

Borehole Drilling in South Sudan, 2009

This case study notes the problems encountered in the drilling of boreholes in order that similar problems may be overcome before any further drilling takes place.



Background

Under the CIDA HAPS funded project, we were able to allocate funding to drill 10 new boreholes and install Indian Mark II hand pumps in the Aweil East Highlands in Northern Bahr el-Ghazal. This activity was one of the activities carried out to improve the access to safe water in the area.

The selection of the villages of Malualdit, Rum Pan Aut, Wakou, Magak-buny, Apial, Marial Jok Nget, Wurkot, Majok-Aken, and Riang Awai for the drilling of the boreholes was carried out by Tearfund in conjunction with the local SSRRC (Southern Sudan Relief and Recovery Commission) supervisor. These sites included the 3 locations of Tearfund run health clinics which previously did not have access to clean water. The selection of the other villages was carried out considering the population size, distance walked to shallow wells, distance walked to any functional boreholes.

Response

The community in each village selected was visited by Tearfund and informed about the drilling of the boreholes and community leaders were also requested to form a WASH Committee comprising of 9 members (at least 4 women) to be responsible for managing the new borehole (among other WASH activities in the community). Two of the members of this committee would be trained as community hand pump mechanics. The GPS location of each community was recorded. In addition, the County and State WES departments were visited to communicate the project and to seek agreement on the selected villages to receive the new boreholes.

The drilling contractor arrived on site at the end of February where they received full briefing from Tearfund on the work expected and the locations to receive boreholes and hand pumps. They commenced drilling in Malualdit, next to the health clinic.

In addition to the drilling and installing of the hand pumps, the drilling contractor was to train two community hand mechanics per borehole site, carry out water quality testing (turbidity, chlorine residual, pH, bacteriological, chemical), and provide tools for maintenance and repair for each borehole.

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Impact

Generally, in the villages where the boreholes have been successfully drilled and installed, the community are enjoying the water and are happy.

“The water is near the home and there is no more movement at night to look for water by the women in the community.” “It provides plenty of clean water for the community.” “The general hygiene of the community members, especially women and children, has greatly improved as some children can bathe twice a day and women can even wash their clothes any time they want.” “The frequencies of stomach aches among children have been reduced which were mainly caused due to drinking dirty water from unprotected shallows wells or even the ponds.” “Women are now concentrating in doing activities other than spending most of their time looking for water.” “There is now even enough water for the domestic animals like goats, cows, and sheep.” “The water is clean, but at the beginning it did not taste as sweet as that of the shallow wells; now it tastes good”. “The water from the borehole has no bad smells when drinking.”



Man praying for the clean water provided

Challenges and Suggestions for dealing with similar situations

- *The local authority at each Payam where the borehole was drilled complained that they were not informed about any drilling of the borehole and the selection of the sites by Tearfund.*
- Tearfund should share information more fully with the local authorities at all levels (payam, county and state) and other agencies drilling the area, in order to obtain planning permission.
- *The drilling contractor had no machine for detecting the water table (although they had used this on their pre-visit). Instead they used a trial and error method to find water. This meant that they failed to strike water on three occasions, which delayed the process and caused problems with the communities where they failed.*
- The drilling contractor should be sent to the field one month before the agreed starting date so that proper planning can take place.
- *The contractor did not have enough tools and spare parts for the rig so any technical fault which needed spare parts would be requested from Juba or Nairobi and this could take at least two weeks to be delivered and fixed hence hindering the drilling. This is why they could not finish the drilling within the agreed month.*
- Tearfund should inspect the contractor’s equipment and spare parts before allowing mobilisation to the site.

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- *The contractor delivered all the kits and tools so that the community hand pump mechanics can borrow from their respective Payam administrator in case the borehole needs repair but the local authority at the Payam level have no good office/building for keeping the tools.*
- *Tearfund should work with the government to devise a better means of making spare parts accessible to the community and make sure that no spare parts are provided free of charge.*
- *In some boreholes the plain casing and screen installation was not properly installed and this has made the removal and fixing of the pipes difficult in case of any technical fault which needs repair by the community hand pump mechanic.*
- *The filter pack (gravel pack) in some of the boreholes (Malual-Dit) was not done adequately (and to the contractual specification) and could be one of the reasons why the water sometimes becomes muddy. “Sometimes the water becomes muddy like that of the shallow wells and we have to drink like that.”*
- *Some boreholes were supposed to be fitted with special components, but not all the parts were fitted as per the contract. Without these components, the water cannot be extracted adequately.*
- *Tearfund WASH staff should monitor the drilling processes closely so that all the casing, grouting, packing, and platform installations are properly placed and pump testing is carried out adequately.*
- *Most of the community hand pump mechanics that were trained by the contractor still do not know how to repair the boreholes. “Sometimes the borehole gets broken and there is not immediate person who can repair it and the community always take long to contribute the money to hire a hand pump mechanic from outside the community.”*
- *The training of the community hand pump mechanics should be well defined in the contract and, if possible, the contractor should spare one person from the team who will be doing the training both theoretically and practically for all the selected persons.*

New borehole – broken after two weeks



- *The water biological quality test that was supposed to be done by the contractor in each of the boreholes that they drilled has not yet been carried out.*
- *The water quality testing should be well defined and carried out straight after pump testing to ensure water is fit for drinking.*