Ex Post-Evaluation Brief
Ghana: Rural Water Supply III

Project /Client	Rural Water Supply III –1999 65 336* Staff Support – 1999 70 245	
Programme executing agency	Community Water and Sanitation Agency (CWSA)	
Year of sample/ex post evaluation report: 2012/2012		
	Appraisal (planned)	**Ex post-evaluation (actual)**
Investment costs (total)	Inv. EUR 4.938 million AM: EUR 0.51 million	Inv. EUR 4.653 million AM: EUR 0.51 million
Counterpart contribution (company)	EUR 0.338 million	EUR 0.053 million
Funding, of which budget funds (BMZ)	Inv. EUR 4.60/4.60 mill AM: EUR 0.51/ 0.51 mil.	Inv. EUR 4.60/4.60 million AM: EUR 0.51/0.51 mil.

* random sample

Project description: The project comprised the construction of 512 drilled wells with hand pumps in 309 communities in the Eastern and Ashanti regions. It aimed to provide the rural population living there with continuous access to safe water, thus improving their general living conditions and reducing the risk of waterborne diseases. To accompany the investment in infrastructure the programme strengthened the institutional decentralisation of rural water supply down to the local level, and raised the target group's awareness of hygienic water use. The project pursued a demand-oriented approach that required the local communities to apply for a drilled well, and make a financial contribution of their own to its construction. Furthermore, an attempt was made to involve the private sector in the provision of maintenance and repair services. The programme retained the design used in phases I and II, which ensured the continuity of German FC's engagement in Ghana's water sector.

Objectives: The overall objective of the programme was to help improve general living conditions and reduce waterborne diseases in rural areas of the Eastern and Ashanti regions. To achieve this, the programme aimed to provide some 140,000 inhabitants of selected communities with populations of fewer than 2,000 with a year-round supply of 15 to 20 litres of safe water per capita per day, in accordance with the WHO standard.

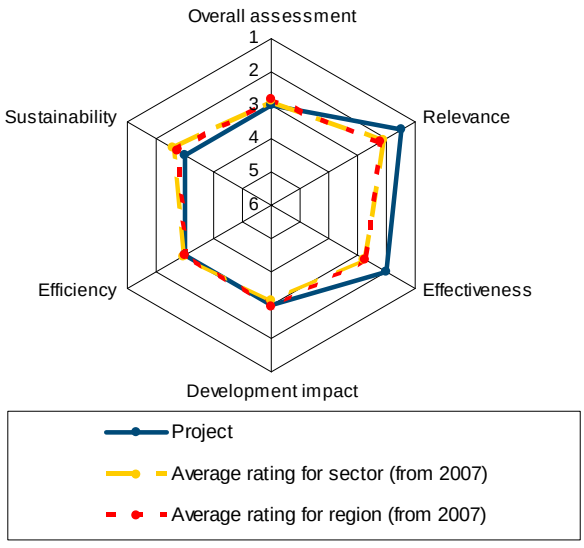
Target group: The target group of the project comprised 140,000 inhabitants of rural communities in the Eastern and Ashanti regions.

Overall rating: 2

The programme helped improve the living conditions of the population in the target regions, and advance and consolidate the institutional decentralisation of rural water supply in Ghana. We qualify this by mentioning that in many cases evidence suggests that microbiological water quality at the point of use is not impeccable, due to inappropriate transport and storage. On the positive side we should note that in all the communities, use of this modern source of water has made a contribution toward eradicating the Guinea worm.

Of Note: In this ex post evaluation, for the first time the water quality was tested not only at the source, i.e. at the drilled well, but also in some cases in randomly selected households in the programme communities visited (i.e. at the point of use). The water was tested for the indicator E. coli (a random sample does yield meaningful information, but is not representative).

Rating by DAC criteria



EVALUATION SUMMARY

Overall rating: Overall we rate the Rural Water Supply III programme as good (**Rating: 2**). We should emphasise that, measured in relation to the complexity of the institutional environment and the challenge of supporting the decentralisation process, the programme was successful. It may be that the programme did not achieve all the desired health effects, as the water samples taken in individual households (at the point of use) and subjected to microbiological analysis for E. coli did point to a very high risk of renewed pollution of the water during storage and transport. Nevertheless, by ensuring the supply of water from drilled wells as opposed to open water sources the programme did help break the chain of infection with the Guinea worm, which was widespread at appraisal. Furthermore, the programme made a major contribution toward improving the living conditions of the target group by installing wells equipped with hand pumps, which eliminated the problems of water scarcity during the dry season and the long distances to the water source that had to be covered on foot (thus saving time and reducing physical burdens). The programme also helped strengthen institutional capacities for decentralising water supply and sanitation in the target regions, thus setting a positive example for other regions in Ghana.

Relevance: When the programme was appraised in the year 2000 the programme executing agency – the parastatal Community Water and Sanitation Agency (CWSA) – estimated the proportion of the rural population being supplied with safe water to be 30 %, and daily per capita consumption to be 10 litres. Similarly, access to safe water in the programme regions was also estimated to average just 30 % (the MDG target is 78 %). The programme systematically targeted small communities with inadequate access to safe water or none at all. It also focused on supplying especially those communities afflicted by Guinea worm infestation, which is transmitted by the practice of cooling worm-induced abscesses at open water sources. The solution selected of drilling hand-pump wells was appropriate to the local infrastructural and hydrogeological conditions.

The programme design and objectives were very closely aligned with Ghana's strategy for the sector. The sector strategy is laid down in the National Community Water and Sanitation Programme (NCWSP). It aims to massively increase access to safe water supply and sanitation for the rural population (achieving coverage of 85 % by 2015). It also aims to further decentralise rural water supply and sanitation, and involve the private sector in the delivery of services for maintenance, repair and the sale of spare parts. In pursuit of these objectives, the programme followed the trajectory outlined below.

As part of a demand-driven approach, the communities were required to submit an application for well construction and to contribute 5 % of the investment costs themselves. Furthermore, they were required to form Community Water and Sanitation Management Teams (WATSANs), which would assume responsibility for operation and maintenance of the hand pump wells. These measures were designed primarily to create formal structures at community level to which the state could transfer responsibility for operating simple wa-

ter supply systems as part of the decentralisation process. A further aim was to strengthen the communities' ownership of their own water supply infrastructure. At the district level the programme supported the establishment of the District Water and Sanitation Management Teams (DWSTs), which are tasked to support the WATSANs in performing their tasks. Further key components of the programme included first of all establishing decentralised water services (sale of spare parts, maintenance, repair), and secondly raising target group awareness of drinking water-related hygiene issues. The latter was designed to prevent contamination of the drinking water through inappropriate transport and/or storage, and thus support a positive effect on health achieved through safe water supply.

When the programme was appraised, improving water supply in undersupplied, low-income regions was a priority area of German-Ghanaian development cooperation. This year, the involvement of German bilateral FC will be concluded with the third and final phase of the Rural Water Supply Programme (BMZ no. 2001 66 066). For the time being, the BMZ does not envisage further engagement in the sector.

Overall the design and objectives of the programme were closely matched with the problems then faced in the water sector in Ghana, and with the urgent basic needs of the target group. The programme was also well integrated institutionally. We therefore rate the relevance of the programme as very good. Sub-Rating: 1.

Effectiveness: The programme objective was to supply roughly 140,000 people in communities with a population of between 75 and at most 2,000 with 15 to 20 litres of safe water per capita per day (WHO standard). To measure the achievement of this goal, a target was set of ensuring that at least 80 % of the hand pumps in the target region should be fully operational four years after completion of the programme. Furthermore, pump downtimes were not to exceed three days per year. To further guarantee sustainability of the water supply, the communities were required to cover 100 % of the maintenance costs (including costs for spare parts with a service life of less than eight years).

The target of supplying 140,000 persons with water was very probably surpassed. It is to be assumed that as a result of the programme at least 140,000 people were supplied with a sufficient quantity of safe drinking water for the first time. In the communities we visited, average per capita consumption was 30 litres. Since there is no reason to assume that per capita consumption was significantly lower in other communities, this target indicator was achieved. Concerning the hand pumps, presumably more than 90 % of them will be operational six to eight years after commissioning. The districts we visited reported downtime rates of below 10 %, and in the communities we visited all the pumps were fully operational. The CWSA also believes that over 90 % of the FC-financed pumps are currently operational. Neither the CWSA nor the district administrations have any exact figures on this, however. Concerning the operating costs, in the communities we visited these were being recovered, although this is largely due to the fact that so far only low monetary costs have been incurred. According to information supplied by the communities, they are able to

meet the costs of maintaining the pumps and replacing their parts. However, one potential problem is that many communities do not perform any preventive maintenance. They only practice breakdown maintenance, i.e. they only perform maintenance work when a repair is needed. So far, this approach has not led to downtimes of more than 3 days. With regard to water quality, we established that the target of complying with the WHO standard of 0 E. coli per 100 ml of water probably is being achieved at the source. None of the samples taken at the FC-supported drilled wells during the evaluation (not a representative sample) were found to contain E. coli bacteria. (Concerning the problem of contamination during transport and storage, see the section on “Impact” below.) In all cases the water available is sufficient to supply the population. In one community, though, the water does have high iron content. Although this does not have any adverse effects on health, it does affect the taste and colour of the water, which means that people tend not to like drinking it, or using it for cooking or washing clothes.

Given that most of the target indicator values were very probably achieved or surpassed, we rate the effectiveness of the programme as good. Sub-Rating: 2.

Efficiency: Given the large number of small and remote communities, the investment costs of EUR 10,000 per hand pump well and EUR 33.2 per capita were warranted. There was no lower-cost alternative that could have guaranteed the same quality of water supply infrastructure. The logistical challenges and the comprehensive consultancy approach of the programme led to consulting costs of 28 %, which in our view were warranted.

With regard to the allocative efficiency, we note that the investment in water supply infrastructure met urgent target group needs. However, one negative aspect is that in certain cases a high iron and manganese content means that the sections of the target group are not using the improved source of drinking water, and are once again resorting to unsafe sources. Furthermore, the largely unsolved problem of renewed contamination of the water during transport and storage is adversely affecting efficiency. We therefore rate the efficiency of the programme as satisfactory. Sub-Rating: 3.

Impact: The overall objective of the Rural Water Supply III programme was to help improve general living conditions and reduce waterborne diseases in selected rural communities in the Eastern and Ashanti regions. No specific indicators were defined for these programme objectives. Due to the lack of data, it is not possible to perform a quantitatively based assessment of waterborne diseases before, during and after programme implementation.

During this evaluation a total of 66 water quality tests were performed (at all sources in the communities visited by the evaluation mission, and in individual households at the point of use). Although these tests are by no means representative of the entire project area, they do provide certain pointers. The tests showed that in all the cases analysed, water at the source (i.e. the water delivered by the FC-supported drilled wells) complied with WHO standards, which is to say all the 100 ml water samples were found to contain 0 E. coli. By

contrast, only a view of the samples taken in households were completely free from E. coli, while the large majority showed low concentrations of E. coli per 100 ml of water, and a few samples in one community showed significantly higher concentrations (124 – 136 per 100 ml of water). The test results indicate a risk of renewed bacterial contamination of the drinking water (which was safe at the source) during transport and storage. Hence households may be consuming drinking water that is not absolutely safe. The assumption that appropriate transport and storage was causally responsible for contamination of the water that had been safe when drawn, is at least partially supported by the evaluation of 66 short structured questionnaires, and the impression gained by the evaluation mission. For instance, it emerged that 88 % of the households did not cover the canister during transport, and that 95 % of the households do not own a separate storage vessel for drinking water. Although 78 % of the households do cover their storage vessels at home, the covers they use are of a rather makeshift nature. These results demonstrate that the hygiene awareness-raising measures implemented in this programme possibly did not bring about the desired behavioural change. However, we should also remember that the precarious living and housing conditions in the target communities are potentially conducive to contamination of the drinking water, and demand a very high level of “hygiene discipline” from users. The individuals concerned usually live in open or semi-exposed dwellings, and keep their small livestock either inside the dwelling or in the yard (90 % of surveyed households), which makes contact with animal excrement almost inevitable. Concerning the communities visited, of the households surveyed only 12 % possess a private, improved latrine. The remaining 88 % share a toilet with several persons, or perform their bodily functions in the outdoors. Some 51 % of respondents stated that they shared a toilet with up to 50 people. One positive aspect that should be emphasised in the fact that the inhabitants of the villages visited do keep the hand pump wells and their immediate surroundings very clean. Moreover, at least some of the surveyed households do manage to protect their drinking water against germs completely.

Since the majority of households surveyed do not consume absolutely safe water, and since this problem very probably also occurs in other target communities, it is doubtful whether all the health effects that the programme sought to achieve actually were achieved. However, we should emphasise that by supplying safe water the crucial first step for reducing waterborne diseases was taken. Prior to installation of the wells, almost all the target communities were obtaining their drinking water from unsafe sources that were in some cases heavily contaminated. These also included open water sources, which present a particular risk for the spread of Guinea worm infestation when affected individuals cool their wounds in the water. When the programme was appraised the Guinea worm was still very widespread in the Eastern Region. The worm is now considered to have been virtually eradicated in Ghana (no further recorded cases in 2011, although the standard disease-free period of three years before eradication has not yet elapsed). The transition in water supply from open water sources to drilled wells has without a doubt made a key contribution toward stopping the spread of worm infestation.

Added to this is a significant improvement in the living conditions of the target group. In the communities visited, since the pumps were installed safe drinking water has been available continuously, and water scarcity has no longer occurred during the dry period. Moreover, the distance to the source of water has been reduced to a maximum of 1,000 metres. Long waiting times at the water source – which sometimes used to be up to several hours – are also a thing of the past. Given these positive effects on well-being, and bearing in mind the fact that the quality of water consumed does not meet WHO standards in all cases, we rate the impact of the programme as satisfactory. Sub-Rating: 3.

Sustainability: At the institutional level, the programme made a sustainable contribution toward securing water supply in the target regions by establishing decentralised administrative structures. At the district level, support was provided to establish and train the DWSTs, which advise the communities on water supply and sanitation. At the community level, support was provided to establish and train the WATSANs, which are responsible for operation and maintenance of the infrastructure. Today, twelve years after the programme was launched, these administrative structures are largely established and operational. Overall, in recent years the Ghanaian Government has succeeded in pressing ahead with its agenda to decentralise rural water supply and sanitation. However, a lack of financial and human capacities is still constraining the scope for action by the relevant players, particularly at the district and community levels. Moreover, the district administrations need to improve their monitoring and advisory systems to ensure that the WATSANs perform their roles professionally.

Concerning the sustainable operation of the infrastructure by the communities, we found that the majority of the hand pumps are operational even 6 to 8 years after they were commissioned. However, the practice of breakdown maintenance does constitute a potential risk for sustainable operation of the equipment. As the pumps suffer wear and tear, unless preventive maintenance is performed the risk of major and costly damage to the pumps will increase, as will the risk of prolonged interruptions in supply.

Whether or not the system of breakdown maintenance proves adequate in the future will not become evident until the first major reinvestment becomes necessary. Although there have so far not been any serious interruptions in supply in the visited communities, the fact that barely any preventive maintenance is being performed does constitute a long-term risk for sustainable operation. To address this problem the CWSA is considering introducing (micro-)insurance cover for the water supply installations that can be purchased by communities and districts. The CWSA has not yet studied the potential demand for a product of this kind.

In retrospect, the attempt to deliver repair and maintenance services and sell spare parts on a decentralised basis through the private sector, and thus improve the services available in rural communities, did not have the desired effect. Since the costs of equipping and running local spare parts depots are very high, it is only worthwhile running such operations

where there is sufficient demand. This is more likely to be the case in more densely populated, urban zones. As a result, it remains difficult to obtain spare parts in remote rural regions. The same applies to the one-man business of the area mechanic who performs maintenance and repair works on the pumps upon request by the communities. The profits that can be generated from this activity are not sufficient to enable the individual concerned to make a living. This means that the public sector will have to play a stronger role with regard to water services than was originally planned.

Overall, despite the existing shortcomings we do regard the programme results as sustainable, particularly because the programme executing agency is very actively and professionally engaged in solving the current problems. Together with the Dutch NGO IRC, the CWSA has for instance launched the “Triple S” initiative, in order to develop a country-wide strategy to deliver sustainable water services for rural water supply. We therefore rate the sustainability of the programme as good. Sub-Rating: 2.

Notes on the methods used to evaluate project success (project rating)

Projects (and programmes) are evaluated on a six-point scale, the criteria being relevance, effectiveness, efficiency and overarching developmental impact. The ratings are also used to arrive at a final assessment of a project's overall developmental efficacy. The scale is as follows:

1	Very good result that clearly exceeds expectations
2	Good result, fully in line with expectations and without any significant shortcomings
3	Satisfactory result – project falls short of expectations but the positive results dominate
4	Unsatisfactory result – significantly below expectations, with negative results dominating despite discernible positive results
5	Clearly inadequate result – despite some positive partial results, the negative results clearly dominate
6	The project has no impact or the situation has actually deteriorated

Ratings 1-3 denote a positive or successful assessment while ratings 4-6 denote a not positive or unsuccessful assessment

Sustainability is evaluated according to the following four-point scale:

Sustainability level 1 (very good sustainability) The developmental efficacy of the project (positive to date) is very likely to continue undiminished or even increase.

Sustainability level 2 (good sustainability): The developmental efficacy of the project (positive to date) is very likely to decline only minimally but remain positive overall. (This is what can normally be expected).

Sustainability level 3 (satisfactory sustainability): The developmental efficacy of the project (positive to date) is very likely to decline significantly but remain positive overall. This rating is also assigned if the sustainability of a project is considered inadequate up to the time of the ex post evaluation but is very likely to evolve positively so that the project will ultimately achieve positive developmental efficacy.

Sustainability level 4 (inadequate sustainability): The developmental efficacy of the project is inadequate up to the time of the ex post evaluation and is very unlikely to improve. This rating is also assigned if the sustainability that has been positively evaluated to date is very likely to deteriorate severely and no longer meet the level 3 criteria.

The overall rating on the six-point scale is compiled from a weighting of all five individual criteria as appropriate to the project in question. Ratings 1-3 of the overall rating denote a "successful" project while ratings 4-6 denote an "unsuccessful" project. It should be noted that a project can generally be considered developmentally "successful" only if the achievement of the project objective ("effectiveness"), the impact on the overall objective ("overarching developmental impact") and the sustainability are rated at least "satisfactory" (rating 3).