provided training; the upgraded facility was handed over to the Local Government institution and the community

- Monitoring and evaluation system was put in place.

<table>
<thead>
<tr>
<th>No.</th>
<th>Community</th>
<th>Population</th>
<th>Water Demand (m³/day)</th>
<th>Reservoir capacity (m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Present (2010)</td>
<td>10 year projected (2020)</td>
<td>15 year projected (2025)</td>
<td>Present</td>
</tr>
<tr>
<td>1</td>
<td>Kenyasi No. 1</td>
<td>8,256</td>
<td>11,095</td>
<td>12,863</td>
</tr>
<tr>
<td>2</td>
<td>Kenyasi No. 2</td>
<td>10,138</td>
<td>13,625</td>
<td>15,795</td>
</tr>
<tr>
<td>3</td>
<td>OLA Resettlement</td>
<td>2,174</td>
<td>2,922</td>
<td>3,387</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>20,568</td>
<td>27,642</td>
<td>32,045</td>
</tr>
</tbody>
</table>

**Intervention outcomes**
Following the implementation of recommendations from initial assessment and feasibility of the situation, the bulleted points below constituted the outcomes.

- Adequate, safe and a more reliable water enjoyed by community members
- Improved understanding demonstrated by community members in community ownership, operation and maintenance of the water supply system, especially in the resettlement community
- Company reputation with the Local government authority and communities highly enhanced; resulting into a cordial relationship.
- Water complaints and grievances drastically reduced.
- Water-related diseases drastically reduced among both community members and staff of company, thus preventing absenteeism caused by water-related disease attacks, such as diarrhea.
- Upgraded Kenyasi small towns pipe water supply system (integrated to OLA resettlement water supply system) handed over to the Asutifi North District Assembly and the community to fully own, operate and manage.
- Reduced complaints related to water adequacy, safety and reliability.
- Improved health conditions for community members and Newmont staff living in the beneficiary communities, such as reduction of water-related diseases and led to savings from reduced absenteeism.
- Reduced community disruptions caused by inadequate, safe and reliable water supply.
- Provided full support to women in the reduction of water fetching-related workload and children punctuality at school.
- Communities have exhibited improved cooperation with the Company in its operations.
- Enhanced Newmont’s reputation and credibility to sustain social license to operate.
- Improved the Company’s image as a good Corporate partner and operating in an atmosphere devoid of tension, fear and panic.
- The local government authority and the community have also welcomed the Company’s collaborative plan to further improve water quantity through the mechanization of a 200m deep borehole and construction of a 140m³ capacity overhead reservoir to serve the inhabitants of Kenyasi. Project implementation is scheduled between quarter 1, 2013 and quarter 4, 2014.
- Before the integration, Newmont shared maintenance costs with inhabitants of the resettlement community and thus bore hundred percent cost of crisis maintenances which seem to be the highest among all maintenance costs. The resettlement community which had its own management bodies, bore the costs of routine and periodic maintenances only, because they are vulnerable and poor. With the integration, the community now comes under the Kenyasi Water and Sanitation Management Team which is currently managing all the three levels of maintenances for the three suburbs. The Company has saved some costs having been relieved from bearing the cost of crisis maintenances.

**Lessons learnt**

Newmont Ahafo site has, of course, noted its lessons to guide future challenges and hurdles, as outlined below.

- Effective coordination and facilitation in the provision of water supply systems enhance partnerships that lead to transparency, ownership and management of all other sustainable community development projects. Moreover, project goals, objectives and targets are often attained.
- A Company, an Organization or any Institution which gives priority to the demonstration of its social responsibility in the provision of infrastructure, such as water, always receives the necessary cooperation and support from the local government authorities and communities in its operations.
- Initial feasibility studies and other forms of assessments into existing situations enable project implementers to execute projects realistically and ensure adequate involvement and participation by all relevant stakeholders.
- Improving collaboration with both external and internal stakeholders, such as the National Community Water And Sanitation Agency (CWSA), Environmental Protection Agency (EPA), Local Government authorities and beneficiary communities guarantees the sustainability of local infrastructure. Community Water and Sanitation Agency (CWSA) is the agency of the Republic of Ghana charged with the responsibility of coordinating the implementation of water and sanitation projects/programmes of small towns (with population of 5000 people and above) and villages in the country (with population of less than 5000 people). Environmental Protection Agency (EPA) is a regulatory agency in the country responsible for ensuring compliance to water, sanitation and environmental rules, regulations and standards as apply to project implementation.
- Capacity building for key stakeholders enhances efficiency and effectiveness that paves the way for sustained provision, monitoring and evaluation of adequate, safe and reliable water supply systems.

**Conclusion**

Newmont Ghana Gold Limited in collaboration with the local government authority and the community have managed to implement proactive measures to forestall challenges in water inadequacy, poor quality and threats to Company operations, among other issues. All parties have learnt their lessons and that are...
poised to sustain every effort put into place and the water supply system itself as regards effective operation, management, operation and monitoring.

Acknowledgements
Thanks to the management of Newmont Ghana Gold Limited for sponsoring all the activities needed to resolve the challenges that confronted all stakeholders, and giving the green light for this experience to be shared at this year’s WEDC conference. The consultant who carried out the initial assessment need also be commended for his brilliant recommendations, which among other measures saw to the integration of the OLA resettlement water supply system into that of the Kenyasi small towns pipe water supply system.

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