Ghana: Rural Water Supply I -II

Ex post evaluation

OECD sector	14030 / Basic water supply and basic sanitation	
BMZ project IDs	1994 65 485, 1996 70 134, 1997 65 066	
Project-executing agency	Community Water and Sanitation Agency (CWSA)	
Consultant	IGIP	
Year of ex-post evaluation	**2005**	
	Project appraisal (planned)	**Ex-post evaluation (actual)**
Start of implementation		
a) Phase I (investment)	a) 1st quarter 1995	a) 2nd quarter 1996
b) Phase I (complementary measure)	b) 4th quarter 1996	b) 4th quarter 1996
c) Phase II (investment)	c) 1st quarter 1998	c) 1st quarter 1998
Implementation Periode		
a) Phase I (investment)	a) 3 years	a) 6 years
b) Phase I (complementary measure)	b) 3.5 years	b) 4.8 years
c) Phase II (investment)	c) 2 years	c) 3.2 years
a) Investment costs Phase I	a) EUR 4.9 million	a) EUR 5.9 million
b) Cost of the complementary measure, Phase I	b) EUR 1.8 million	b) EUR 2.3 million
c) Investment costs, Phase II	c) EUR 25.5 million	c) EUR 27.0 million
Counterpart contribution		
a) Phase I	a) EUR 0.5 million	a) EUR 0.8 million
b) Phase II	b) no information available	b) no information available
Financing, of which Financial Cooperation (FC) funds		
a) Phase I (investment)	a) EUR 4.4 million	a) EUR 5.1 million
b) Phase I (complementary measure)	b) EUR 1.8 million	b) EUR 2.3 million
c) Phase II (investment)	c) EUR 2.56 million	c) EUR 2.56 million
Other institutions/donors involved	World Bank, CIDA	World Bank, CIDA
Performance rating	2	
• Significance / relevance	2	
• Effectiveness	2	
• Efficiency	3	

Brief description, overall objective and project objectives with indicators

The project “Rural Water Supply I“ comprised the rehabilitation and upgrading of altogether 3,600 drilled wells and their equipment with hand pumps in seven regions in Ghana (main focus: eastern region, Ashanti and Brong Ahafo) and the construction of 100 new drilled wells in the Ashanti region. In addition, advanced and further training was provided for 260 so-called “area mechanics“. The “Maintenance Units“ (MU), which were at the time still operating under the supervision of the “Community Water and Sanitation Agency“ (CWSA), were finally equipped with vehicles and tools. It was planned that later on, in the context of the complementary measure, they were to be restructured and their core activities were to be privatised. The focus of the complementary measure was on the mobilisation of the target population, the build-up of user structures at the municipal level, the technical training for the hand pump caretakers and mechanics and advisory services to be provided to the Community Water and Sanitation agency (CWSA) on programme control and the privatisation of the Maintenance Units.

The project “Rural Water Supply II” (RWS II) was part of the ”Community Water and Sanitation Programme 1“ (CWSP 1), which was co-financed together with the World Bank (IDA) and Canada (CIDA). The German contribution covered the qualitative and quantitative improvement of the water supply for the rural and semi-urban population through the construction of 269 new boreholes in four regions and the rehabilitation of 960 wells in seven regions.

The overall objective of both programme phases was to contribute to reducing health risks and the occurrence of water-induced diseases. An indicator to measure the achievement of the overall objective was not defined. The programme objectives are the qualitative and quantitative improvement of the drinking water supply for the rural and semi-urban population in the programme region.

The following indicators were to measure the achievement of the programme objectives:

Rural Water Supply I (RWS I):

- Better drinking water supply for 500,000 people;
- The water consumption from the newly-built wells is between 15 and 20 litres per capital per day;
- Hygienically safe drinking water;
- Transfer of ownership in the hand pump wells in the eastern region > 75%;
- Establishment of local markets for hand pumps, services, spare parts.

Rural Water Supply II (RWS II):

- The water supply rate in the region is > 45% of the rural population (in 2000);
- The readiness for operation of the facilities set in place is on overage > 75%;
- The water consumption from the newly-built wells is between 15 and 25 litres per capital per day;
- The water quality meets WHO standards.

The target group were approx. 500,000 inhabitants of rural communities in the context of the project “Rural Water Supply I” and 350.000 inhabitants in the context of “Rural Water Supply II”.

Programme design / major deviations from the original programme planning and their main causes

RWS I was in independent programme (including a complementary measure), which was designed as a follow-up measure for the FC project “3,000 Wells Programme”. Under RWS I, in addition to the complete rehabilitation of 1,062 hand pumps, the superstructure of another 965 wells was rehabilitated and the pumping cylinders of 1,550 pumps were cleaned and, if required, repaired or replaced. In the final analysis the target value of 3,600 wells was nearly reached. As planned, 100 new drilled wells were constructed in the Ashanti region. The complementary measure comprised the introduction of a decentralised operating and maintenance system in the context of the transfer of ownership of rural water supply facilities to the municipalities. This FC measure was implemented only in the eastern region as a pilot region. However, a similar approach was applied in the other regions by the donors involved there.

RWS II was a project co-financed together with the Community Water and Sanitation Project (CWSP 1) of the Word Bank, which included three components aimed at improving the drinking water supply and sanitation of 700 rural and 30 semi-urban municipalities as well as measures to support the project-executing agency. The FC funds were used to construct and equip 269 new wells and to rehabilitate another 960 wells. In the context of the use of remaining funds another 30 wells were drilled and equipped, 21 de-ironing filters were procured to improve the water quality and a cross-country vehicle was procured for the project-executing agency CWSA. Moreover, two socio-economic surveys were conducted to establish the utilisation rate of the wells. Thus, the project measures were implemented largely as planned and the targeted numbers were even exceeded.

Since the planned results were reached or exceeded under both RWS I and RWS II and the number of inhabitants supplied per well is clearly higher than the targeted values, the total number of inhabitants covered by the project is higher than originally planned (900,000 instead of 850,000 inhabitants). In the context of CWSP 1 the programme sites were selected by CWSA. Here, one major criterion for the selection was the willingness to make a contribution to the investment costs and to take care of the operation of the facilities later on (application on “first come, first serve” basis). Another criterion was the presentation of a well management plan. The strong response by the population to the project and the high rate of achievement of results show that the choice of the selection criteria was adequate. The design chosen for both project phases is satisfactory and largely stood the test in the operation of the facilities. The capacities created are sufficient to cover the basic need of the target group for drinking water.

In the context of the FC complementary measure 262 municipalities in the eastern region and in the Offinso District (Ashanti) were given support in the operation and maintenance of the existing and newly-built wells, which they are to conduct under their own responsibility. For this purpose, two pump caretakers per village were instructed on how to do the routine maintenance and implement smaller repairs. At the next higher level a network of “area mechanics” was set up, who have previous knowledge in mechanical/technical matters and who can carry out more complex repairs on a part-time basis. The central Maintenance Unit established at an earlier stage was privatised and integrated into this overarching service network as a service provider. According to the information provided by the two companies resulting from the privatisation their capacity utilisation is good and they are even considering to expand the range of services offered. It can be stated that with regard to both the broad-scale impact (target group) and the acceptance of the COM system introduced the complementary measure made an appropriate contribution to the achievement of the overall objective pursued with the investment measure. However, looking at the measure more critically it has to be added that so far it was not possible to bring about the formal legitimisation of the user groups neither internally at the village level (collection of fees) nor with regard to external relationships (assignment of

a private maintenance firm). Instead, the groups still depend very strongly on the municipalities in order to be able to fulfil their tasks.

Key results of the impact analysis and performance rating

The socio-economic surveys conducted ahead of the final evaluation revealed that 76 % of the wells examined were in operation. Another 20% were temporarily not in operation (on average for 1-2 weeks) due to repairs. Only around 4% of the wells inspected were completely out of operation. In general the areas surrounding the wells are kept clean by persons in charge of hygiene issues. However, the pumps are not oiled regularly and preventive maintenance is conducted only sporadically.

In 85% of the municipalities interviewed, the average distance between the well and the place were the water consumer lives is 200 to 300 metres. This is a substantial improvement compared with the situation before the project started. The water quality of the well is satisfactory. According to random water quality samples taken in the framework of the socio-economic survey all chemical values sampled, except for the iron content, were within the tolerance range defined by the WHO. No information is available on the germ load of the water, however, given the improved hygiene behaviour of the population we assume that the health risk is relatively low. No statements can be made about the water quality at the final consumption point, but since transport distances were reduced and families are more careful when storing drinking water the risk of contamination has been reduced. The increased iron-content in the water does not have any harmful health impacts, but since the water does not taste very good the acceptance as drinking water is reduced and people do not like to use it for cooking and washing clothes. This was the result of approx. 28% of current drinking water samples. Due to this high iron content in the water people tend to resort to alternative water sources to cover their drinking water needs. In the context of the use of remaining funds de-ironing filters were successfully tested in order to reduce the iron content. After the filters had been installed the water produced was accepted as drinking water without any reservations. However, due to lack of funds it is currently not envisaged to procure such water filters on a broader scale for all well sites where the water has a high iron content.

Overall, 80% of the households interviewed judge the level of the rural drinking water supply from wells as good to average both in terms of quality and quantity.

Due to shorter transport distances, adequate drinking water storage at home and improved hygiene behaviour the water is less susceptible to contamination. In consequence, health risks have been reduced and fewer diarrhoeal diseases are reported. This means, in turn, that women have to spent less time and effort to care for sick family members and can take up an alternative employment. Thus, women benefit particularly from the project.

A major proportion of the target group was classified as poor at the time of the project appraisal. This applies still today. In this sense and through the provision of social infrastructure the projects have direct poverty relevance, both conceptually and in fact. As the operating and maintenance concept envisaged the inclusion of the target group in the form of independently acting user groups it was possible to contribute to improving self-administration at the village level.

Since the quantities of water extracted under the projects are low no substantial strain was put on the groundwater resources. At the time of the final evaluation only two of 50 well inspected had run dry due to falling groundwater levels. But again, this was not necessarily due to the operation of the wells since the quantities of water taken were relatively low. The projects had only a marginal impact on the environment.

The project goals were largely achieved. However, this statement must be qualified to a certain extent with regard to the supply rate in the Brong Ahafo region, which remained somewhat behind the expectations, though here, too, 100% of households that can be reached economically were supplied. The acceptance of the facilities constructed under the project was reduced because the iron content of the water was too high and in consequence the water consumption was not exclusively covered from the wells constructed. At the date of the final inspection the readiness for operation was approx. 76% and thus slightly above the targeted value of 75%, though it has to be taken into consideration that roughly 20% of the wells were only temporarily out of operation (on average for 1 – 2 weeks). Only around 4% of the wells inspected were completely out of operation. Sustainability risks exist especially in those municipalities (roughly one third of the total) that have totally refrained from charging fees on a regular basis (and instead collect money on an ad-hoc basis when repairs need to be made), but even there most wells have been functioning for many years. The maintenance service was privatised. However, in the still ongoing phase of transition the procurement of spare parts is being financially supported from donor programmes and is expected to be self-sustaining only in a few years time. Against the background of these sustainability risks we classify the **effectiveness** of the project as a whole as **satisfactory (sub-rating 2**).

The project addressed a clear supply bottleneck of the mostly poor population in the project area. Though no health statistics on water-induced diseases are available it can nevertheless be assumed that the project made a contribution to the achievement of the overall objective the supply level was improved, supply structures were altered and people's hygiene behaviour has changed. The domestic hygiene behaviour has improved due to education campaigns (water storage, water boiling). This statement has to be qualified, however, because people in almost all municipalities still use to resort to traditional (hygienically unsafe) sources of water. The water used as drinking water, however, is generally boiled. Thus, this practice does not cause any health risks to the population. The picture looks different when looking at personal hygiene because it cannot be excluded that people resort to surface water and thus may contract "water contact" or "water vector" diseases. The people affected by the project consider the health impacts produced by the newly created possibilities to supply themselves with safe water as positive. The project also had a structural impact through the promotion of user-supported operating systems, which was also supported by the entire community of donors. We evaluate the overall **significance** and **relevance** of the project as being **satisfactory (sub-rating 2).**

The production efficiency was generally high. The selection of the project sites was based on the specific needs and urgency expressed by the municipalities (application on a "first come, first serve" basis); a major criterion for the selection was the willingness of the municipalities to bear part of the investment costs. Due to reduced repair downtimes the times of use of the wells increased. The statistical operating costs for all systems are covered even though in some municipalities fees are not charged on a regular basis but money is collected on an ad-hoc basis (sustainability risk). Full cost recovery (allocation efficiency) cannot be ensured with the fee system currently practiced because major cost components, such as depreciations, are not included in the calculation. For this reason we rate the project's **efficiency** only as **sufficient** (sub-rating 3).

After considering the above mentioned key criteria, we classify the project **overall as having a satisfactory degree of developmental effectiveness (rating 2).**

General conclusions and recommendations

- Training and advanced training measures for the operating and maintenance personnel are a permanent task, the performance of which has to be ensured also after the completion of the

project in order to make sure that new members of a user group receive sufficient instruction on the operation of the project facilities. As the administrations concerned usually do not have the financial resources, alternative concepts should be worked out to ensure that the maintenance of facilities is guaranteed on a continuous and sustainable basis. It should be considered, if required, to attract private-sector institutions or non-governmental organisations to assume this task.

- When setting up user committees the tasks and responsibilities to be assumed have to be formally defined and legalised in order to prevent social tension in the village context, both internally and externally, because the legitimisation of user committees is not recognised. This may be done in the form of a simple document ("user constitution"), which names the committee members nominated and confirms their tasks. Such a document and the competences defined in it should be publicly recognised by the superior administrative level and be integrated in a catalogue of measures to build up decentralised user associations. This also includes the definition of a succession regulation in the event that a committee member resigns.

- When the developmental justification of a project is based on the health impacts it is required that the original health situation be examined at the time of the project appraisal – or if possible already in the context of the feasibility study – so as to have data available to assess the dimension of the existing health problems and to be able during the ex-post evaluation to more systematically evaluate the main impacts of the project.

- Behavioural changes in the area of water hygiene are a long-term process. Since water supply, also in the context of decentralisation, is a priority of German development cooperation with Ghana, it should be examined whether these behavioural changes can be supported over the long term and under different projects.

- It has become apparent that the acceptance of water with a high iron content by the users is often very low. There is the danger that people do no use the project facilities providing such water and instead resort to traditional unsafe water resources. Already when determining the concept and design of the project it should be verified whether the iron content of the water is acceptable or too high. If the iron content is not acceptable the installation of water filters should be envisaged already during the planning and tendering phases.

Legend

Developmentally successful: Ratings 1 to 3	
Rating 1	**Very high or high degree of developmental effectiveness**
Rating 2	**Satisfactory developmental effectiveness**
Rating 3	**Overall sufficient degree of developmental effectiveness**
Developmental failures: Ratings 4 to 6	
Rating 4	**Overall slightly insufficient degree of developmental effectiveness**
Rating 5	**Clearly insufficient degree of developmental effectiveness**
Rating 6	**The project is a total failure**

Criteria for the Evaluation of Project Success

The evaluation of the "developmental effectiveness" of a project and its classification during the ex-post evaluation into one of the various levels of success described in more detail below concentrate on the following fundamental questions:

- Are the **project objectives** reached to a sufficient degree (aspect of project **effectiveness**)?
- Does the project generate sufficient **significant developmental effects** (project **relevance** and **significance** measured by the achievement of the overall development-policy objective defined beforehand and its effects in political, institutional, socio-economic and socio-cultural as well as ecological terms)?
- Are the **funds/expenses** that were and are being employed/incurred to reach the objectives **appropriate** and how can the project's microeconomic and macroeconomic impact be measured (aspect of **efficiency** of the project conception)?
- To the extent that undesired **(side) effects** occur, are these tolerable?

We do not treat **sustainability**, a key aspect to consider for project evaluation, as a separate category of evaluation but instead as a cross-cutting element of all four fundamental questions on project success. A project is sustainable if the project-executing agency and/or the target group are able to continue to use the project facilities that have been built for a period of time that is, overall, adequate in economic terms, or to carry on with the project activities on their own and generate positive results after the financial, organisational and/or technical support has come to an end.