

34th WEDC International Conference, Addis Ababa, Ethiopia, 2009

**WATER, SANITATION AND HYGIENE:
SUSTAINABLE DEVELOPMENT AND MULTISECTORAL APPROACHES**

**Post-conflict provision of water supply, sanitation
and hygiene education: The case of Southern Sudan**

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REVIEWED PAPER 360

Introduction

Following the signing of the Comprehensive Peace Agreement in January 2005 and the establishment of the semi autonomous Government of Southern Sudan in October 2005, the GoSS faces a huge challenge in achieving its Millennium Development Goals in terms of Water Supply, sanitation and hygiene education.

According to the Joint Assessment Mission of March 2005 (JAM/ Southern Sudan Statistics and Evaluation Office, 2005) only about 27% of the population has access to a safe and improved water supply with about 15% having improved levels of sanitation. Although NGOs and UN agencies have been providing safe water supplies and sanitation improvements across all 10 states in Southern Sudan during the 21 year civil war, it is estimated by the Ministry of Water Resources and Irrigation of GoSS that up to one third of improved water supply systems (mostly boreholes with hand pumps) are not functioning. Southern Sudan has the highest incidence of guinea worm of any country in Africa and every year there are reports of cholera from most urban centres.

This paper will critically assess how the GoSS is tackling the challenge of providing improved water supplies and sanitation and hygiene awareness both through funding mechanisms such as the Multi Donor Trust Fund for Southern Sudan and from funding through other donors like USAID and the European Union. The paper will look at how the \$86m MDTF is being implemented and the drawbacks that this funding mechanism is facing.

Background

Civil war erupted across Southern Sudan in the early 1980s and raged until the signing of the CPA in January 2005. The war caused massive displacement of people to the extent that in 2005 Sudan had the largest number of displaced people of any country in the world, approximately 2.5 million. Infrastructure was destroyed including boreholes as both sides in the conflict destroyed water points so that the other side could not use them. Land mines were laid in the thousands and there are still large swaths of the country which are mined.

The Government of Southern Sudan was formed in October 2005 and responsibility for water supply was placed under two separate ministries while responsibility for the water resource was placed under a third ministry. This diversification of responsibilities has not helped to increase coverage levels and in July 2008 a presidential decree ordered the Directorate of Rural Water Supply and Sanitation to be moved to the Ministry of Water Resources and Irrigation and the Directorate of Urban Water Supply to be moved from the Ministry of Housing to the MoWRI as well. So now all directorates responsible for water are under one ministry.

The water resource

Southern Sudan is endowed with impressive water resources in the form of the great Nile river which flows through the country from Uganda in the south to Egypt in the north. In Southern Sudan the river stretches for about 1200km and in the central basin spills out into the Sudd, one of the worlds largest wetlands which provide a livelihood to hundreds of thousands of people in terms of fishing and agro-pastoralism.

Up to now, this great resource has not been much used by the people of South Sudan, but there are plans afoot to revive rice farming schemes near Bor on the Nile and Aweil on the Jur river, a tributary of the Nile. Plans have also been made to build a hydro electric dam on the Nile at Fulla south of Juba to provide the towns with power. However, Sudan is still restricted on the amount of water it can abstract from the Nile under the terms of a colonial treaty signed with Egypt in 1959. The capital of Southern Sudan is Juba which has a small abstraction system for domestic water supply but it only serves about 10% of the burgeoning population. The system is currently being upgraded, but most of the population relies on hundreds of water tankers pumping raw water from the river and selling it to consumers at rates far in excess of the normal tariff. There are also 366 boreholes (Louis Berger Group, 2007) with hand pumps 50% of which are broken down but there is a program to repair them funded by USAID.

Groundwater

Most people in Southern Sudan who have access to improved water supplies get water from boreholes equipped with hand pumps. In most areas adequate quantities of ground water can be tapped within 80m of the surface but in the basement areas of East and Western Equatoria this may go to 120m. In the central areas of Lakes and Jonglei States ground water can usually be found from 50-80m. Over the last 20 years most boreholes have been drilled by NGOs and a few private contractors mainly from Uganda and Kenya. But now more private companies are registering with the MoWRI to the extent that there are now about 50 companies or NGOs registered to drill.

In the basement areas a geo physical survey should be compulsory but some donors leave it up to the drillers to determine whether they do a survey or not. Some prefer to site by sight alone to save money and take the risk of drilling dry holes. This practice is encouraged by drilling contracts which pay 50% of the cost of dry boreholes.

The multi donor trust fund for Southern Sudan

In terms of lack of capacity especially at the state and county levels. Even three years since the GoSS was set up, NGOS are still the ones mostly implementing watsan programs in the rural areas. The paper will examine the efficiency and cost effectiveness of NGO projects which tend to incorporate high overhead costs due to unusually high drilling costs due to lack of infrastructure and a drilling season lasting only six months.

Handpumps

According to the MoWRI database there are over 8,600 boreholes/hand pumps across the 10 states of Southern Sudan. But according to a JAM survey (JAM Report, 2005) up to 33% of these may be not working. In some counties the figure is nearer 50%. The reasons include:

- Lack of a spare parts chain
- Shortage of tools
- Shortage of trained mechanics
- Inappropriate hand pump type
- Lack of community organisation.

Ninety per cent of hand pumps are the India Mark II because this is the type UNICEF favoured and still favours. UNICEF gives these pumps to NGOs to install. However, with an estimated 30% broken down at any one time the Mark II has not been a success. It is made of corrosive materials, is heavy to lift out and requires 24 tools to change the plunger seals. More modern, Village Level Operation and Maintenance pump are available, like **the Afridev** but it does not have a good reputation as some were improperly installed. But the Afridev enjoys success in other countries like Ethiopia and Mozambique where women have been trained to maintain it using only two tools. The Afridev uses non-corrosive, lightweight materials that can be easily transported and stored, whereas the Mark II needs heavy pipes and rods and cylinders to be transported at huge cost, plus large tool boxes and lifting tools and then stored in large warehouses. It is a pump of the seventies and should be limited to deep aquifers where the Afridev is not suited.

Multi donor trust fund

The MDTF for Southern Sudan was introduced at a donor conference in Oslo in 2005. There are several projects for different sectors. For the rural water and sanitation sector donors pledged a total of \$86 million over four years to fund the Rural Water Supply and Sanitation Project. The fund is administered by the World Bank and implemented by the Directorate of Rural Water Supply and Sanitation. In order to reach the MDGs for water supply, an estimated eight million people would need to gain access between now and 2015. The target of the MDTF RWSSP is to drill 1750 new boreholes/hand pumps plus rehabilitate 500 existing boreholes/hand pumps and build 75 small distribution systems in small towns. In addition, institutional latrines will be built and there will be an extensive hygiene and sanitation education program.

Technical assistance to the Project Management Team is being provided by Euroconsult Mott MacDonald who has a team of experts including contract management, procurement, capacity building, water and sanitation and hydrogeology. Under Phase 1 five contracts for works started in 2008 after preparation in 2007. UNICEF were given \$15 million to do 250 new boreholes and rehabilitate 200 hand pumps and do 10 small distribution systems as well as conducting a KAP survey in selected areas. They are also doing an inventory of all existing water points to update the Ministry database.

Another contract was given to PACT who has subcontracted 11 smaller drilling companies and has so far drilled 123 out of their 175 borehole allocation. They have also trained 12 CBOs in supervision and hygiene education who are working in the 175 communities to do community mobilisation.

Three drilling companies have also been contracted through international competitive bidding to do 145 boreholes/hand pumps. Although they have done a good job of drilling, they did not do any community mobilisation or training of mechanics. Therefore, the PMT is now contracting local NGOS to form water committees, train hand pump mechanics and do hygiene education in the communities where drilling took place.

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Centralised focus

The MDTF is focused at central government level at the ministries in Juba. All contracts are let from here. There is little provision for building capacity at state level where capacity is weak and weaker still at the county level. Although under the RWSSP a program has been developed to do capacity building of the Directorates of Rural Water Supply and Sanitation at state level, it will take years to have an effect.

Bureaucracy

Because the fund is administered by the World Bank, WB procurement procedures have to be followed which is rather time consuming and leads to long delays. This has an impact in terms of drilling as the drilling season is limited to six months during the dry season from November to May. From May to October many areas are inaccessible as rain makes roads impassable.

Capacity building

The project has assessed the capacity of the state rural water offices and has developed a training plan for 2009 which will see staff being trained at a government centre in Juba on office management, computer skills, accounting and financial management. At the same time, five new state offices will be built in Phase II and five rehabilitated and equipped with communications equipment to enable them to send emailed reports to the centre which is a major drawback now. In 2009 GoSS will transfer increased amounts to the states to enable staff to draw per diems and buy fuel to travel to the field, something they are unable to do now. Vehicles will also be supplied to states water offices without vehicles.

Phase II of MDTF

As this paper is being written Phase II of the RWSSP is being prepared. Phase II will go from 2009 to 2012 and has a budget of \$56 million, with half of the funds coming from the GoSS and half from MDTF. Although about 1,000 new boreholes are planned for Phase II, other methods of sourcing water are being

included such as abstraction and treatment from rivers and collected surface run off in the form of hafirs where ground water is either too deep or too saline e.g. in Upper Nile state.

Also under Phase II more research on the nature of the water resource will be undertaken. Little is known about the groundwater characteristics of Southern Sudan. The existing hydrogeological map was done from only a few studies in limited areas. More detailed hydrogeological maps can be made using the drilling logs from existing boreholes. This will require drilling log data to be collected from the NGOs and contractors as they have not yet submitted these logs to the database. More research is needed on the flow rates of the Nile and its main tributaries to determine how much water can be abstracted under existing treaties to serve communities near these rivers and for irrigation projects.

Under Phase II more capacity building at state and county level will be undertaken to enable government water staff to better plan water supplies and to supervise drillers and other contractors. Most of the 95 counties do not have a Water Officer so decentralization has to be rolled out in the coming three years to reach the actual grassroots.

Lessons learned

The following lessons can be learned although the MDTF water project is still in its early stages:

- More emphasis should be placed on capacity building the institutions from federal to county level
- Less emphasis should be put on drilling new boreholes
- More focus should be placed on rehabilitating existing boreholes/hand pumps
- More appropriate hand pumps, like the Afridev, should be installed
- A sustainable spare parts chain for hand pumps is still lacking. The private sector could play an important role in this
- More of the fund should be allocated to the states and less to the federal level
- More sophisticated methods of geophysical surveying are needed to reduce the number of dry boreholes
- More emphasis is needed to understand the water resource and on longer terms plans for its use
- More emphasis and resources should be placed on hygiene education and improving sanitation especially in urban areas.

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