Water for Recovery and Peace Programme
PACT Sudan

External Evaluation

Final Report
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Submitted by

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Acronyms

AMA	Assistance Mission for Africa
CBO	Community-based Organisation
CCRI	Cush Community Relief International
CDO	Community Development Officers
CPA	Comprehensive Peace Agreement
FGD	Focus Group Discussion
GoSS	Government of Southern Sudan
IDP	Internally Displaced Person
INCODE	Initiative Community Organisation, Development and Education
KDI	Kapoeta Development Initiative
LRDA	Losolia Rehabilitation and Development Association
NGO	Non-governmental Organisation
ODI	Overseas Development Institute
OFDA	Office of Foreign Disaster Assistance
O&M	Operation and Maintenance
PRA	Participatory Rural Appraisal
SHHS	Sudan Household Health Survey
SMART	Social Mobilisation, Awareness and Rehabilitation Team
SWMC	Sustainable Water Management Committee
SWDS	Semi-urban Water Distribution System
SWOT	Strengths, Weaknesses, Opportunities and Threats
TDA	Toposa Development Organisation
USAID	United States Agency for International Development
WRAPP	Water for Recovery and Peace Program
WSS	Water Supply and Sanitation

Evaluation team

The evaluation was led by the Water Policy Programme, ODI. Tom Slaymaker supervised the process of the evaluation and ensured quality outputs. Katharina Welle carried out interviews with key stakeholders, field work in three locations of Southern Sudan, analysis and report writing. Manhiem B Malek, an independent local consultant, facilitated interactions with direct and indirect programme beneficiaries in Southern Sudan; as an engineer, Manhiem also assessed the quality of technical works of water schemes provided under WRAPP.

Executive Summary and Strategic Recommendations

The Water for Recovery and Peace Program (WRAPP) has been operating in Southern Sudan under PACT since 2005 with the aim to (1) increase access to protected water supply and enhance awareness about sanitation and hygiene; (2) enhance capacity for community management of water schemes; (3) contribute to the reduction of conflict and the promotion of stability and peace; and (4) be gender and environmentally sensitive. The main funding agency of WRAPP is USAID/OFDA. By November 2007, WRAPP had implemented 707 (boreholes) rural water supply schemes, rehabilitated 505 (boreholes) schemes, 13 semi-urban water distribution schemes, public toilet blocks in 10 towns and one hafir, a major rainwater harvesting facility. The total number of beneficiaries reached under WRAPP reach an estimated 1,4 million.

The purpose of the evaluation was to assess the WRAPP approach in terms of its appropriateness, effectiveness and sustainability.

The evaluation team followed the log frame approach, assessing to what extent the programme is meeting its objectives and achieving outcomes and impact with a focus on qualitative methods to assess the soft aspects of the WRAPP approach.

Key Findings

Improved access to WSS services

Quantitative achievements: by November 2007, WRAPP implemented approximately 80% of targeted rural water supply schemes (boreholes) and over 90% of planned rehabilitations and semi-urban water distribution systems with a lower success rate in implementing major rainwater harvesting schemes. Taking into the consideration the logistical challenges surrounding water supply and sanitation (WSS) interventions in Southern Sudan this is an important and highly satisfactory achievement.

The *quality of technical works* was generally acceptable with small issues arising in cases such as sub-standard design and use of little cement with potential impact on the life-time of rural water supply schemes in particular.

There was clearly a positive *impact* of improved services on people's lives. Users reported of reduced migration due to lack of surface water for part of the year, increased security for women and children thanks to reduced risks of rape and abduction and generally of time freed for other livelihood activities. These accounts of impact indicate that WRAPP followed a demand-responsive approach and targeting areas in need.

WRAPP's approach to *sanitation and hygiene promotion* focuses on hygiene education around the water point and the provision of latrine hardware in urban areas. Latest international approaches to on-site sanitation and hygiene go beyond this with a much greater focus on behaviour change at HH level.

Enhanced capacity for community management

WRAPP's approach of working through a training of trainers (via CBOs engaging so called Social Mobilisation, Awareness raising and Rehabilitation Teams – SMART) to build capacity for community management of schemes showed mixed results. While a significant number of rural water supply schemes had very strong

management arrangements and practices, some schemes were poorly handled. This had a number of reasons:

- Some CBOs did not have sufficient experience to set up user committees and provide training.
- Morale among most SMART teams was low due to lack of and irregular payment intervals partly due to internal CBO issues, partly linked to contractual arrangements with WRAPP
- The WRAPP Community Development Officers were stretched across wide geographical areas and issues requiring their support. This compromised the quality of supervision of drillers and backstopping of SMART teams.

Sustainability of urban scheme management was generally less satisfying with a different set of potential reasons for poor management including:

- Ex-ante viability assessments did not take sufficient consideration of financial viability aspects i.e. with regard to cost-recovery related to local purchase power.
- The voluntary nature of urban scheme management compromised financial and operational scheme management thereby leading to scheme breakdown and collapse of committees.
- Local Authorities did not have sufficient capacity to deal with management crises in user committees.

For the sector as a whole, WRAPP played a crucial role in vitalising the local drilling market. It supported at least four CBOs with start-up material and organisational development support. These drillers have now been able to significantly expand their portfolio. The emergence of a local drilling market is crucial for the future development and sustainability of the sector.

Across the sector O&M emerges as the most important future challenge. The lack of supply chains for tools and spare parts is the biggest constraint to sustainable scheme management across Southern Sudan.

Reduction of conflict and promotion of stability and peace

WRAPP's approach to target emerging population centres that receive a high proportion of internally displaced persons and returnees has eased tension and generally positively impacted on people's lives.

WRAPP' approach of taking into account different segments of the population when setting up committees and of including conflict resolution modules in its training has led a good level of capacity from the side of user committees for dealing with user-related conflicts in some cases. However, the level of skills transfer is highly dependent on the SMART team's quality of work.

There has been no clear evidence for reduced conflict through the provision of hafirs by WRAPP based on the hafir visited.

Livelihoods, gender and the environment

Livelihoods aspects are now being incorporated into the latest WRAPP project cycle. Currently envisaged activities are sound and innovative yet ambitious considering a time frame for implementation of six months only.

Gender aspects are taken into consideration by WRAPP in terms of making the participation of women in management committees obligatory and encouraging women to take up decision-making positions. Yet, gender aspects go beyond user-committees and need to be upstreamed firstly by starting to tackle the gender imbalance in the programme itself (currently all WRAPP staff are male).

No significant environmental issues arose during project visits. The most important environmental health challenge in Southern Sudan except for sanitation and hygiene is guinea worm infestation; this is particularly an issue for WRAPP in relation with hafirs.

Lessons learned and strategic recommendations

There are a number of lessons to be learned from WRAPP's interventions that are relevant for the WSS sector. Strategic recommendations are organised in accordance with these lessons.

Working through local partners: Contrary to most other I-NGOs and donors, WRAPP works through local partners. WRAPP's support to local drillers (e.g. AMA, PARAD, SUPRAID) contributed to vitalising the S Sudanese drilling market and is an activity that should be fostered in the future. As detailed in Box 3, experience from WRAPP's field staff indicates that local drillers are able to mobilise faster, require less logistical support and can provide better quality work in Southern Sudan.

⇒ Continuing to support the local drilling market is crucial for rapid scaling up and long-term sustainability of water supply in Southern Sudan. WRAPP should continue its successful approach in doing so and other sector actors should be encouraged to priorities local drillers over international companies whenever feasible.

WRAPP's experience of supporting local CBOs to act as ToTs for water supply management is a viable approach but requires a high level of back stopping support from WRAPP to ensure quality.

⇒ If WRAPP continues to work through local CBOs it needs to increase its field support to SMART teams. This could be done by consolidating current programme activities within a smaller geographical area and by decreasing the number of SMART teams and schemes that the WRAPP community development officers are currently responsible. Tackling issues related to the low morale of SMART teams will be crucial for the future sustainability of this approach.

⇒ With GoSS now resuming its role in water supply and sanitation, the question arises whether its extended staff and voluntary structures at county level and below should also be targeted in WRAPP's future capacity building activities? This goes particularly for pump mechanics and sanitation and hygiene promoters at payam and boma level.

Working with and through sector structures: A Water policy and related strategies are underway and government structures are being established to implement these with implications for the way in which NGOs and donors operate in the sector.

⇒ Working actively with government structures at all levels should be a priority for all donors and NGOs in terms of

- Decisions on locations & types of technology;

- Supporting capacity of (local) government staff including considering them as local partners as suggested above;
- Providing information (logs etc) and sharing good practices, e.g. training manuals for further harmonisation of approaches; and
- Following government guidelines (i.e. under MDTF).

Operation and Maintenance: Field work has shown that rural user committees are able to organise themselves for repairs of hand pumps, particularly if there are no alternatives, government support structures are strong and training is done well. For semi-urban water distribution systems, current levels of training and management models are not sufficient.

⇒ WRAPP could encourage a transition to a private management model for SWDS or leave management in public hands. In any case, WRAPP should develop models that allow for salaried staff, foster training on financial management and provide other organisational development to the operator.

⇒ WRAPP should collaborate on developing sustainable O&M approaches with government and document lessons for other sector stakeholders.

The lack of spare parts and tools is probably the most important challenge for the sector. Without addressing this problem, investments in water supply schemes remain largely futile. Developing a sustainable supply chain for repairing rural water supply schemes is therefore an urgent priority for all sector stakeholders.

⇒ WRAPP, in collaboration with the relevant sector working group, should pilot models for spare part supply chains e.g. through local drillers or other existing structures.

Sanitation and hygiene promotion: Sanitation and hygiene have been neglected at the detriment of providing hardware water supply services in Southern Sudan. The alarmingly high incidence of under-five diarrhoea of over 40% as well as repeated outbreaks of cholera in some urban settings highlight the need for action.

⇒ WRAPP's approach to sanitation and hygiene needs to be consolidated. The programme needs to develop an approach that focuses on behaviour change at HH level making use of the latest concepts available in the sector, which will need longer term engagement by local partners.

Reducing Conflict

Focusing water interventions on conflict reduction is very relevant in the context of Southern Sudan. Hafirs have a strong potential to reduce conflict but are difficult to implement and manage. The actual contribution to conflict reduction of the first hafir implemented in Yuai still needs to be supported with evidence.

⇒ WRAPP should increase its ex-ante analysis of conflict drivers and the potential contribution of hafirs to a reduction of wider conflicts. Hafir construction should be complemented with other peace-related activities such as disarmament, facilitation of negotiations for grazing space which offer opportunities to increase integration within PACT.

“Do no harm” is an often neglected yet important aspect of conflict mitigation and highly relevant for WRAPP interventions in water supply and water resources management.

⇒ WRAPP should add “do no harm” analyses to the ex-ante project assessments mitigate conflicts such as communities developing grievances because of dry boreholes or hafirs becoming part of conflicts (cattle raiding) rather than contributing to its reduction. Such and analysis could, for example, lead to better ways of integrating WRAPP into community peace building activities.

1 Southern Sudan WSS context

1.1 Water Supply and Sanitation in Southern Sudan

In 2004, Southern Sudan's population was an estimated eight million people living in an area of around 640,000km^2. About 70% have livelihoods directly or indirectly related to cattle rearing with part of the population migrating for part of the year in search for grazing land and water (GoSS 2007a). Having emerged from decades of conflict in 2005, Southern Sudan's basic infrastructure including water supply has been largely destroyed or dismantled. In addition to catering for the existing population, the Government of Southern Sudan has to deal with considerable numbers of Internally Displaced Persons (IDPs) and returnees increasing the pressure on already overstretched water supply systems, particularly around emerging population centres. The pressure on the government to deliver water supply services is very high as access to water is seen as a very important peace dividend by the population.

1.1.1 Water Supply and Sanitation statistics

With the Sudanese census still pending, population figures and water supply coverage levels remain largely unreliable. This is illustrated in Table 1 (below) by the large differences between water coverage figures derived from the World Food Programme's Needs assessment of 2006 and the Sudan Household Health Survey (SHHS) of the same year.[1]

Table 1: water statistics of Southern Sudan

Locations	WFP Needs Assessment 2006 (% of population with access to improved water sources)	SHHS 2006 (% of population with access to improved water sources)
Abyei	100	-
Blue Nile	100	40.5
S. Kordofan	78	60.2
EES	38	59.3
CES	71	36.6
WES	42	35.1
Lakes	78	67.4
WbeG	74	37.2
NBeG	55	48.8
Warap	42	61.2
UN	12	60
Jonglei	60	22.2
Unity	45	57.1

Even in the light of weak statistical evidence, access to water supply and sanitation services is evidently very low. The SHHS statistics of 2006 put the overall water

[1] The Government of Southern Sudan is now building up a database of water supply services in Southern Sudan with the support of UNICEF but this database is currently believed to be incomplete.

supply coverage in Southern Sudan at 48,9%, with more than 45% of those with access taking more than one hour for a round journey to collect water. This is compares poorly with Northern Sudan (55,1% according to SHHS) and neighbouring countries falling under the category of 'least developed' e.g. Uganda (60% according to JMP data of 2004).[2] Poor sanitation coverage of just under 7% and poor hygienic practices contribute to an alarmingly high prevalence of diarrhoea in under-five children of 44,2% in Southern Sudan according to the same source. In 2006 and 2007, Southern Sudan also had repeated outbreaks of Cholera particularly in urban centres (Interview with UNICEF). Furthermore, Sudan had approximately 80% of the world's reported guinea worm cases in 2006 (Carter Center, 2006).

1.1.2 Emerging sectoral trends

With the peace agreement between the North and South signed only three years ago, in 2005, assistance to Southern Sudan is predominantly provided in the form of humanitarian aid outside the government system and delivered by I-NGOs. However, the government has made impressive progress over the last two years, recently finalising a rural water supply and sanitation policy (GoSS, 2007a) and an accompanying strategy is currently under preparation. There is an emerging governmental framework with which donors and I-NGOs are increasingly engaging as part of the ongoing shift from emergency interventions to longer-term development assistance.

The Local Government Framework for Southern Sudan of 2007 foresees a decentralised structure for service delivery from the county level downwards. The draft rural water supply and sanitation policy actively supports this vision and is in keeping with internationally recognised good practices for sector service delivery. The draft strategy for Rural Water Supply and Sanitation service delivery aims to formalise existing community management approaches and to establish support structures for communities to sustain their RWSS services on the long run. It envisages a demand-based approach that responds to local needs and priorities and enables communities to take responsibility for Operation and Maintenance (O&M) of their schemes (GoSS, 2007c). The draft strategy for sanitation and hygiene focuses on social mobilisation for behaviour change, education and awareness raising and advocacy campaigns (ibid). This is complemented with the promotion of appropriate technologies that are low-cost and locally replicable.

1.1.3 The logistics of providing water supply services in S Sudan

Providing water supply infrastructure in Southern Sudan is logistically challenging. The long rainy season means that large parts of the area are inaccessible for six to nine months of the year thereby shortening the drilling period to three to six months. Basic materials for constructing wells including gravel packs and casings frequently have to be flown in from other countries. Widespread insecurity due to inter-communal conflicts, particularly around oil-fields and in transitional areas, continues to restrict movement and disrupt drilling schedules. This is further exacerbated by periodic acute fuel shortages as experienced due to the recent political crisis in Kenya in January 2008. Foreign drilling companies, who dominate the market in Southern Sudan, are not always able to mobilise quickly under such conditions which combine to render the already short drilling season even shorter.

[2] Cross-country comparisons are highly limited, however. JMP data for Sudan for 2004 assumes coverage levels of 70%.

Despite progressive improvements in the overall situation in Southern Sudan following the Comprehensive Peace Agreement of 2005, major RWSS sector donors continue to fund operations mainly out of emergency relief budgets. This has negative implications for implementing agencies such as PACT as they are faced with 12 month funding cycles that make medium to long-term planning difficult if not impossible. Short funding cycles also make it difficult to achieve wider development objectives such as capacity building because of the lack of continuity of operations.

The context in which the Water for Recovery and Peace Program (WRAPP) of PACT has been providing water supply services is highly challenging and can easily lead to slowing down progress through factors beyond the control of WRAPP. This has been taken into consideration when evaluating the success of WRAPP's approach.

2 Evaluation Profile

2.1 Purpose and specific objectives

This external evaluation was requested by USAID/OFDA, the main donor of the Water for Recovery and Peace Program (WRAPP). USAID / OFDA are interested in an in-depth review of the achievements of WRAPP's approach of forming and supporting effective community-based water management structures through local Community Based Organisations (CBOs). In addition, the WRAPP programme team are interested to draw lessons which are relevant in scaling up future programme activities and can inform wider ongoing processes of policy and strategy development within the RWSS sub-sector.

The purpose of the evaluation was to assess the WRAPP approach in terms of its appropriateness, effectiveness and sustainability, to identify factors that affect performance; and to identify key lessons learned and strategic recommendations. The specific objectives of the evaluation are detailed in Annex 1.

The ***key audience*** of the evaluation are the WRAPP team (manager and coordinators) and USAID / OFDA. In addition, the evaluation findings were presented and discussed with a wider audience of I-NGOs, UN organisations and government during a stakeholder feed-back session on 25th January 2008 in Juba.

2.2 Evaluation methodology

The evaluation framework follows the log frame approach, assessing to what extent the programme is meeting its objectives and achieving outcomes and impact (as and where assessment of the latter is feasible).

While the evaluation includes quantitative methods to measure inputs and outputs, the main focus was on qualitative methods to assess the soft aspects of the WRAPP approach i.e. the outcomes and (where feasible) impact of the programme. Evaluation methods included:

- Review of WRAPP-related documentation and relevant literature
- Semi-structured interviews with key informants of WRAPP staff and direct and indirect beneficiaries.
- PRA tools such as Focus Group Discussions and SWOT analysis[3]
- Site visits and direct observation
- Feed-back meetings with PACT staff at regional level and wider stakeholder review with senior government officials, representatives from I-NGOs and donors.

The evaluation findings are based on three weeks of field work in Southern Sudan. The first week, in November 2007, was spent in Juba interviewing key stakeholders from government, donor organisations and other I-NGOs in the water sector. In January 2008, the evaluation team spent two weeks in the field visiting WRAPP project sites in North and East Kapoeta in Equatoria state, Mapel and Rumbek towns, Tonj Central and Cueibet counties in Bahr-el-Ghazal and Lakes states and Waat town, Duk and Wuror counties in Jonglei.

[3] The use of PRA tools remained limited as only one or two members of CBOs and of user committees were available for consultation in many places.

3 WRAPP Profile

Pact Sudan has been active in the water sector in Southern Sudan since 2003, first as part of the larger Sudan Peace Fund.. In 2004, PACT's activities in the water sector expanded to form the Water for Recovery and Peace Program (WRAPP) mainly supported by USAID / OFDA.

The ***objectives*** of WRAPP can be summarised as follows (taken from WRAPP project proposals to OFDA in 2006, 2007):

- Increase access to protected water supply and enhance awareness about sanitation and hygiene;
- Enhance capacity for community management of water schemes;
- Contribute to the reduction of conflict and the promotion of stability and peace; and
- Be gender and environmentally sensitive.

WRAPP has defined its ***expected results*** mainly in quantitative terms i.e. in the number of water schemes constructed and user beneficiaries. The bulk of WRAPP's interventions encompass borehole drilling (707 in November 07) and rehabilitations (505 in November 07) according to the internal project data base; its programme also implements Semi-urban Water Distribution Systems (SWDS) (13 in November 07), rainwater harvesting schemes i.e. hafirs (one in November 07 according to WRAPP project team) and public latrine blocks in towns (10 schemes completed in November 07).

WRAPP's most important ***funder*** is USAID / OFDA, which has supported WRAPP with a series of funding cycles around 12-months from November 2004 onwards. In addition, PACT received funding from a number of other bi- and multilateral donors over the years. WRAPP's funding from 2005 to date reaches nearly USD27 million[4] (Interview with WRAPP programme coordinator). Most recently, and an important achievement for the programme, WRAPP was awarded a contract from the Government of Southern Sudan to implement water schemes under a Multi-Donor Trust Fund for USD6,65 million (GoSS, 2007b).

Direct ***beneficiaries*** of WRAPP are the users of water supply systems (rural and peri-urban), latrines and rainwater harvesting schemes that have been constructed or rehabilitated with support from WRAPP. The programme estimates the total number of beneficiaries to be 1,418,500 in 2007.[5] In addition to water users, the SWMCs (Sustainable Water Management Committees) and CBOs through which PACT implements its approach on the ground, are also categorised as direct beneficiaries in this evaluation.

Indirect programme beneficiaries are individuals or organisations that are benefiting from the outputs of WRAPP but not actively participating in the programme. These include government stakeholders at all levels, I-NGOs and UN organisations operating in Southern Sudan.

[4] Of which approximately USD20 million had been spent in November 2007.
[5] See WRAPP overall achievements 2005-2007, internal programme data base.

3.1 WRAPP's approach

In its project proposals, PACT emphasises the collaborative approach it pursues for implementing water supply services that supports ownership and is responsive to local needs and resources (PACT 2006, 2007a, b). Compared to other donors and I-NGOs operating in Southern Sudan's water sector, WRAPP focuses on building local capacity, which has led to strong working relations with Community-based Organisations (CBOs) in particular. In practice this means that WRAPP staff do not implement water supply and sanitation services directly but act as an intermediary to CBOs who instruct and guide Sustainable Water Management Committees (SWMC) as the user committees are called in WRAPP. In total, WRAPP engages with more than 45 CBOs across Southern Sudan which are chosen based on their organisational structure and previous work performance (interview with PACT).

Though not mentioned under PACT's approach, WRAPP also differs from other organisations in that the water programme has at its heart an analysis of and suggested strategies for conflict mitigation and contributing to stability and peace.

3.2 Geographic areas of intervention

WRAPP operates in the three major geographic areas of Southern Sudan: Bahr el Ghazal (Northern BeG, Western BeG, Warap, Lakes), Greater Upper Nile (Upper Nile, Jonglei, Unity) and Equatoria (West[6], Central, East) and in Transitional Areas. Within these areas, WRAPP interventions are often geographically widely spread, which is a challenge in terms of being able to supervise drilling, community mobilisation and training and do follow up monitoring.

According to the WRAPP coordinators, the programme targets areas that are most underserved (relying on statistics and experience) and less frequented by other donors. Other I-NGOs interviewed during the field work confirmed that there is coordination between their organisations and PACT in the field but the extent to which available RWSS sector resources are effectively targeted is difficult to assess from a small sample. At county level, WRAPP's approach is to coordinate with the county commissioner who overlooks other implementation agencies as far as they, for their part, report to the local authority. The two commissioners met during the field visits confirmed WRAPP's cooperation and were well aware of other organisations implementing water points in their constituencies.

3.3 WRAPP's organisational set-up

WRAPP is a programme within PACT Sudan but is relatively autonomous within the organisation. According to WRAPP's organisational chart, each of the three large programme areas is overlooked by an area coordinator supported by one or two Community Development Officers - WRAPP's field staff - per state and other technical officers in charge of specific components. According to WRAPP's 2008 HR plan, one CDO is responsible for supervising the construction, community mobilisation and training for 40 boreholes on average excluding the construction of latrines, hand dug wells, SWDS and hafirs.

This means that WRAPP staff, particularly the Community Development Officers, are thinly spread considering the geographical area covered by the programme with consequences for the quality of supervision of drillers and backstopping support available for CBOs.

[6] Activities in West Equatoria are very limited: 15 boreholes and 1 SWDS.

In addition to field managers and CDOs and the management team on top, WRAPP employs a number of technical officers (urban, environment, rainwater harvesting) and has staff dedicated to capacity building (a trainer and organisational development officer but the latter position is currently vacant).

4 Evaluation Findings

Southern Sudan is currently in the process of transition from emergency relief to reconstruction and development. Humanitarian assistance is geared at quick high-impact interventions that do not necessarily build on government structures and policies. Development assistance requires a stronger orientation on GoSS i.e. in terms of using emerging government systems for delivery of services, expanding capacity building activities to government personnel and a higher emphasis on sustainability of services. While the former is much more under the control of WRAPP, the latter activities relate partly to the wider PACT programme and to the sector.

The evaluation findings are organised accordingly. The first part deals with the aspects of WRAPP that are related to improved access to WSS services and enhanced capacity for community management. The second part focuses on issues that go beyond the narrow definition of service delivery i.e. aspects relating to conflict, livelihoods, and issues that go beyond WRAPP's immediate sphere of intervention such as organising spare part supply chains and capacity building of government staff, future support for the drilling sector etc.

4.1 Quantitative programme achievements

Since its formation in 2005, WRAPP reached an estimated 1,4 million inhabitants most of them through the provision or rehabilitation of boreholes in November 2007 (see Table 2 below). According to the WRAPP manager, the total implementation rate of boreholes stood at 80% in November 2007 for OFDA projects and at 76% for WRAPP as a whole. At the same time, WRAPP surpassed its original target of 475 proposed rehabilitations by 6% now proposing a new target of 555 rehabilitations (as shown in the table below). Pending implementation relates mainly to ongoing / not-yet started contracts.

Table 2 Total WRAPP achievements against targets

	New boreholes	Rehabilitations	SWDS	Rainwater Harvesting
Total WRAPP Programme Target	1161	555	15	4 hafirs + poss 10 under MDTF)
Achieved (Nov 07)	707	505	13	1 hafir
Of which OFDA	534	n/a	13	1
Total estimated beneficiaries (Nov07)	1,086,000	252,500	65,000	-

Source: WRAPP achievements, Nov07; communication with WRAPP project team

Given the challenging logistical context of Southern Sudan, WRAPP's quantitative achievements to date are highly satisfactory. The figures are confirmed by WRAPP's reputation, among government and non-government partners, as an effective implementer. With regard to quantitative achievements, hafirs are with one out of four implemented the least satisfactory component of WRAPP's interventions to date. This aspect will be dealt with separately under the section on conflict.

4.2 Basic Rural Water Supply Services

Implementation of new and rehabilitation of existing rural water supply schemes are treated together in this section as there are no major differences between the two types of interventions.

4.2.1 Effectiveness and impact

4.2.1.1 Site selection

Geographic distribution of water points and site selection is important and possibly the most politicised aspect of RWSS interventions. PACT's approach is to agree which counties receive water points at state level with the relevant department and other donors, and to advise local authorities[7] about the location of water points within a county (Interview with WRAPP project team). At boma level, the community takes a joint decision about the precise site of the water point as far as the hydrogeology allows.

Interviews with county commissioners and water committees confirmed this practice. The evaluation team did not find evidence of significant grievances related to borehole siting and experienced first hand that need rather than easy access determined the location of the boreholes visited. For example, none of the PACT boreholes were drilled along major roads but rather communities have, at times, cleared roads for rigs to be able to pass. This evidence relies mainly on qualitative information obtained by beneficiaries and project staff. Under the given time and methodological constraints, it was not possible to explore in depth overall equity of distribution across the entire program area.

4.2.1.2 Type of schemes and quality of technical works

The dominant type of scheme implemented by WRAPP is a borehole. Yet, there are areas that allow for hand dug wells, spring protections and rock catchments. WRAPP started implementing such schemes under its latest OFDA contract in Equatoria. WRAPP should continue to explore these and other lower-cost and lower-tech alternatives wherever feasible.

The predominant technology used by PACT for rural water supply schemes is a borehole fitted with an India Mark II hand pump (dominant model in the market in Southern Sudan in 2008) or other depending on the depth of the well. The quality of technical works was generally acceptable though a few issues arose which may impact on the lifetime of a hand pump. Generally, contractors used as little cement as possible which resulted in small and flat platforms, shallow platform and drainage walls and short drainage channels. In some cases, drainage design was also poor leading to standing water (see also Annex 3: RWSS visited).

In Southern Sudan, where even basic materials such as gravel are not easily available, the use of insufficient quantities or inadequate qualities of materials is a common problem that is not limited to PACT boreholes. Tightening supervision of drillers is therefore an important undertaking, particularly if there is already a culture of carrying out substandard work. Supervision of quality of works should be the

[7] The most practiced approach is that local authorities sit with payam administrators and subordinates to decide which payams and bomas the boreholes should be allocated in. Pact does not have a significant role in decision at this level except advising on appropriate decision that ease logistics problems and create impact in specific areas, focus on conflict areas, returnees, disease endemic places, etc. (WRAPP programme coordinator)

responsibility of PACT staff rather then left to CBOs as WRAPP is ultimately held responsible for the quality of technical works. In this light, the wide geographical areas covered by CDOs as well as the high number of borehole drilling and rehabilitation a CDO has to juggle within one season poses a serious challenge to ensuring quality.

SMART teams should also share the minimum standards for quality of works specified in the contract with the local authority and communities so that they are aware of what they should expect and are better able to hold contractors to account.

4.2.1.3 Impact of schemes on people's lives

Direct observation confirmed that most of the schemes visited were used intensively with demand generally exceeding supply. Long lines of water containers indicated queues and a lack of alternative sources in the area.

Peoples' own accounts of the impact the provision of water supply had had on their lives were remarkable, particularly in Jonglei state. Elders reported that they were no longer forced to migrate for part of the year with all their belongings and carrying the old, sick and young on their backs. The provision of water has not only reduced their burden but also led to increased security. Women reported a reduction in the number of rapes, previously associated with having to fetch water from long distances, and improved safety for children who previously risked injury or death when deep holes dug in dry river beds frequently collapsed.

Users also reported that the reduction of time taken to fetch water freed time for other activities such as taking care of the household, looking after children and for productive activities. The evaluation team also observed that the water of the soak-away pit was in some cases used for brick making, particularly around Tonj town.

4.2.2 Capacity for community management

Increasing capacity for community management lies at the heart of PACT's approach to water supply and is crucial for the sustainability of schemes developed. PACT's approach is to support Community-based Organisations (CBOs) to establish and train Social Mobilisation, Awareness and Rehabilitation Teams (SMART) to promote effective management of community-based schemes.

The CBOs through which PACT works are often small organisations of one to four paid staff in addition to SMART teams. Some CBOs receive funding from other donors typically for food-security interventions such as distributing seedlings or school feeding, etc. Some of the CBOs supported by WRAPP had also previously received funding from PACT for peace-building activities. The CBOs operate in one or several counties and may be committed to supporting a particular ethnic group. The CBO directors are sometimes also politically active.

PACT generally approaches CBOs locally and offers to train four (often purposely hired) staff for two weeks on all aspects related to establishing committees for managing water points. These trained teams are called SMART (Social Mobilisation, Awareness and Rehabilitation Teams). They operate on a contractual basis and are paid by milestones. Prior to interventions, SMART teams are equipped with bicycles and/or motorbikes, tents and each member receives fixed per diems for each day spent in the field. The first milestone triggering a payment is the successful mobilisation of the project site followed by milestone two, social mobilisation and training, and milestone three, post-implementation monitoring and completion of hand-over and a related narrative report. The milestone payments are disbursed, upon invoice, once the

step has been completed for all water schemes with one CBO being responsible for some 10 to 20 schemes per season.

During the period of implementation, PACT's Community Development Officers (CDOs) are supposed to accompany and supervise CBOs, particularly during the first cycles after the training. PACT also provides capacity support to CBOs in the form of Organisational Development through initial and follow up visits by the organisational development officer of WRAPP.

4.2.2.1 Training of Trainers and support to CBOs

WRAPP delivers trainings to user committees via a two week Training of Trainers (ToT) program. There are good reasons for working through intermediaries, particularly the intention to build the capacity of local CBOs to deliver such services in the future. However, a Training of Trainers approach implies some loss of quality or information by transferring skills through an intermediary and therefore requires careful monitoring of results.

The quality of the training modules and skills transfer was assessed indirectly i.e. by analysing the capacity of user committees to put learned tasks into practice. The evaluation team found that a significant proportion of the 18 user committees visited fully understood the principles of ownership, were able to mobilise for scheme repairs and to resolve local conflicts around water points. This is a major achievement in a difficult environment such as Southern Sudan and suggests that the related parts of the existing training modules for rural water supply are adequate. The training was also regarded as very useful by the SMART team members interviewed. Interviewees reported that it had boosted their skills and improved their leadership capabilities. Refresher trainings were also seen as very helpful in advancing the team's understanding of issues that had previously not been entirely clear.

Less satisfactory were the committees' O&M skills but this problem is not limited to PACT or Southern Sudan. A technical O&M training of (currently) one to two days does not equip user committees to carry out repairs themselves - a fact that was confirmed by the committees themselves. This does not necessarily mean that all user committees should receive extensive O&M training. Rather, for boreholes that are well connected to payam or county administrations, links to government-employed pump mechanics should be improved. But, there should be a possibility for remote communities and areas without pump mechanics to become eligible for extra O&M trainings enabling them to sustain water points themselves over longer periods of time. O&M is a very important aspect of sustainability and other aspects will be elaborated in section 4.2.2.3. Aspects of sanitation and hygiene also require adjustments which will be discussed in 4.5.1.

In addition to providing ToTs, WRAPP also supports CBOs through an organisational development officer who spends time advising CBO management in questions regarding financial management, by-laws etc; a crucial undertaking for supporting the CBO management and via this the SMART team. In practice, however, this type of support has not always been systematically provided, particularly during the last year as the organisational development officer was occupied with other tasks.

Delivering services via third parties carries the risk of diluting quality. This is evident from the work delivered by some of the CBOs as is explored in section 4.2.2.2 below and enhancing support to CBOs or rethinking the current CBO-based service delivery model emerges as one of the major action points of this evaluation.

4.2.2.2 The quality of work delivered by CBOs

Throughout the field trip, the evaluators observed the work of four SMART teams and interviewed members of seven CBOs/drillers.[8]

According to their current in-kind and grant agreements with PACT, CBOs are responsible for mobilising communities prior to the drilling including ensuring a participatory process of site selection, the formation of a user committee, possibly clearing the road for drillers, supervising technical works, training user committees and a formal hand-over of the scheme after implementation. For each milestone (three in total), SMART team members are paid for a fixed amount of days per borehole.

In Jonglei in particular, there was evidence of excellent facilitation and training work carried out by the SMART team of NCDS (now CCRI). Communities had been mobilised, had received training and, based on this, were able to raise timely contributions for repairs and to resolve conflicts linked to overcrowding (see also Box 1 below). There was also evidence of good facilitation during committee formation as pump mechanics acted as chairmen in several cases and women tended to be given the position of a treasurer.

Committees of water points facilitated by the Kapoeta Development Initiative (KDI) and by the Initiative for Community Organisational Development and Education (INCODE) on the contrary had not always received adequate training and little follow-up support after schemes were completed. KDI, in particular, was poorly prepared for handling community mobilisation and training. One KDI member reported that the team was unable to motivate committee members to participate in training after 1,5 days – an issue that must have been demoralising for KDI staff in addition to leading to poor skill transfer to user committees.

Reasons for poor or no training differed. The SMART team member of INCODE put payment issues forward as the main reason for not delivering what they were trained to do. According to him, the SMART team had not been paid for their services over a period of two years. Lack of payment and late payment was also an issue for KDI and TDA in Equatoria and for the very able SMART team in Jonglei which operated first under NCDS and then under CCRI but continues to receive no management support and experiences delays in payment.

Based on discussions with PACT staff and SMART team members, it appears that the problems of non-payment and late payment are often related to CBO internal conflicts between the SMART team on the one hand and the CBO management on the other.

Further, SMART team members are uncomfortable with the new payment rules based on milestones introduced by WRAPP to increase control over performance. Payment by milestones is intended to be more cost effective compared with previous fixed contracts with CBOs which, at times, did not match with the time-tables of contractors thereby leading to contracts ending before CBOs could actually carry out any work. The new payment structure is advantageous for PACT but puts CBOs and particularly SMART teams at a disadvantage. Rather than having a monthly income, SMART team payments are now dependent on the time schedule of contractors which the former can generally not influence. The fact that payments are effected based on a fixed number of days to be spent per milestone is another issue. In some cases, SMART team members reported having already used up most of their days just in mobilising the community to clear road access for the driller.

[8] LRDA, TDA, KDI in Equatoria, INCODE in Lakes, NCDS/CCRI in Jonglei as well as AMA and PARAD.

The combination of these problems stretches organisations with already low capacity and has lead to low morale for all CBOs interviewed. High staff turnover, another problem with CBOs, is likely to be partly a result of irregular and discontinued payments. Apart from acute problems of not getting paid for work carried out, SMART team members also struggle with having to make ends meet during the wet season when they are not employed by PACT. The capacity of SMART teams is further stretched in areas where the terrain restricts movement and/or communities are dispersed over a large geographical area. For example, TDA works in communities that are 125km and 165km away from their base which places an additional strain on organisational resources which is not taken into account under the current contract. These issues compromise WRAPP's objective of building capacity for community management of water supply schemes.

A different issue related to poor performance of SMART teams is the lack of supervision from PACT staff i.e. Community Development Officers. CDOs backstop SMART teams in terms of supervising community mobilisation and trainings. CDOs also carry out social and environmental impact assessments prior to implementation and water quality testing after drilling is completed. They also frequently find themselves stretched. On average, a CDO is responsible for 40 boreholes in addition to rehabilitations, urban water schemes and hafirs (according to WRAPP's HR plan for 2008) but some CDOs are responsible for far more than this. For example, the CDO in Jonglei works with five to seven CBOs in nine to 11 counties. In 2008, WRAPP is expected to drill 172 new boreholes and to rehabilitate about an additional 100 water points in Jonglei only. Although WRAPP is in the process of recruiting a second CDO for the area, current staff are clearly overstretched not only in terms of the sheer quantity of works to supervise but also with regard to the geographical distances CDOs are required to cover. This has negative consequences on the quality of work delivered. CDOs are less able to effectively supervise and support SMART teams and to supervise drillers increasing the risk of low quality technical works and undermining transfer of soft skills from SMART teams to user committees.

4.2.2.3 Sustainable community management of schemes

Demand-led approaches to community-based management have become the dominant model for rural water supply development since the 1990s. The positive side of this approach is that it may be more responsive and appropriate to local needs and capacity to manage services thereby increasing sustainability of supply. This is seen internationally as more effective and efficient than the previously dominant supply-driven approach which frequently led to communities abandoning schemes after breakdowns in the absence of government capacity to carry out necessary repairs. On the negative side, however, community management increases the burden for communities and puts responsibility for sustaining services into their hands in sometimes difficult environments. Particularly if wider support systems such as supply chains and a qualified private sector to repair schemes are unavailable, communities may still be left in a similar dilemma as under previous approaches. These issues are prevalent beyond WRAPP and Southern Sudan; knowing about and being able to respond to sustainability issues is a struggle across Sub-Saharan Africa.

In Southern Sudan the question of scheme sustainability is an urgent one because pumps are generally overworked and alternatives scarce. According to WRAPP's experience, pumps usually break down after one to two years of operation but

breakdowns can also occur much earlier and more frequently. Being able to deal with such a situation is thus crucial for user committees.

For WRAPP-supported schemes, the capacity of communities to manage rural water supply schemes over time was found to vary significantly with multiple different factors influencing the performance of user committees. In the context of PACT interventions, sustainability only stretches over a period of up to three years i.e. the beginning of 2005 when WRAPP was established.

A first and very important factor, the quality of training carried out, was covered under 4.2.2.1 and is not repeated in this section.

Second, the sustainability of user committee management may be linked to whether a follow-up system is in place. Water points around Tonj town, for example, were relatively well managed despite the lack of training provided to committees through INCODE. According to the mayor of Tonj town, all 25 water points in Tonj Central were functional at the time of the visit. This is due to the active role the local authority takes in managing water points. Water committees are expected to report to the local authority and are put in contact with pump mechanics in case of break downs. The relative proximity to the town also facilitates communication between the local government and communities. The support system in Tonj, however, still depends heavily on having active water committees. One of the points visited was clearly poorly managed with serious damage to the drainage channel through livestock after only six months of operation. The committee itself was disintegrated; it had never met since it had been formed.

Third, absolute water scarcity determines the commitment of committees for management. This was clearly visible from two opposite examples of originally well trained communities. In Jonglei, as also cited in Box 1 below, communities are extremely well organised and go to great lengths to protect and repair water points including setting up emergency funds in some cases. These emergency funds are collected by the community in advance so that the process of repair can be speeded up once the borehole breaks down. In Abiru town, Cueibet County, on the contrary, where a number of agencies have drilled boreholes since PACT carried out a rehabilitation in 2005, alternative water schemes were abundant. The payam capital itself had at least three different improved water points at the time of the visit. For the water point rehabilitated by WRAPP, committee membership had changed since WRAPP's training and there was no acknowledgement of any support given by WRAPP or the local partner. The sanitary condition of the well was appalling, in fact begging the question whether the point was still safe to use.

Box 1: Illustration of differences in sustainability of water point management

Poor management: Wundhiod BH in Tonj town, Lakes State: The Wundhiod borehole lies in the proximity of Tonj town. It was constructed not even a year before the visit, in May 2007 but as there was no fence, livestock had eroded the soil around the drainage so much that it was about to break off at the time of the vistit. The evaluators learned from a committee member that no proper training was ever given to the SWMC. Originally, a person had been made responsible for fencing the bh but when he failed to mobilise the community around, nobody followed up. The INCODE SMART team member who accompanied the visit blames the director of the CBO for the lack of action. According to him, the SMART team had not been paid over the last two years and this eroded their motivation to carry out their work properly. The member is not willing to work for INCODE again this coming season.

Excellent management: BH in Motot payam, Wuror county, Jonglei: The management of the Motot boma borehole, in contrast, was excellent. As the evaluators arrived, many women were queuing for water; a police man was keeping order and renewing the fence. Due to high demand, the hand pump had been repaired several times by the committee. The committee organised payments by requiring every household fetching water to make a small contribution. For fencing this means that everyone needs to bring along a pole and for repairs contributions made in the form of money or sorghum. The SMART team, formerly under NCDS, had trained the committee on management aspects and the fact that the chairman was a trained pump mechanic was an asset when repairs became necessary. The most urgent problem for the committee was the lack of spare parts in the area.

Fourth and very important, the availability and financing of spare parts and tools is an external factor determining the sustainability of schemes. This is an issue beyond the direct control of WRAPP and will be dealt with in section 5.

4.2.3 Recommendations

This section looked at the delivery of rural water supply schemes through CBOs acting as intermediaries between WRAPP and user committees. The evaluation found that the quality of work provided by CBOs varied and that poor skills transfer was, at times, compensated by follow-up through local authorities. This notwithstanding, the partly low quality of work carried out by CBOs, the low morale of SMART team members and weak supervision from the part of PACT staff suggest the need for action. The following recommendations are meant to give a spectrum of actions that PACT could consider for taking informed decisions about how best to maximise outcomes, impact and sustainability.

Minimum package: there is a minimum set of steps that WRAPP can take to improve the skill transfer from CBOs to user committees.

Increased organisational development support to CBO management: PACT should enhance its organisational development support to CBOs. Re-establishing a full-term position for organisational development of CBOs should be made a minimum priority. Building capacity is one of WRAPP's programme objectives and crucial to the impact of its interventions. It is also at the heart of PACT's activities and experience world wide and should therefore be a 'low hanging fruit' for WRAPP.

Increased field support to SMART teams and obligatory refresher trainings: yearly refresher trainings could be made obligatory to SMART teams to enhance skills and to minimise loss of quality through ToTs. This should be accompanied by increased supervision of and support to SMART teams in the field, particularly during the first cycles of community mobilisation, committee formation and training when SMART team members are still inexperienced in their roles.

Increased counselling of SMART teams: During their field support missions, CDOs could have fixed times reserved for counselling of SMART teams including explaining them their rights in accordance with the contracts and making sure invoices are handed in on time and are formally correct.

Decrease geographical coverage: In order to be more effective in its interventions, WRAPP should consider consolidating programme activities within a smaller geographical area, i.e. by reducing the number of counties in which it operates. This would save travel time and possibly also reduce the number of CBOs with which WRAPP cooperates. These time gains could then lead to more intensive and higher quality interventions in a smaller area. Alternatively, WRAPP should increase the number of CDOs so as to guarantee adequate supervision of drillers and of CBOs and field support to SMART teams.

Extra elements: the following suggestions are extra elements and may require a more critical rethinking of the way WRAPP works.

Increasing the financial security of SMART teams: the current contractual arrangement of payment by milestones shifts the financial risk and burden from WRAPP to SMART teams. For a programme whose objective is to build capacity, this is a problematic shift. WRAPP should consider reversing this or find arrangements that increase the prospects of a sustainable and regular income for SMART team members. This could take different forms. The most radical option is to support SMART teams or at least part of their members with some sort of regular payment throughout the year. In return, these members could take on additional tasks with regard to M&E and Sanitation and hygiene promotion (see also the relevant sections further below). To an extent, this recommendation also relates to WRAPP's funders as the programme currently operates under 12 – 18 months funding cycles rendering any longer-term support to CBOs difficult. This point will be elaborated further in section 5.

Complement SMART teams with LA staff: Alternatively, PACT could more actively expand its capacity building activities from SMART teams to members of the local authority, notably pump mechanics and sanitation and hygiene promoters at payam level and county water focal persons. PACT could also take an active role in establishing water user associations (as per GoSS Water Policy).

4.3 Urban water supply and public latrines[9]

WRAPP commissioned 15 Semi-urban Water Distribution Systems (SWDS) since 2005 of which 13 had been implemented by November 2007. The evaluation team visited three of the schemes namely Rumbek, Mapel and Waat. The SWD systems are mechanised boreholes supported by a solar system in most cases and a diesel generator as a back up. They supply between 10 and 20 communal taps and are managed by committees in collaboration with the local authority. WRAPP also implemented public latrine blocks in 10 towns; in some cases, e.g. Rumbek, complementing a SWDS, in other cases as independent projects.

The sanitation component of the WRAPP program is less well developed than water supply development. Activities remain somewhat ad hoc and criteria for targeting sanitation interventions remained unclear to the evaluators. In Rumbek, for example, four latrine blocks were constructed. But why four blocks? Are they likely to have a significant impact in a town with c.100,000 inhabitants? Similar to the SWD systems, public latrine blocks are popular but without a management concept in place, they are difficult to maintain.

4.3.1 Effectiveness and impact of SWDS and public latrines

This section focuses on questions linked to the implementation of urban WSS services through WRAPP including planning, implementation and effectiveness of management by users.

4.3.1.1 Ex-ante financial viability assessments

[9] WRAPP also has a plan of implementing private latrines in Equatoria. This will be dealt with in section 4.5.1.

WRAPP's criteria for commissioning a SWDS relate to the proportion of the population which is currently unserved and whether the town is a growing population centre. A decision is taken after a social and environmental impact assessment and very roughly on the basis that implementing a mechanised borehole with a number of taps is more efficient than a number of boreholes fitted with hand pumps in growing urban centres.

Overall, SWDS are popular with local authorities and users but require a relatively high management capacity and sufficient purchase power to recover costs that cannot always be guaranteed from among the prospective users of the schemes. This means that Local Authorities are likely to demand schemes but it is not guaranteed that they are then capable of maintaining them. For this reason careful ex-ante assessments particularly of the financial viability of the scheme, are key.

A good example for this is the SWDS in Waat, which, based upon a rapid assessment, is unlikely to recover running let alone O&M costs in the near future. Waat is a small town in Jonglei. Although it hosts a number of NGOs and, until recently, the army, the cash economy is minimal. The scheme has a deep borehole and can be run by generator only with the implication of high running costs in addition to recurring fuel shortages in the area. The question arises whether the financial viability of the scheme was properly assessed prior to scheme construction based on financial modelling of likely income and expenses and whether the serious risks i.e. fuel shortages and rise in fuel prizes were properly taken into account?

4.3.1.2 Quality of technical works

As far as construction is concerned, the SWDS were generally found to be robust. Some taps and pipes had leaks and in the case of Mapel, water was pumped directly into the distribution system instead of being pumped to an elevated distribution tank leading to low water pressure and only four out 15 taps providing water. However, it was assumed that this was a management rather than a technical problem.[10]

The most controversial technical element of the SWDS is the solar panel. In Rumbek, the solar panels were stolen twice but this had not happened in any other of the 12 SWDS equipped with panels. In Mapel, the solar system was very dusty and therefore not working at full capacity but, remarkably, still pumping water while no one was actively taking responsibility for managing the scheme according to users. The Waat SWDS was not equipped with solar panels due to the depth of the borehole making the use of solar panels uneconomical.

The technical quality of urban latrines constructed was poor in Kapoeta town. Although the blocks were only a few months old, walls had cracks and one of the latrines had no foot stands. None of the latrines in Kapoeta, Rumbek and Yuai had hand washing facilities.

4.3.2 Capacity for SWDS management

All visited SWDS showed management problems which impacted on the services provided. In the two smaller towns, Mapel and Waat, the SWDS provided water intermittently at the time of the visit; the Rumbek SWDS was running fine but had previously been out of work for several months. A number of issues contributed to the poor / intermittent management of the three different schemes:

[10] The management team was not available during the visit in Mapel so the issue could not be explored further.

In Mapel users reported that the problem was not technical but related to poor organisation of contributions. With low and irregular contributions (e.g. “when the operator is hungry”) there were not sufficient resources to run the generator e.g. in the rainy season. It remained unclear whether the committee had received training before starting their job and the system clearly looked as if it was not properly sustained. The solar panels were extremely dusty and several pipes and taps had leaks.

In Waat, where the SWDS was run by generator only, the committee never started functioning properly according to a committee member, the local pump mechanic. He runs the generator whenever an organisation (e.g. NGO, army) supplies fuel. Once the fuel is used up, the system stalls. In addition to this, fuel itself is often hard to come by in Waat.

The Rumbek SWDS was recently repaired and run by a private operator since December 2007. Previously, the system was run by a voluntary committee in collaboration with the LA. Before the solar panels were stolen, the system had worked reasonably well. The management collapsed after the solar panels had been stolen a second time. The SWDS committee relied on the generator only which substantially increased running costs. A lack of savings (kept in old Sudanese Pounds) finally led to the collapse of the system as the committee could not afford a major repair. The private operator invested up-front in a new generator; he is hoping to recover costs and make a small profit in the near future. All 11 taps provided water in January 2008 and all parties were pleased with the solution found. Yet, the discussion with the private operator and tap attendants (former caretakers) revealed the need for setting up sound accounting systems linked to a fixed tariff system that is fair to the users and recovers costs.

4.3.2.1 Sustainability aspects of SWDS management

Managing schemes that incur operational costs requires higher skill levels and time than taking care of boreholes fitted with hand pumps with obvious implications for sustainability. There has been a global trend towards establishing private operators for the management of small urban schemes. The underlying assumption is that a paid work force that operates on a small profit basis is more sustainable than a voluntary committee. However, issues arise with regard to the quality of services provided and ensuring tariffs are affordable as well as guaranteeing the financial viability of the scheme. The ability of local authorities to devise appropriate contracts which ensure service providers remain accountable to water users is key.

Management of urban schemes has been an issue for all of the three WRAPP schemes visited.

In Rumbek, poor management was mainly related to the voluntary nature of the work. In Rumbek, tap caretakers complained that they were not able to cater for the system on a voluntary basis as their jobs were time consuming (e.g. collecting contributions, advising on sanitation and hygiene etc.). The committee also implied that the guard abandoned the solar systems because he was not provided with a shelter to sleep under during the rainy season. In Mapel, reasons for poor management were more difficult to establish as no committee member was available for interview but information from users also point towards issues related to voluntary and discontinued contributions.

The LA who is supposed to act as a back-stopper in case the committee does not perform properly, was not able to fulfil its role for either of the visited SWDS. They

are an important partner for setting up a SWDS but do not have the capacity to keep a SWDS going on their own.

The evaluation team was asked to look specifically at the feasibility of managing solar panels in SWDS. In the view of the evaluators, these contributed positively to the functioning of the schemes. Solar panels brought running costs down, particularly during the dry season, which is an important factor, particularly in towns with a limited user-base able to afford regular payments. In remote towns, solar panels also provide an alternative to diesel during fuel shortages, a frequent phenomenon in Southern Sudan. From a financial and fuel-related perspective, solar panels thus offer important prospects for increased sustainability.

In Mapel, the solar continued running without a care taker at the time of the visit; this suggests that its management is relatively simple.

4.3.3 Management of public latrines

PACT's approach to the provision of urban public latrines has, so far, been limited to the construction of latrine hardware; in addition to WRAPP, other PACT programmes have also implemented latrine blocks as part of their activities and other donors, i.e. UNICEF, follow this approach though without active coordination of efforts between different implementers.

PACT's focus on hardware construction without a clear strategy for the management of latrines has led to sub-optimal use of latrine blocks. Latrine use was either subject to 'common pool' problems (i.e. no designated person taking care of the latrine leading to misuse, destruction of infrastructure and environmental hazards) or to the private appropriation of infrastructure (e.g. latrine for the bishop only, renting out of latrines to households by public health office, running of whole block by private operator[11]). In each case, the lack of a management strategy led to restricted access.

The various private arrangements described above show that there is a felt need for latrines in semi-urban and urban environments but, at the same time, a failure of communal, voluntary management.

4.3.4 Recommendations

Generally, WRAPP needs to further develop its approach to SWDS and latrine management. The picture emerging from the three visited SWDS strongly points in the direction of private management of SWDS and of public latrines. The suggestions below take these ideas forward in more detail but some of the suggestions could also be implemented under continued public management.

From public to private management of SWDS / public latrines: in the case of Rumbek, the important advantage of engaging with a private operator was that he could bring in the needed capital to repair the generator. He also offered temporary care takers a share of the profit in return for collecting user fees. This is also true for a private operator who took over one of the public latrines in Kapoeta town. He invested in a wall and in shower blocks to add additional services to latrine use.

Salaried staff: whether SWDS / latrines are run publicly or privately, voluntary work undermined management sustainability. Providing caretakers with monetary

[11] The private operator (Kapoeta town) had added a shower block to the latrines and ran the block as a side business next to his own shop. Disappointingly, however, the use of the latrines was very low. Six persons visited the block on average per day probably due to the high entry fee of 1 Sudanese Pound.

incentives either in the form of shares or a monthly income is an important shift for managing SWDS / public latrines in the future.

Improving financial management: Linked to this, there is an urgent need to improve financial management i.e. through training. Though the private operator in Rumbek had made a good start, his financial management capabilities were clearly limited. Basic training in financial accounting should form part of SWDS in the future if it does not feature at the moment.

Other organisational development support: Further, the legal standing and organisational structure for scheme management are vague at the moment. Establishing a legal basis (e.g. obtaining a lease from the LA), sound organisational systems and transparent procedures for staff payment are important next steps to make the private operation sustainable. This task could be taken on by WRAPP's organisational development officer in the future.

Ensuring fair tariffs and creating space for expansion: In addition to the organisational development activities suggested above, WRAPP could facilitate a process of negotiating a tariff that is both fair for the users and allows the operator to accumulate savings for future systems expansion. Trialling this with financial models could be a possible further option for WRAPP. In the absence of an effective regulator WRAPP has an important role to play with regard to tariff setting as it can act in the interest of consumers.

Management of public latrines: Public latrine management could be taken forward as part of managing the SWDS where both types of infrastructure exist. In other cases, WRAPP could encourage women groups to run public latrine blocks. Various models could be trialled to make such an undertaking sustainable while encouraging maximum use. This could include adding additional infrastructure such as public showers and clothes washing facilities.

Collaborating with other implementers on public latrines: As both WRAPP and other PACT programmes implement public latrines, there is scope for improved knowledge sharing within the organisation regarding trialling of different latrine management models. There is also room for developing a coherent approach towards latrine hardware and management in cooperation with LAs and other implementers.

Documenting good practices: Finally, PACT should document case study examples of how SWDS can be privately operated and maintained on a sustainable basis so that the model can be more widely replicated.

4.4 Rainwater harvesting

WRAPP's most important rainwater harvesting schemes are hafirs. More than the other parts of the programme, hafir construction intends to contribute towards the reduction of intra- and inter-communal conflict. So far, WRAPP has implemented one out four budgeted hafirs with an additional possible 10 hafirs planned under the MDTF.

4.4.1 Implementation and quality of technical works

The implementation of hafir construction has been delayed for a number of reasons. Originally, hafirs were to be dug through manual labour but WRAPP faced reluctance from the part of beneficiaries. This was partly due to late mobilisation which meant that the young and active male population had already migrated to other areas in search of grazing land. But WRAPP also had general difficulties in overcoming the

notion that hafirs need to be dug by machines (as had happened in an earlier government scheme) and could not offer attractive compensation for labour contributions. WRAPP then decided to bring in mechanised labour which started shortly before the rainy season. As a result, works were done in a rush with negative effects on quality. According to the WRAPP project team, the hafir fulfils the necessary conditions set out in the design. Field staff in Jonglei were of the opinion that the hafir would dry up before the start of the rainy season thereby reducing its impact as a stabilising factor in localised conflicts. As the field visit took place in January, the evaluation team could not obtain conclusive evidence for either scenario. The LA perceives the hafir as insufficient in comparison with a very large government scheme implemented in the past.

4.4.2 Effectiveness and impact

The main aim of hafirs is to provide sufficient water resources for livestock of the local population to avoid migration towards other people's grazing land and water sources. The assumption is that once sufficient water is provided, cattle owners would not migrate or migrate in fewer numbers.

The evaluation team visited the completed hafir situated at the outskirts of Yuai. The hafir was used by cattle owners and fisher nets had been put up to catch fish; yet the team was also told that people were reluctant to use it because it had lately become a target for cattle raiding. The visit went ahead with two armed police men.

It was difficult to assess how far the use of the hafir was impacted by the fear of cattle raiding. If the impact was significant, the intervention would fail to reach its original objective. As hafirs are comparatively expensive, this needs to be carefully followed up and properly assessed.

The first hafir implementation holds important lessons for WRAPP. Reports from county officials suggest that the hafir has had unintended consequences, which raises questions with regard to 'do no harm'. Although hafirs are supposed to reduce conflict, there was no clear evidence for a reduction of conflict with a potential shift from one place to another. This implies that WRAPP needs to place greater emphasis on conflict analysis as part of its pre-intervention assessment and to complement hafir construction with other conflict mitigation measures such as community peace building to ensure the effectiveness of the intervention.

4.4.3 Sustainable Management

Hafirs require effective management to regulate use of this common pool resource and to maintain the resource. In addition, according to WRAPP staff, hafir walls need to be reinforced particularly during the first years after construction so as to avoid 'silting up' and loss of water storage space.

At the visited hafir there was no evidence of enhanced walls and the reluctance to contribute labour during construction begs the question whether users would be willing to make themselves available for such activities? Members of the hafir committee were not available for an interview and it is unclear whether the committee is in fact functioning and active.[12]

[12] The evaluation team was able to meet members of user committees at all other sites.

4.4.4 Recommendations

Hafirs are an important intervention if they can contribute to reducing intra- and inter-communal conflict. However, based on WRAPP's early experience so far, it remains unclear whether they do make a significant contribution to increasing stability in practice.

Include analysis of existing conflict factors in ex-ante hafir assessments: WRAPP needs to enhance its analysis of the factors contributing to reducing intra- and inter-communal conflict and the role of providing hafirs therein. This is to increase the impact of its intervention but also to make sure the provision of schemes conforms to 'do no harm' principles. Other factors than water enhancing the likelihood of conflict include the prevalence of small arms and the widespread practice of cattle raiding in the area. Unless these factors are addressed, conflict might not be reduced. WRAPP also needs to carefully examine the extent to which grazing land or water determines temporary migration. If grazing land plays a major role in migration, providing hafirs may only have limited impact on the situation.

Greater emphasis on 'do no harm' as part of conflict mitigation: 'Do no harm' analyses could generally play a greater role in WRAPP interventions. The drilling of dry boreholes, for example, can have a major negative impact on the affected community, lead to grievances and conflict. WRAPP has a technical strategy in place to deal with such matters[13] but ways of mitigating the problem with the local authority and affected community are less clear cut. WRAPP should ensure follow-ups to mitigate any negative consequences its programme has on the local environment.

Collaborate with other PACT programmes: WRAPP could collaborate with other PACT programmes on interventions accompanying hafir provision to increase the effectiveness of conflict reduction. In the case of Yuai hafir, this could take on the form of negotiating grazing space between host and migrant communities (reviving traditional institutions) or between cattle raiders and hafir users so as to guarantee safe use of hafirs.

Closely follow developments of sustainable management: With the provision of mechanised labour, the question arises whether user committees will be effective in managing and maintaining a common pool resource like a hafir. WRAPP should closely follow the management of the present hafir in order to trial sustainable management models. The lessons arising from this example would be very useful for the future development of management models; collaborating closely with the MoWRI and documenting lessons learned would be very useful for future implementation.

4.5 Cross-cutting aspects

This section deals with aspects that cut across the implementation of water services provided by WRAPP. These are sanitation and hygiene, gender, the environment, livelihoods and, last but not least, conflict.

4.5.1 Sanitation and hygiene promotion

WRAPP's activities on sanitation and hygiene focus on keeping the water point itself sanitary i.e. through fencing, keeping the water point clean, refraining users from washing in the immediate environment etc. This falls under the capacity of community management and, as described above, was very well implemented in some

[13] Paying 40% for the next borehole even if it is dry and carrying out geophysical surveys

cases but not so well in other cases. It should be emphasised, however, that most of the schemes implemented by other agencies seen while passing through Southern Sudan did not have fencing or good sanitary conditions. Based on random observation, WRAPP's efforts compare positively.

Having said this, WRAPP's approach to sanitation and hygiene lacks the latest behaviour change tools and an overall conceptual framework. For example, under the Equatoria programme, WRAPP has currently planned the implementation of 100 HH latrines as a pilot programme. This does not correspond with current international experience that sanitation and hygiene interventions are only successful if practiced by at least 80% of the population. In this context, funding the construction of 100 latrines as currently envisioned will not bear any considerable impact, particularly as they cannot easily replicated at their current estimated cost of USD100 per latrine (PACT, 2006). For behaviour change, a number of different Participatory Hygiene and Sanitation Transformation tools are now implemented across Asia and Africa (see also Box 2 for more information), which WRAPP could appropriate for its own programme.

Box 2: Sanitation and hygiene promotion – international trends

World wide, Community-led Total Sanitation (CLTS) has received a lot of attention after initial successes in Bangladesh and other parts of South Asia. The concept, developed by Kamal Kar (see for example: 2005) intends to motivate villages to create an open-defecation free environment based largely on their own resources rather than using subsidies for individual HH latrines. It relies on a number of participatory sanitation and hygiene transformation tools such as the walk of shame where communities pass all places in their villages that are used for open defecation, the calculation of feces, where community members calculate the amount of feces produced over a certain period of time etc. These tools intend to provoke disgust among community members thereby starting a process of transformation leading to the construction of basic latrines from local materials until a village is declared "open-defecation free".

There are open questions as to whether CLTS or similar total sanitation approaches can be adapted by countries in Sub-Sahara Africa. One possible difference, for example is population density. In Bangladesh, for example, villages are more coherent entities than in areas of sub-Saharan Africa where homesteads can geographically be more widely spread leading to less peer pressure and therefore lower prospects for success.

Another issue relates to the effectiveness of the approach in reducing water-borne diseases. Depending on the technical quality of the latrine and the environment, latrines can also become health hazards, particularly in the case of flooding. Furthermore, CLTS focuses on one of the barriers, latrine use but not on the other two key barriers of handwashing and safe water storage which are important for reducing incidences of disease according to epidemiological studies.

There is scope for complementing total sanitation approaches with the method of 'small doable actions' currently trialled by the Hygiene Improvement Project of USAID in Ethiopia and Madagascar. Rather than taking the community as a whole, 'small doable actions' works as a HH approach. It trains public health and hygiene promoters in negotiation techniques with HHs identifying small actions that the HH can do under the current constraints it faces. For example, rather than insisting of washing hands at fixed times, the promoter can identify the most crucial times and promoting hand washing techniques that reduce the use of water.

4.5.1.1 Recommendations

Overall, WRAPP needs to raise the profile of sanitation and hygiene within its programme with suggested changes in programming, staffing and investments.

Updating sanitation and hygiene training module: WRAPP needs to update the sanitation and hygiene components of its current training modules to incorporate more

HH focused approaches such as 'small doable actions' and community motivation tools like PHAST and total sanitation.

Construction of latrines should focus on developing replicable demonstration models: rather than constructing 100 HH latrines, WRAPP should use funds to build locally appropriate, low-cost demonstration models of latrines that can realistically be replicated by individual HHs. This programme of latrine construction should be integrated with behaviour change activities.

Provide strategic support to sanitation and hygiene activities through staffing: WRAPP should recruit a sanitation and hygiene expert at programme level who could take on responsibility for developing a coherent approach to urban and rural sanitation across the programme, updating of training modules, transferring of skills to SMART teams and responsibility of the construction of demonstration latrines and the management aspects of public latrines. Importantly, this recruitment should be a woman who could more easily relate to sanitation and hygiene promoters in SMART teams and SWMCs.

4.5.2 Gender

WRAPP's policy towards gender is defined mainly in quantitative terms i.e. the number of women participating in user committees. Other indicators relate to a reduction of women's workload and increase of livelihood opportunities for women through provision of water supply (PACT, 2006).

Except for one, all interviewed committees did have women representatives; women's roles in committees ranged from just being members to being responsible for orderly queuing and the resolution of disputes between women; sometimes women had also taken the position of a treasurer. This is a positive trend that should be continued.

But, gender concerns not only relate to questions of representativeness and participation but also to improving the impact and sustainability of schemes. WRAPP should continue to ensure that women are included and also that they take on positions that allow for influencing decisions. Women stay at home while men migrate with cattle and therefore make better caretakers.

Women are also involved in small scale productive uses of water around the homestead. WRAPP could focus on women groups and female entrepreneurs in other components of the programme and by this develop cross-linkages to livelihoods and the management of urban SWDS and latrines.

WRAPP should also be able to relate to gender issues beyond user committees. Gender-balance needs to become embedded in WRAPP's own organisational set-up, which is currently male-only. It is understood that the current job descriptions offered by WRAPP are not ideal for women but recruiting a female sanitation and hygiene officer or giving preference to women for more office-based positions such as M&E could be a starting point.

4.5.3 Environment

WRAPP is required by USAID/OFDA to carry out environmental impact assessments before implementing any projects and to do arsenic testing of drilled wells after construction. WRAPP has recruited an environmental officer who carries out these tasks and has also trained other WRAPP staff on these two key interventions. All arsenic test results on the WRAPP internal data base were negative and there is no reported high risk of arsenic contamination in the area. The WRAPP data base of

November 2007 only shows test results for 103 boreholes but is due to a lack of recording rather than a lack to carrying out the tests.

During field visits, one user committee reported problems with salty water which had allegedly killed a number of their cattle. WRAPP staff took a sample of the water and reportedly sealed the borehole until test results would confirm that use was safe. This is a good approach to ensuring environmental safety and addressing users' concerns.

Other major environmental issues surrounding WSS include hygienic use of water points, especially those located in schools and health centres, to avoid contamination of the source and ensure safe disposal of waste water, and degradation of surrounding areas by livestock. Issues related to this were dealt with under community management above.

A final environmental health concern in Southern Sudan is the high number of guinea worm infections. According to the Carter Center (2006), South Sudan retains the highest infection rate with guinea worm world wide and in recent years, efforts have been stepped up, particularly by the Carter Center, to eradicate the disease in Southern Sudan.

This affects WRAPP's hafir programme as hafirs are ideal breeding grounds for guinea worm larvae which are prevalent in the areas where WRAPP plans future rainwater harvesting investments. The evaluation team had a number of discussions with WRAPP staff particularly concerning one prospective site in Kapoeta North. At the end of the visit, the team learned that this site is not likely to go ahead because of cost implications. This notwithstanding, the issue of guinea worm remains an important consideration in the development of hafirs. In any case, close cooperation and consultation with the Carter Center prior to the construction of new hafirs in affected areas should continue from the side of WRAPP with a particular focus on educating water users on the safe use of different water sources.

A very positive initiative from the side of WRAPP is the start up of market clean-ups in towns with the intention to reduce pollution from solid waste. At the time of the visit, this new activity was still in the conceptual phase but the relevance of such an initiative was evident during the visits of towns across Southern Sudan.

4.5.4 Livelihoods

WRAPP has incorporated a livelihoods component into its Equatoria project which started in 2007. After initial start-up problems due to the withdrawal of the main partner organisation responsible for implementing activities under this component, WRAPP has now made good progress in exploring alternatives. All suggestions currently discussed are sound, innovative but ambitious given the currently remaining finance window of only six months.

If WRAPP decides to support the activities discussed in January 2008 (e.g. supporting butcheries to become more hygienic, grants for vegetable marketing, support to local dairy cooperatives), the sustainability of the intervention would be significantly enhanced if the financing window was prolonged to a period of at least 1,5 to two years.

Otherwise, there are also a number of less ambitious alternatives that could promote livelihoods under WRAPP's existing activities. For example, SMART team training could pick up on brick-making around water points, an activity that is already practiced in some cases; support to women groups to earn an income by managing public latrine blocks or support to private entrepreneurs, again possibly in conjunction

with women entrepreneurs for the private management of SWDS; WRAPP's emerging market clean-up activities could also create livelihood opportunities e.g. through recycling and re-use of solid waste.

4.5.5 Promoting conflict analysis and mitigation in RWSS projects

There are at least two dimensions of conflict in Southern Sudan. The first is the international dimension, decades of fighting which resulted in the destruction of nearly all basic infrastructure including water supply and sanitation in Southern Sudan leaving the population in very dire living conditions. In this context, provision of water supply services is perceived as one of the most important peace dividends by the people making the location of water schemes highly political. Different water programmes, including WRAPP, prioritise growing population centres with high reported influx of returnees and Internally Displaced Persons (IDPs) under the assumption that this will reduce pressure on scarce resources and thereby increase stability.

4.5.5.1 Providing water to areas with high influx of returnees and IDPs

The evaluation team assessed the above part of WRAPP's conflict analysis by asking user committees about the numbers of returnees and IDPs, their reasons for returning and potential conflicts arising related to their return.

According to committee members, boreholes generally served IDPs, returnees and the native population. Boreholes were indeed, or became centres for IDPs and returnees, particularly in Jonglei where communities are forced to migrate once surface water dries up. Committee members reported that the provision of water had increased their security as they were not forced any more to leave their properties behind during their migration in search of water. Women reported that they were less exposed to rape as their distance travelled to fetch water shortened and that the risk of abduction of children was reduced.

None of the committees had experienced any conflicts between these different user groups. The only issues mentioned were that IDPs that had not yet been present during the borehole construction were not aware of some of the management arrangements made. This shows that WRAPP's approach of targeting IDPs and returnees is successfully implemented.

4.5.5.2 Hafirs for increasing stability

The second dimension of conflict in Southern Sudan is of a localised nature, often closely interlinked with competition over land and water resources. The predominant source of livelihood for around 70% of the population is directly or indirectly related to livestock. Southern Sudan has one of the highest rates of cattle compared to population figures in the world (GoSS, 2007).[14] Finding watering points and grazing areas for cattle is a regular cause of conflict between different ethnic groups.

WRAPP's approach to this dimension of conflict is discussed in section 4.4 above.

4.5.5.3 Linkages between WRAPP and PACT

One link between WRAPP and PACT is that WRAPP has effectively provided an entry point for other PACT peace programmes. Water is seen as a peace dividend and

[14] Based on current human (8 million) and cattle (10 million) population estimates, cattle population exceeds humans by one fifth in Southern Sudan.

is therefore a quick-win that opens the door for more 'soft' peace interventions of PACT.

Efforts to improve the active integration between WRAPP and different PACT programmes are emerging. PACT's early warning post project intends to reduce conflict around land and cattle movements between different ethnic communities that have been worsened by the increased presence of small arms and militia groups. Early warning posts combine different PACT programmes i.e. the provision of water, roads and police services in strategic locations with notorious security issues.

This emerging integration between different PACT programmes is promising. The programmes should actively continue their collaboration of providing boreholes in areas that have been identified as critical and conflict-prone during peace meetings held, for example, between neighbouring counties. Another point for follow up is increased collaboration around the provision of hafirs as suggested in section 4.4 above.

5 Wider strategic considerations for WRAPP

This section locates WRAPP in the wider context of ongoing developments in the sector and suggests ways in which WRAPP might position itself strategically.

5.1 Current sector challenges and their implications

Water sector actors in Southern Sudan face a number of generic challenges during the transition from humanitarian relief operations to development. The government of Southern Sudan has made substantial progress in developing a policy framework with which implementing agencies can engage. The draft strategy for rural water supply sets out broad policy directions to be followed by NGOs operating in Southern Sudan. At the same time, the GoSS is not yet an 'effective' state; government structures are still in the process of being set up and a number of positions exist on paper but not yet in practice or government staff are not yet familiar with their tasks and lines of accountability. This can create a difficult situation where implementers are told to engage with government but find that they might have to take on some of generic government tasks as they go along.

A similar situation exists for aid modalities. The emerging policy framework requires more long term thinking i.e. with the possibility to plan over a number of years, at least beyond the previous 12-month funding cycles. Yet, many donors including USAID continue to operate on the basis of emergency funds that do not allow for longer term budgeting. The MDTF, the main instrument for funding development activities in Southern Sudan's transition phase until the elections expected in 2009, is, itself, not well equipped.

On the ground, rapid scaling up of service provision through NGOs has led to a higher provision of services but not always in those areas most in need (e.g. there is evidence of many boreholes simply drilled along the road from Juba to Kapoeta) and without setting up clear accountability structures and support systems. In the absence of strong leadership from the side of MCRD, data and statistics for water coverage is unreliable making targeting interventions more difficult.

The most acute problem on the ground is now O&M of water supply services. In parts of Equatoria, several interviewees suggested that as many as 75% of all boreholes are broken down. This assumption was strengthened by all committees across the three

geographical areas identifying the lack of tools and spare parts as their biggest challenge. Tackling O&M is thus becoming increasingly critical for the sector.

With regard to implementation, agencies like PACT face another set of practical challenges. Rather than proceeding on a continuum from insecurity to stability, Southern Sudan is still undergoing acute crises in various pockets. In some cases, conflicts are of an inter- and intra-community nature but in other areas there is continued and recently increased tension between the North and South with significant army movements that make some parts of Southern Sudan inaccessible. The recent political crisis in Kenya has added logistical difficulties to operating in Southern Sudan, particularly as many agencies – CBOs as much as international companies have their headquarters in the neighbouring country.

What implications does this situation have for WRAPP? It puts the programme at the cross-roads between rapid scaling-up of service provision and longer term capacity building. Both options have trade-offs. Rapid scaling-up is clearly expected from prospective beneficiaries, government stakeholders and donors but it might lead to higher costs in the long run as systems are not in place to sustain a rapid increase in water supply schemes. More emphasis on capacity building helps to build up the latter but at the extent of possibly slowing down increase in coverage. Striking the right balance is clearly going to be the key challenge for WRAPP in the near future.

5.2 Building on WRAPP's comparative advantages

WRAPP is a key actor in the Southern Sudanese water sector; the programme has a number of comparative advantages:

WRAPP has a strong emphasis on capacity building. It has got an excellent track record of helping to build up and vitalise a local drilling market in Southern Sudan by supporting agencies such as AMA and PARAD. WRAPP has also got a three-year track record in training trainers that transfer soft skills to user committees of rural water supply schemes with excellent results in difficult environments in some case.

WRAPP is comparatively strong in conflict analysis and mitigation. The programme originated from an intervention that had conflict mitigation at the heart of its operation. Although operations have now shifted towards 'classic' project provision, conflict analysis and mitigation still plays an important role in WRAPP. This is embedded in training modules transferring conflict mitigation skills, in WRAPP's target population consisting of a mixture of returnees, IDPs and native population, and in WRAPP's implementation of rainwater harvesting schemes.

WRAPP is present at all levels from the community to GoSS. This gives the programme a unique perspective cutting across all areas which can be used to inform and advise government on problems on the ground as well as decisions taken at the top.

These comparative advantages point towards a number options for WRAPP's future engagement that consolidate and build on WRAPP's strengths:

Stronger engagement with government to build capacity for sustainable management: so far, WRAPP's capacity building activities have focused on CBOs which are alternative implementation agencies. The Ministry of Cooperatives and Rural Development has recently published its structures for decentralised service provision. These structures foresee a WASH coordinator at county level with pump mechanics and sanitation and hygiene promoters at payam level. The evaluation team also met a number of pump mechanic teams during the field visit. Rather than focusing solely on

CBOs for skills transfer, WRAPP could also support and involve these decentralised government staff as future ToTs. This way, it would help build capacity of government staff and possibly increase the sustainability of its trained facilitators. This might also help finding a solution for increasing follow up with user committees. In addition, WRAPP could also present its training modules to other stakeholders i.e. the government in one of the following donor-government coordination meetings to share experiences and stimulate discussion about a common soft approach to user committee training.

Trialling sustainable supply chain models: Operation and Maintenance is the most urgent issue of concern for the rural water sector. Without adequate access to mechanics, tools and spare parts, investments in water supply infrastructure remain short-lived. In many of the visited areas, boreholes were used to their full capacity with some boreholes being pumped continuously from 3am to 1am. Excessive use leads to frequent breakdowns and thus availability of spare parts becomes key. There is now an O&M group within MCRD with a draft strategy on how to tackle the issue of spare part supply chains. WRAPP itself is part of a related working group and has been thinking about trialling a supply chain model. WRAPP should take the initiative and, in cooperation with MCRD trial such a model in one or two counties as soon as possible.

Continuing to build the capacity of the local drilling market: WRAPP has played an important role in vitalising the local drilling market in the past. Local drillers are crucial not only for the long term development and stability of the sector but also in the short run as they are more capable of dealing with the difficult environment of Southern Sudan. Box 3 lists a number of advantages that local drillers have over international companies. WRAPP should continue to build the capacity of local drilling companies where this is feasible.

Box 3: Reasons for relying on the local drilling market

The following reasons for using local drillers are based on local experience in the field in Southern Sudan.

- Local drillers are self-contained, they have good logistics including being able to send drilling rigs via planes to inaccessible areas.
- The quality of technical works of local drillers tends to be better (use of more cement, work is done more thoroughly) compared to international companies as local companies feel more accountable to the beneficiaries.
- Engaging with local drillers is logistically less time-consuming as they need less back-stopping support in the field e.g. during the frequent incidences of insecurity
- Local drillers are more familiar with the hydrogeology of the areas and are therefore sometimes able to take more informed decisions.
- Drillers based in third countries take more time to mobilise in the field thereby further diminishing the already short window of the drilling season.
- Relying on international companies on the contrary increases the risk of non-delivery and late delivery of works with important political risks for GoSS as a consequence.

Source: interviews with WRAPP field staff

Trialling management models for wider sector use: WRAPP should trial management models i.e. for SWDS and for urban latrine management and share the lessons and good practices with the wider sector.

6 Lessons learned & strategic recommendations

There are a number of lessons to be learned from WRAPP's interventions that are relevant for the WSS sector. Strategic recommendations are organised in accordance with these lessons.

Working through local partners: Contrary to most other I-NGOs and donors, WRAPP works through local partners. WRAPP's support to local drillers (e.g. AMA, PARAD, SUPRAID) contributed to vitalising the S Sudanese drilling market and is an activity that should be fostered in the future. As detailed in Box 3, experience from WRAPP's field staff indicates that local drillers are able to mobilise faster, require less logistical support and can provide better quality work in Southern Sudan.

⇒ Continuing to support the local drilling market is crucial for rapid scaling up and long-term sustainability of water supply in Southern Sudan. WRAPP should continue its successful approach in doing so and other sector actors should be encouraged to priorities local drillers over international companies whenever feasible.

WRAPP's experience of supporting local CBOs to act as ToTs for water supply management is a viable approach but requires a high level of back stopping support from WRAPP to ensure quality.

⇒ If WRAPP continues to work through local CBOs it needs to increase its field support to SMART teams. This could be done by consolidating current programme activities within a smaller geographical area and by decreasing the number of SMART teams and schemes that the WRAPP community development officers are currently responsible. Tackling issues related to the low morale of SMART teams will be crucial for the future sustainability of this approach.

⇒ With GoSS now resuming its role in water supply and sanitation, the question arises whether its extended staff and voluntary structures at county level and below should also be targeted in WRAPP's future capacity building activities? This goes particularly for pump mechanics and sanitation and hygiene promoters at payam and boma level.

Working with and through sector structures: A Water policy and related strategies are underway and government structures are being established to implement these with implications for the way in which NGOs and donors operate in the sector.

⇒ Working actively with government structures at all levels should be a priority for all donors and NGOs in terms of

- Decisions on locations & types of technology;
- Supporting capacity of (local) government staff including considering them as local partners as suggested above;
- Providing information (logs etc) and sharing good practices, e.g. training manuals for further harmonisation of approaches; and
- Following government guidelines (i.e. under MDTF).

Operation and Maintenance: Field work has shown that rural user committees are able to organise themselves for repairs of hand pumps, particularly if there are no alternatives, government support structures are strong and training is done well. For semi-urban water distribution systems, current levels of training and management models are not sufficient.

⇒ WRAPP could encourage a transition to a private management model for SWDS or leave management in public hands. In any case, WRAPP should develop models that allow for salaried staff, foster training on financial management and provide other organisational development to the operator.

⇒ WRAPP should collaborate on developing sustainable O&M approaches with government and document lessons for other sector stakeholders.

The lack of spare parts and tools is probably the most important challenge for the sector. Without addressing this problem, investments in water supply schemes remain largely futile. Developing a sustainable supply chain for repairing rural water supply schemes is therefore an urgent priority for all sector stakeholders.

⇒ WRAPP, in collaboration with the relevant sector working group, should pilot models for spare part supply chains e.g. through local drillers or other existing structures.

Sanitation and hygiene promotion: Sanitation and hygiene have been neglected at the detriment of providing hardware water supply services in Southern Sudan. The alarmingly high incidence of under-five diarrhoea of over 40% as well as repeated outbreaks of cholera in some urban settings highlight the need for action.

⇒ WRAPP's approach to sanitation and hygiene needs to be consolidated. The programme needs to develop an approach that focuses on behaviour change at HH level making use of the latest concepts available in the sector, which will need longer term engagement by local partners.

Reducing Conflict

Focusing water interventions on conflict reduction is very relevant in the context of Southern Sudan. Hafirs have a strong potential to reduce conflict but are difficult to implement and manage. The actual contribution to conflict reduction of the first hafir implemented in Yuai still needs to be supported with evidence.

⇒ WRAPP should increase its ex-ante analysis of conflict drivers and the potential contribution of hafirs to a reduction of wider conflicts. Hafir construction should be complemented with other peace-related activities such as disarmament, facilitation of negotiations for grazing space which offer opportunities to increase integration within PACT.

"Do no harm" is an often neglected yet important aspect of conflict mitigation and highly relevant for WRAPP interventions in water supply and water resources management.

⇒ WRAPP should add "do no harm" analyses to the ex-ante project assessments mitigate conflicts such as communities developing grievances because of dry boreholes or hafirs becoming part of conflicts (cattle raiding) rather than contributing to its reduction. Such and analysis could, for example, lead to better ways of integrating WRAPP into community peace building activities.

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Annex 1 Specific objectives of the evaluation

The specific objectives of the evaluation were to:

1) Assess the **appropriateness** of the WRAPP approach (conceptual) in terms of

- Providing access to water, and increasing awareness about basic sanitation and hygiene
- Promoting community-owned and managed WASH services
- Working through CBOs / SMARTs to train SWMCs
- Reducing conflict and promoting stability and peace

2) Assess the **effectiveness and impact** of the WRAPP approach (delivery) regarding

- Providing access to water, and increasing awareness about basic sanitation and hygiene
- Using partners to transfer skills to SWMCs
- Reducing conflict and promotion of stability and peace
- Promoting livelihood improvements (in Equatoria)
- Being gender and environmentally sensitive

3) Assess the **sustainability** of the WRAPP approach in terms of

- Capacity of SWMCs to manage water supplies
- Capacity of local authorities and states to support SWMCs effectively
- Quality of technical works
- Reliable supply of spare parts

4) Formulate key **lessons learned** and **strategic recommendations** for replicability and scaling-up based on

- Strengths and weaknesses
- Constraints found
- Thereby distinguishing between internal (to the WRAPP programme) and external (sector-wide) lessons and recommendations

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Deng Alok	care taker, William Deng Nhial BH, Tonj
Deng Chan	care taker, River Side BH, Tonj
Elia Reec	team leader, SMART team, INCODE
Elisabeth Adut Wuoling	business woman, Mapel town
Frances Mading	private operator, SWDS, Rumbek
James Woul	pump mechanic supervisor, Tonj South
Jeremel Monydith	Deputy Ex Dir, Tonj South (including Tonj Town)
Kamis Chol	committee member, Rumbek SWDS
Madelena Nirao	business woman, Mapel town
Makur Atel	public health officer, Rumbek Central
Malao Dut	Sub-chief Abiriu town, Cueibet county
Malek Akech	private operator, SWDS, Rumbek
Matuch Majak	Chairman, William Deng Nhial BH, Tonj
Monika Achol Genj	member, William Deng Nhial BH, Tonj
Monika Ayen	local resident, former latrine cleaner Rumbek
Paul Majok	O&M, Rumbek SWDS
Reyai Rejap	hygiene promoter, Rumbek SWDS
Rosa Enjandeng	treasurer, module B bh, Tonj
Solomon Anyah Garang	Executive Director, Rumbek Central
Valentino Macher Afer	Mayor, Tonj Town
Zacharias Maniel	local resident, latrine user, Rumbek

Jonglei

Dak Rik	Vice Chairman, Goak Goak bh, Motot payam, Wuror County
Gaduech Dik	Chairman, SWMC, Thoa Diok bh, Pieri payam
Gar Bol Git	Chairman, SWMC, Pulchol bh, Pulchol Payam, Wuror
Gat Luck Redh	Commissioner, Wuror County
James Gin	member, SWMC, Tangnyang bh, Karam Payam, Wuror
James Top Dhuor	former team leader, UNWWA
Jiol Chol	community elder, Tangnyang bh, Karam Payam, Wuror
John Gatwik	chairman, SWMC, Tangnyang bh, Karam Payam, Wuror
John Jurkuch	water coordinator, PARAD
Lual Rel	Chairman, SWMC, Juet bh, Wuror payam
Martha Mabiel	member, SWMC, Goak Goak bh, Motot payam, Wuror
Mary Nyayang Chol	treasurer, SWMC, Tangnyang bh, Karam Payam, Wuror
Peter Lam	SMART team member, former NCDS and CCRI
Stephen Duk	Chairman, SWMC, Payai bh, Payai payam
Stephen Maluit	office manager, Wuror County
Stephen Red	Chairman, SWMC, Motot bh, Motot payam, Wuror County
Thomas Lual Pust	Acting Executive Director, Wuror County
Tutyan Kong Mayona	former SMART team leader, SWIDAP

Annex 3 RWSS visited

	Location	Type of scheme	Year constructed	CBO responsible	Quality of works	Management capacity	Comments
Equatoria	Kapoeta N, Loriwo	BH	2007	KDI	Platform narrow, shallow, drainage short	Poor (no fencing, quality of water considered bad)	Salty water, sealed after visit
	Kapoeta N, Natarangat	BH	2007	KDI	Platform narrow, shallow, drainage short	Poor, (standing water, unable to deal with conflict)	Committee complains that people come at night to play with bh
	Kapoeta E, Narus, Nacenekunyuk	BH	2007	TDA	Ok but 20m from latrine hole	Poor (no fencing, solid waste, dirt lying around)	
	Kapeota E, Narus, new market	BH	2007	TDA	Ok	Committee not yet trained	
	Kapoeta E, Narus, Bapeng	BH	2007	TDA	Dry (possibly wrong pump installed as yields no water)	Committee not yet trained	It was contested whether this bh is supported by PACT
Lake & Bahr el Ghazal	Tonj S, Tonj town, river side	BH	2006 (?)	INKODE	Ok	Good (properly fenced, clean, repaired in past, caretaker around)	
	Tonj S, Tonj town, William Deng Nhial	BH	2005/6	INKODE	Platform low, foundation same level as floor, drainage short and low	Ok (monthly contributions, complete rehabilitation of bh recently)	Quality of works not from original driller; some grievances against committee as method of monthly collection not transparent
	Tonj S, Tonj town, module b	BH	?	INKODE	Ok	Ok (repaired several times, evidence of managing conflicts with cattle owners)	Case of management being good despite of lack of formal training
	Tonj S, Tonj town, Wundhiod	BH	2007	INKODE	Ok	Poor (no fencing, drainage channel has cracks because livestock eroded soil around water point, committee does not meet)	
	Cueibet, Abiriu, Ruontwic	BH	2005	AGON	Ok but leakage inside pump, nut missing	Point looks abandoned	According to local pump mechanic, village has moved four miles further down due to shifting

							cultivation.
	Cueibet, Abiriu, Machar Murial	Rehab	2005	AGON	Platform shallow	Poor (sanitary condition appalling, unwillingness to make contributions)	Case of donor-dependency in an area where many different organisations have provided water points over the last years
Jonglei	Duk, Ageer, Patuenoi Dit	BH	Feb 2007	?	Drainage short	Ok-poor (no fencing, previous repairs, spare parts now gone, no idea where to get new ones)	Community got orientation but no training of committee, spare parts are a challenge
	Wuror, Wuror, Juet	BH	2005	NCDS	Platform walls narrow, not levelled, drainage short and broken in places		Currently broken down
	Wuror, Payai, Payai	BH	2006	NCDS	Little cement used, otherwise ok	Very good (strong fence, clean, contributions clear, bh repaired several times)	Is the community of the county councillor, spare parts are a challenge
	Wuror, Pieri, Thoa Diok	BH	2006	NCDS	Ok	Good (committee active, just assembling contributions and re-building fence)	Community was chased away last year and is now returning
	Wuror, Motot, Goak Goak	BH	2006	NCDS	Platform low, little cement used,	Good (repaired six times, well fenced)	Spare parts are key problem and overcrowding
	Wuror, Motot, Motot	BH	2006	NCDS	drainage not descending	Good (police man takes care as there was lots of fighting, well fenced, repaired several times	Spare parts and overcrowding are most immediate problems
	Wuror, Pulchol, Pulchol	BH	2006	NCDS	Ok, but drainage could be better levelled	Good (regular contributions, previous repairs, well fenced)	Overcrowding is main problem, got training and spare parts last year from different NGO which was very beneficial