



FORCIER CONSULTING

Water Access Assessment

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List of Acronyms

EU	European Union
FGD	Focus Group Discussion
KII	Key Informant Interview
NBeG	Northern Bahr el Ghazal
NGO	Non-Governmental Organization

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1. Background on the Sudan/South Sudan Border

In 2011 South Sudan became the world's newest country when it gained independence from Sudan following a referendum, six years after the signing of a Comprehensive Peace Agreement that ended Africa's longest-running civil war.¹ A framework for development of the border region and resolution of many unresolved border issues was agreed as part of the Cooperation Agreement between Sudan and South made in September 2012. Progress on implementation of the Cooperation Agreement is being made slowly. The two countries are currently unable to resolve their differences over demarcation of their common border. Internal violent conflict is taking place in the border region: in South Kordofan and Blue Nile States, as well as the Darfur region, north of the border; and in Upper Nile and Unity States south of the border. Also, the Abyei Area located on the border between the two countries remains a contested area, and "a referendum for the residents to decide whether to join south or north has been delayed over voter eligibility."²

2. Background on Water Access in South Sudan

Water access in South Sudan varies heavily throughout the year, with availability being severely limited in the dry season between June and October.³ The White Nile runs through the country, providing reliable water supply to the population settled in proximity to its banks, however the rest of the population faces severe challenges in terms of water access.⁴ Surveys have shown that more than 30 percent of the population of South Sudan does not have access to clean water, and "around 38% of the population has to walk for more than 30 minutes one way to collect drinking water".⁵

3. Background on Project

Concordis International is in the process of implementing the *South Sudan Community/Cooperation Agreement Conflict Prevention & Peacebuilding project 2014 – 2015*, for which they have received funding from the European Union (EU).

The objective of this project is:

- (i) To support the implementation of the South Sudan/Sudan Border Agreement and the Agreement on Trade in a way that takes account of the needs/wishes of local cross-border populations;
- (ii) To strengthen internal relationships among South Sudanese border communities, including with their respective nomadic pastoralist communities;

¹ "South Sudan profile – Overview", BBC News, last updated 20 May 2015, accessed 29 June 2015, <http://www.bbc.com/news/world-africa-14069082>

² "South Sudan profile – Overview", BBC News, last updated 20 May 2015, accessed 29 June 2015, <http://www.bbc.com/news/world-africa-14069082>.

³ Implementation of integrated, coherent and coordinated support to South Sudan by the United Nations system", United Nations Economic and Social Council (18 September 2014), accessed 24 June 2015, http://www.un.org/en/ecosoc/docs/adv2014/south_sudan_ecosoc_report.pdf.

⁴ "South Sudan profile – Overview", BBC News, last updated 20 May 2015, accessed 5 July 2015, <http://www.bbc.com/news/world-africa-14069082>.

⁵ "Water, sanitation, hygiene – Issue", UNICEF – South Sudan, accessed 5 July 2015, <http://www.unicef.org/southsudan/wes.html>; "South Sudan Overview", The World Bank – South Sudan, accessed 5 July 2015, <http://www.worldbank.org/en/country/southsudan/overview>.

(iii) And to build relationships between border communities, governments of adjacent border states and the authorities of Sudan and South Sudan with regards to the management of cross-border relations.”⁶

4. Aim of Assessment

This Water Access Assessment has undertaken a thorough evaluation of water points along the Sudan-South Sudan border in the South Sudanese States of Northern Bahr el Ghazal, Unity and Upper Nile, and the conflicts and tensions surrounding them. Water points along the north-south border have “significantly increased inter-communal conflicts between the border communities”, and identifying the key underlying causes of this conflict is the first step in finding a solution and enabling communities to coexist peacefully in their interactions at water points.⁷

The report evaluates the following indicators:

- Identification of current water points along the common border of Sudan and South Sudan in the above-mentioned three states of South Sudan;
- Frequency of tension and conflict over water points;
- Availability/usage of water points by local communities and nomadic pastoralists;
- Prevalence of demand for more water points in the border areas, and their preferred location;
- Migration patterns and their local impacts;
- Roads and infrastructure for movement of goods and people.⁸

5. Methodology

This report is exclusively based on qualitative research, using three methods of data collection: desk review, key informant interviews (KIIs) and focus group discussions (FGDs). Details of each of these research methods are given below. The sites for KII and FGD data gathering were pre-selected by Concordis International, whilst Forcier Consulting researchers identified interview subjects based on their roles in the respective local communities.

Desk review

A detailed desk review of background documents and relevant publications was conducted for this report, including but not limited to Concordis Terms of Reference for Market Research; Forcier Consulting Proposal to Concordis on Water Research and Market Assessment; Contract between Forcier Consulting and Concordis on implementing Water Research and Market Assessment in three states in South Sudan; Concordis *Crossing the Line* report; and Concordis *More Than a Line* report.

KIIs

Key informant interviews were conducted with relevant stakeholders and other informed persons. These covered community members from both settled and migrant communities in Aweil East and Aweil North Counties in Northern Bahr el Ghazal State (NBeG); Renk County in Upper Nile State; and Pariang County in Unity State. 12 KIIs were conducted in each state by the following allocation, in order to maximize comparability across states:

- 3 KIIs with community leaders (pastoralist and host)
- 3 KIIs with local government officials

⁶ Term of Reference (ToR) for undertaking Water Research in Northern Barh El Ghazal, Unity, and Upper Nile States, p. 1.

⁷ Term of Reference (ToR) for undertaking Water Research in Northern Barh El Ghazal, Unity, and Upper Nile States, p.2.

⁸ Inception Report – Concordis Water Research Survey and Market Assessment, Forcier Consulting.

- 3 KIIs with traders
- 3 KIIs with community-based organizations

FGDs

Focus group discussions were conducted with relevant stakeholders and other informed persons. These covered community members from both settled and migrant communities in Aweil East and Aweil North Counties in Northern Bahr el Ghazal State (NBeG); Renk County in Upper Nile State; and Pariang County in Unity State. 12 FGDs were conducted in each state by the following allocation, in order to maximize comparability across states:

- 2 FGDs with consumers
- 2 FGDs with vendors
- 2 FGDs with wholesalers
- 2 FGDs with nomadic pastoralists

6. Limitations

The target communities for this research face considerable challenges, as highlighted in this report, and consist of a vulnerable and disadvantaged population. As such, the responses given by KII and FGD interview subjects may be influenced by an aspiration on behalf of the respondent to attract aid and benefits for their community.

There were a number of issues affecting the data collection process:

Armed conflict in Melut County Upper Nile State affected data collection in neighboring Renk County. Security personnel invariably escorted the Forcier Consulting field researchers in the area, and their presence at KII and FGD interviews affected the willingness of respondents to give detailed answers. This was especially true for questions related to the security situation at water points.⁹ Individuals may have been worried about potential retribution for answers that security personnel were not happy with, or that might be shared outside of the interview space.

Additionally, local chiefs and other community members in Upper Nile initially resisted the presence of the Forcier Consulting field researchers, stating that a number of non-governmental organisations (NGOs) had previously conducted assessments in the area that never resulted in the implementation of any projects. Through negotiations the field researchers were able to complete the full quota of data gathering, though the unfavorable attitude of local community leaders and members may have negatively influenced the responses given by KII and FGD interview subjects.

Finally, in Northern Bahr el Ghazal, the road to Majok Yin-Thiu was rendered inaccessible due to flooding – interviews were therefore conducted with Majok Yin-Thiu community members who were residing in the towns of Warawar and Wanyjok at the time of data collection.

⁹ Concordis Market Assessment and Water Research, Fieldwork Report for Upper Nile State (08.06.15).

7. Main Findings

7.1 Water availability, access and demand

7.1.1 Identification of current water points along the common border of Sudan and South Sudan

Water sources in Northern Bahr el Ghazal, Unity and Upper Nile States of South Sudan consist of boreholes, wells, pools and ponds, dams, toches and rivers.¹⁰ Most smaller water points are located closer to local communities, within 15 to 45 minutes walk, whilst dams and rivers can be many hours or even days of walking from villages. The distance from communities to their nearest source of drinking water is given in table 1 below, segregated by boma.

TABLE 1: DISTANCE TO CLOSEST SOURCE OF DRINKING WATER, BY BOMA¹¹

State	County	Payam	Boma	Closest source of drinking water
<i>NBeG</i>	<i>Awiel East</i>	<i>Majok Yin-Thiu</i>	<i>Wanyjok</i>	1-2 hours on foot from main settled community, but 20-30 minutes from nomadic pastoralist base.
<i>NBeG</i>	<i>Awiel East</i>	<i>Majok Yin-Thiu</i>	<i>Warawar</i>	Minor water point 10-15 minutes, close to main road. Main water source 1-2 hours away on foot.
<i>NBeG</i>	<i>Awiel North</i>	<i>Malual North</i>	<i>Gok Machar</i>	Most communities are 15-30 minutes from water sources in the bush and by the main road, though some as far as 2-3 hours away.
<i>Unity</i>	<i>Parieng</i>	<i>Biuu</i>	<i>Ble</i>	3 kilometres from the town, near the main road.
<i>Unity</i>	<i>Parieng</i>	<i>Jamjang</i>	<i>Mankour</i>	Settled communities: 2-4 hours walk from main water source, some shallow wells are some 30-60 minutes walking. Pastoralist communities are located a full day's travel from drinking water sources.
<i>Unity</i>	<i>Parieng</i>	<i>Nyiel</i>	<i>Akorweng</i>	There is a borehole in the town; otherwise the nearest source is 1-2 hours away in the bush.
<i>Unity</i>	<i>Parieng</i>	<i>Nyiel</i>	<i>Aliiny</i>	Water sources are close by, in the town and by the road.
<i>Upper Nile</i>	<i>Renk</i>	<i>Shimodi</i>	<i>Malakia</i>	There are wells 45 minutes walk from town; pools and ponds are scattered along the road and in the bush.
<i>Upper Nile</i>	<i>Renk</i>	<i>Renk</i>	<i>Renk</i>	Water sources are close to town, but about one hour walk from the villages.
<i>Upper Nile</i>	<i>Renk</i>	<i>Renk</i>	<i>Wun-nyok</i>	There are wells 30 minutes walk away (in Shimodi town), and scattered pools and ponds.

¹⁰ FGDs and KIIs with relevant stakeholders and informed persons between 19 and 28 May 2015. A toch is a swampy area by a river, often used for cattle grazing.

¹¹ FGDs and KIIs with relevant stakeholders and informed persons between 19 and 28 May 2015.

The man-made water sources in communities require continual maintenance; lack of maintenance has resulted in the malfunction of many local water points across communities in all three target states.¹² This is particularly the case for Upper Nile, where “the boreholes in Shimodi need maintenance because all of them are broken”.¹³

The maintenance required at water points includes:

- Weekly cleaning of wells and boreholes to avoid blockage¹⁴
- Seasonal re-digging of shallow wells¹⁵
- Disinfection of water tanks¹⁶
- Service of generators used to pump water from wells¹⁷
- Regular removal of mud from shallow wells¹⁸



Picture 1: Three broken boreholes in Roshuk, Upper Nile State

¹² KII with local official in Northern Bahr el Ghazal on 22 May 2015; KII with host community leader in Upper Nile on 27 May 2015; KII with local official in Upper Nile on 21 May 2015; KII with local official in Upper Nile on 27 May 2015; KII with nomadic community leader in Upper Nile on 23 May 2015; KII with host community leader in Northern Bahr el Ghazal on 26 May 2015.

¹³ FGD with nomadic community members in Upper Nile on 19 May 2015.

¹⁴ KII with nomadic community leader in Northern Bahr el Ghazal on 25 May 2015; KII with host community leader in Northern Bahr el Ghazal on 25 May 2015; FGD with nomadic pastoralists in Northern Bahr el Ghazal on 22 May 2015; KII with nomadic community leader in Unity on 25 May 2015.

¹⁵ KII with host community leader in Unity on 21 May 2015.

¹⁶ KII with local official in Unity on 19 May 2015(b); KII with local official in Unity on 19 May 2015(a).

¹⁷ KII with host community leader in Upper Nile on 27 May 2015; KII with nomadic community leader in Upper Nile on 22 May 2015; FGD with host community members in Upper Nile on 22 May 2015.

¹⁸ FGD with host community members in Unity on 22 May 2015.

Out of these, weekly cleaning of wells and boreholes is the highest priority amongst community members, particularly in Northern Bahr el Ghazal.¹⁹ In addition to regular maintenance, many water points would benefit from the following measures:

- Fencing of boreholes²⁰
- Deepening of village wells using machinery²¹
- Barbed-wire fencing around pools and ponds used for drinking water for humans to prevent livestock from consuming water from the same source²²

Standardization and mechanical deepening of village wells is particularly desired in Upper Nile, with the preferred depth of wells extended to between 30 and 50 meters.²³ This would greatly benefit communities by allowing existing wells to produce more water and for a longer period of time without drying out.

Each of the measures listed would ensure a safer access to water, both in terms of increased water supply and keeping water sources clean and uncontaminated.

7.1.2 Availability/usage of water points by local communities and nomadic pastoralists

Water availability

The majority of inhabitants in the border regions of Northern Bahr el Ghazal, Unity and Upper Nile practice farming and keep livestock as their main sources of income, and use water primarily for drinking, cooking, washing and watering livestock.²⁴ Rivers in particular are key water access points; the White Nile serves as the main water source for all communities surrounding it.²⁵ Communities in proximity to the river take their livestock there for watering year-round, whilst those further away will travel to the river with their herds during the dry season – in the wet season livestock can drink water from local wells, pools and ponds.²⁶ Those with smaller herds will sometimes use local water sources also in the dry season.²⁷ Cultivation takes place along the banks of the river, but otherwise only in the wet season using rainwater, though smaller vegetable gardens can be kept during the dry season using small amounts of water from local water sources.²⁸

¹⁹ KII with nomadic community leader in Northern Bahr el Ghazal on 25 May 2015; KII with host community leader in Northern Bahr el Ghazal on 25 May 2015; FGD with nomadic pastoralists in Northern Bahr el Ghazal on 22 May 2015; KII with nomadic community leader in Unity on 25 May 2015; FGD with nomadic pastoralists in Northern Bahr el Ghazal on 22 May 2015; FGD with nomadic pastoralists in Northern Bahr el Ghazal on 28 May 2015; FGD with host community members in Northern Bahr el Ghazal on 21 May 2015.

²⁰ KII with host community leader in Unity on 19 May 2015.

²¹ FGD with host community members in Northern Bahr el Ghazal on 21 May 2015; FGD with host community members in Upper Nile on 20 May 2015(a); FGD with host community members in Upper Nile on 22 May 2015; FGD with nomadic community members in Upper Nile on 23 May 2015; FGD with host community members in Upper Nile on 20 May 2015(b).

²² FGD with host community members in Upper Nile on 20 May 2015(a); FGD with host community members in Unity on 22 May 2015; FGD with nomadic pastoralists in Unity on 28 May 2015(a); FGD with host community members in Upper Nile on 20 May 2015(b).

²³ FGD with host community members in Upper Nile on 20 May 2015(b); FGD with host community members in Upper Nile on 20 May 2015(a); KII with local official in Upper Nile on 21 May 2015.

²⁴ FGDs and KIIs with relevant stakeholders and informed persons between 19 and 28 May 2015.

²⁵ FGD with nomadic community members in Upper Nile on 19 May 2015; FGD with nomadic community members in Upper Nile on 23 May 2015; KII with nomadic community leader in Upper Nile on 23 May 2015.

²⁶ FGDs and KIIs with relevant stakeholders and informed persons between 19 and 28 May 2015.

²⁷ KII with local official in Upper Nile on 27 May 2015.; KII with nomadic community leader in Unity on 25 May 2015.

²⁸ KII with host community leader in Northern Bahr el Ghazal on 26 May 2015; FGD with host community members in Upper Nile on 22 May 2015; FGDs and KIIs with relevant stakeholders and informed persons between 19 and 28 May 2015.

In general, pools and ponds are dug by hand during the rainy season to collect rainwater, whilst in the dry season people rely on wells and boreholes.²⁹ In the dry season some members of rural communities with inadequate water access migrate to nearby towns in search of water and food.³⁰ In Shimodi in Renk county of Upper Nile, each family creates their own water source – families dig three wells of approximately 10-15 metres, which last for about one year before they dry up.³¹ These wells produce about one barrel of water per day.³² Meanwhile, in Mankour boma in Unity State, nomadic community members residing there during the dry season dig wells in the area of Baam to access drinking water.³³

In Northern Bahr el Ghazal, 55.5 percent of respondents report having inadequate access to drinking water, with the remaining 44.5 percent of interviewees living in Gok Machar boma, in proximity to the river.³⁴ In Upper Nile State “people within Renk town have adequate water for drinking”, thanks to a pipe system that supplies water to taps in the community.³⁵ The remaining 85 percent of respondents in Upper Nile, however, say their access to drinking water is insufficient, largely due to boreholes and wells in local areas being broken.³⁶ Meanwhile all respondents from Unity State report inadequate access to drinking water, and in the entire county of Parieng there are only 84 hand pumps available to a population of 82,443.³⁷

The issue of water availability has been a problem for generations in both Unity and Upper Nile States, though it is getting increasingly worse due to poor maintenance—some wells are clogged with soil and dirt, while there are many broken boreholes across communities.³⁸ In Northern Bahr el Ghazal, however, poor water availability is considered a new problem. It is commonly related to the population increase caused by returnees to the area from abroad as well as the influx of nomadic pastoralists who bring large herds of livestock.³⁹ The issue is particularly pressing in the communities of Majok Yin-Thiu, Makuel, Jaach, Kiiradam and Warawar.⁴⁰

Water access

The vast majority of communities in the border counties of Northern Bahr el Ghazal, Unity and Upper Nile have rules governing the access to local water points. These rules include:

- Not washing oneself in water points used for drinking water⁴¹

²⁹ FGD with host community members in Upper Nile on 22 May 2015; FGD with nomadic community members in Upper Nile on 19 May 2015; FGD with nomadic community members in Upper Nile on 23 May 2015; KII with host community leader in Unity on 19 May 2015.

³⁰ FGD with host community members in Upper Nile on 22 May 2015.

³¹ KII with host community leader in Upper Nile on 27 May 2015; KII with local official in Upper Nile on 27 May 2015; KII with nomadic community leader in Upper Nile on 22 May 2015; KII with nomadic community leader in Upper Nile on 23 May 2015.

³² KII with nomadic community leader in Unity on 23 May 2015; FGD with nomadic community members in Upper Nile on 19 May 2015.

³³ KII with nomadic community leader in Unity on 23 May 2015.

³⁴ KIIs and FGDs with relevant stakeholders and informed persons in Northern Bahr el Ghazal State between 21 and 28 May 2015.

³⁵ KII with nomadic community leader in Upper Nile on 23 May 2015; KII with local official in Upper Nile on 26 May 2015.

³⁶ KII with local official in Upper Nile on 21 May 2015; KIIs and FGDs with relevant stakeholders and informed persons in Upper Nile State between 19 and 27 May 2015.

³⁷ KII with host community leader in Unity on 21 May 2015; KIIs and FGDs with relevant stakeholders and informed persons in Unity State between 19 and 28 May 2015.

³⁸ KIIs and FGDs with relevant stakeholders and informed persons in Unity State between 19 and 28 May 2015; KIIs and FGDs with relevant stakeholders and informed persons in Upper Nile State between 19 and 27 May 2015.

³⁹ KIIs and FGDs with relevant stakeholders and informed persons in Northern Bahr el Ghazal State between 21 and 28 May 2015.

⁴⁰ KII with nomadic community member in Northern Bahr el Ghazal on 21 May 2015; KII with host community member in Northern Bahr el Ghazal on 25 May 2015.

⁴¹ KII with host community leader in Unity on 19 May 2015; KII with host community leader in Northern Bahr el Ghazal on 25 May 2015; KII with host community member in Northern Bahr el Ghazal on 25 May 2015; KII with local official in Unity

- Not to wash clothes by water points used for drinking water⁴²
- Not to throw dirty objects in the well⁴³
- Not to allow cattle to drink from human drinking sources⁴⁴

Additionally, water access in Upper Nile depends on the following requirements:

- Communities are responsible for digging their own wells (so rules only applicable to pools and ponds)⁴⁵
- During the dry season only sheep and goats may be given water from wells; cattle must be taken to the riverside⁴⁶
- Large herds of livestock must be taken to the river for watering⁴⁷

Chiefs, community elders and/or local leaders normally create these rules.⁴⁸ They are not flexible, and apply equally to everyone in the communities, both settled and pastoral.⁴⁹ First-time rule violators sometimes get away with a warning, though the standard punishment across all states is a fine.⁵⁰ In extreme cases of destruction of water points (e.g. by letting livestock deplete or contaminate drinking water sources) perpetrators may be arrested.⁵¹

Visitors from outside the local communities are always allowed access to the water sources, “because water is for necessity for everyone on this earth and you can’t refuse to give water to your fellow human being to drink.”⁵² As stated by one community leader in northern Bahr el Ghazal: “We don’t discriminate people who is in need of water, this can encourage peace and peaceful coexistent among us.”⁵³

When there is an insufficient amount of water available in the community, pastoralists and settled community members with large herds will migrate to the river, whilst other inhabitants will seek out

on 19 May 2015(b); KII with nomadic community leader in Northern Bahr el Ghazal on 21 May 2015; KII with nomadic community leader in Northern Bahr el Ghazal on 25 May 2015; KII with host community member in Northern Bahr el Ghazal on 20 May 2015; KII with host community leader in Northern Bahr el Ghazal on 26 May 2015; FGD with host community members in Northern Bahr el Ghazal on 28 May 2015; FGD with host community members in Unity on 22 May 2015; FGD with nomadic community members in Upper Nile on 23 May 2015; FGD with nomadic pastoralists in Northern Bahr el Ghazal on 28 May 2015; FGD with host community members in Northern Bahr el Ghazal on 21 May 2015.

⁴² KII with local official in Northern Bahr el Ghazal on 22 May 2015; KII with host community leader in Northern Bahr el Ghazal on 25 May 2015; KII with host community member in Northern Bahr el Ghazal on 25 May 2015; KII with nomadic community leader in Northern Bahr el Ghazal on 25 May 2015; KII with host community leader in Northern Bahr el Ghazal on 26 May 2015; FGD with host community members in Northern Bahr el Ghazal on 28 May 2015.

⁴³ KII with nomadic community leader in Northern Bahr el Ghazal on 25 May 2015; KII with host community member in Northern Bahr el Ghazal on 25 May 2015.

⁴⁴ FGD with nomadic pastoralists in Northern Bahr el Ghazal on 22 May 2015; FGD with host community members in Northern Bahr el Ghazal on 28 May 2015.

⁴⁵ KII with host community leader in Upper Nile on 27 May 2015; KII with local official in Upper Nile on 27 May 2015; FGD with host community members in Upper Nile on 20 May 2015(a); FGD with nomadic community members in Upper Nile on 23 May 2015; FGD with host community members in Upper Nile on 20 May 2015(b).

⁴⁶ FGD with host community members in Upper Nile on 22 May 2015.

⁴⁷ KII with host community leader in Upper Nile on 27 May 2015; KII with local official in Upper Nile on 21 May 2015; KII with local official in Upper Nile on 27 May 2015; KII with nomadic community leader in Upper Nile on 22 May 2015; KII with nomadic community leader in Upper Nile on 23 May 2015; FGD with nomadic community members in Upper Nile on 19 May 2015; FGD with nomadic community members in Upper Nile on 23 May 2015.

⁴⁸ FGDs and KIIs with relevant stakeholders and informed persons between 19 and 28 May 2015.

⁴⁹ FGDs and KIIs with relevant stakeholders and informed persons between 19 and 28 May 2015..

⁵⁰ FGDs and KIIs with relevant stakeholders and informed persons between 19 and 28 May 2015. Fines can be in kind or in the form of money.

⁵¹ KII with nomadic community leader in Unity on 25 May 2015.

⁵² KII with local official in Northern Bahr el Ghazal on 22 May 2015; FGDs and KIIs with relevant stakeholders and informed persons between 19 and 28 May 2015.

⁵³ KII with host community leader in Northern Bahr el Ghazal on 26 May 2015.

the nearest town with decent water access.⁵⁴ Some communities also dig extra wells, and in Upper Nile water is transported from Renk town in tanks using horses and donkeys.⁵⁵



Picture 2: Shallow well used for drinking water in Jamjang, Unity State

7.1.3 Prevalence of demand for more water points in the border areas, and their preferred location

Every community surveyed in this assessment reported a need for additional boreholes to be created in their local communities.⁵⁶ In Northern Bahr el Ghazal, the population believed potential new boreholes should be installed in the highland areas, market centres, schools, healthcare facilities and the boma centres and the payam headquarters.⁵⁷ In Unity State boreholes are needed across all nine payams of Parieng County, with Crundi (Baam) in Mankour boma specifically cited as being in need of additional water sources.⁵⁸ As for Upper Nile, there is a particular need for new boreholes in Shimodi town centre, though they are also needed in the rural areas of Gozrom, Gosfomi, Warbala, Tebelia, Kulang, Jerbelat, Duk Duk, Renk and Shimodi “because these areas doesn't have proper water-points.”⁵⁹ There are also a number of communities in Upper Nile located in proximity to broken

⁵⁴ FGDs and KIIs with relevant stakeholders and informed persons between 19 and 28 May 2015.

⁵⁵ KII with local official in Northern Bahr el Ghazal on 22 May 2015; KII with host community leader in Northern Bahr el Ghazal on 25 May 2015; KII with local official in Unity on 19 May 2015(b), KII with nomadic community leader in Upper Nile on 23 May 2015; KII with nomadic community leader in Upper Nile on 22 May 2015; FGD with nomadic community members in Upper Nile on 19 May 2015; FGD with nomadic community members in Upper Nile on 23 May 2015.

⁵⁶ FGDs and KIIs with relevant stakeholders and informed persons between 19 and 28 May 2015.

⁵⁷ KIIs and FGDs with relevant stakeholders and informed persons in Northern Bahr el Ghazal State between 21 and 28 May 2015.

⁵⁸ KIIs and FGDs with relevant stakeholders and informed persons in Unity State between 19 and 28 May 2015.

⁵⁹ KII with local official in Upper Nile on 21 May 2015; KIIs and FGDs with relevant stakeholders and informed persons in Upper Nile State between 19 and 27 May 2015.

boreholes, and which would benefit greatly from their repair; these include communities in the bomas of Malakia and Wun-nyok in Renk County.⁶⁰

Community members in Northern Bahr el Ghazal, Unity and Upper Nile States associate a number of benefits with the creation of additional water sources in their respective areas, as listed in Table 2 below:

TABLE 2: BENEFITS ASSOCIATED WITH THE CREATION OF NEW WATER SOURCES, PER STATE

Northern Bahr el Ghazal ⁶¹	Unity ⁶²	Upper Nile ⁶³
<ul style="list-style-type: none"> • Sufficient water for cultivation will increase food supply • Migration in search of water will reduce • Disputes and conflict at and surrounding water points will reduce • With access to healthy pastures, cows, sheep and goats will produce more milk 	<ul style="list-style-type: none"> • Reduced congestion at water points • Illness amongst humans and animals from drinking contaminated water will reduce • Reduced distance to water point • Reduced conflict surrounding water access • There will be sufficient water for livestock • Improved hygiene • Will allow for cultivation in the dry season 	<ul style="list-style-type: none"> • Access to adequate water for drinking, cooking and livestock • Access to clean water, reducing infection and illness in humans and animals • Reduced rural to urban migration in search of water • Reduction of disputes and conflict over water sources • Increased agricultural productivity • Increased production of milk from livestock

Creation of additional and safe water sources is particularly pressing in Unity State – not only do all respondents from Unity report having inadequate access to water, but many existing water sources there are contaminated by oil during the rainy season.⁶⁴ Recent results from a six-year study show that “there is a direct link between the oil exploration and production in the northern part of Unity State and the contamination of drinking water in this area”, something which remains a problem currently affecting 180,000 residents in Unity.⁶⁵ The groundwater surrounding the oil fields, in particular the Thar Jath field, has been found to contain dangerously high levels of salt and heavy metals as a direct result of petroleum exploration.⁶⁶

⁶⁰ FGD with host community members in Upper Nile on 22 May 2015; FGD with host community members in Upper Nile on 20 May 2015(b); KII with local official in Upper Nile on 27 May 2015.

⁶¹ KIIs and FGDs with relevant stakeholders and informed persons in Northern Bahr el Ghazal State between 21 and 28 May 2015.

⁶² KIIs and FGDs with relevant stakeholders and informed persons in Unity State between 19 and 28 May 2015.

⁶³ KIIs and FGDs with relevant stakeholders and informed persons in Upper Nile State between 19 and 27 May 2015.

⁶⁴ KII with host community leader in Unity on 19 May 2015.

⁶⁵ Oil pollution: 180,000 people face health risks in Unity, Eye Radio (26 February 2015), accessed 13 July 2015, <http://eyeradio.org/oil-production-contaminates-drinking-water-unity/>; Effect of oil exploration and production on the salinity of a marginally permeable aquifer system in the Thar Jath-, Mala- and Unity Oilfields, Southern Sudan, Rueskamp, Ariki, Stieglitz and Treskatis (2014), accessed 13 July 2015, [http://www.hoffnungszeichen.de/fileadmin/redaktion/SoH_Africa/ZGPI_2014 - Effect of oil exploration and production in South Sudan - Rueskamp Ariki Stieglitz Treskatis.pdf](http://www.hoffnungszeichen.de/fileadmin/redaktion/SoH_Africa/ZGPI_2014_-_Effect_of_oil_exploration_and_production_in_South_Sudan_-_Rueskamp_Ariki_Stieglitz_Treskatis.pdf); Soaked in oil: The cost of war in South Sudan, Al Jazeera (04 March 2015), accessed 13 July 2015, <http://www.aljazeera.com/indepth/features/2015/03/soaked-oil-cost-war-south-sudan-150302102747401.html>.

⁶⁶ Soaked in oil: The cost of war in South Sudan, Al Jazeera, last updated 04 March 2015, accessed 14 July 2015, <http://www.aljazeera.com/indepth/features/2015/03/soaked-oil-cost-war-south-sudan-150302102747401.html>.

7.2 Migration and conflict

7.2.1 Frequency of tension and conflict over water points

All respondents in Northern Bahr el Ghazal and Upper Nile States report that security at the drinking water sources is adequate; in Unity State, however, both settled community members and nomadic pastoralists report conflict and violence surrounding the water sources, particularly related to the Baggara and Nuer communities.⁶⁷ Table 3 below lists the top three main sources of conflict in communities across Northern Bahr el Ghazal, Unity and Upper Nile, as perceived by interviewees/focus groups.

TABLE 3: MAIN SOURCE OF CONFLICT IN COMMUNITIES, BY STATE

NBeG	Unity	Upper Nile
Water access	Water access	Water access
Cattle theft	Cattle theft	Grazing land
Adultery	Pregnancies out of wedlock	Farmland

Water access is clearly a pervasive issue in all three states, and causes regular conflict within communities. Between different communities however, cattle theft and land grabbing of farming land are the most common causes of conflict, as shown by table 4 below.

TABLE 4: MAIN SOURCE OF CONFLICT BETWEEN COMMUNITIES, BY STATE

NBeG	Unity	Upper Nile
Cattle theft	Cattle theft	Farmland
Water access	Water access	Water access
Destruction of farmland/crops by livestock	Grazing land	Destruction of farmland/crops by livestock

The vast majority of those **involved in violent conflict are youths**, though in Upper Nile farmers and herders are occasionally at the centre of disputes.⁶⁸ Interviewees and focus group participants believe that the main reasons settled community members in the border regions of NBeG, Unity and Upper Nile can be drawn into violent conflict are (in order of importance)⁶⁹:

1. Poverty
2. Lack of job opportunities for youth
3. Lack of sufficient food
4. Theft of cattle
5. High dowries
6. Water.

⁶⁷ KIIs with relevant stakeholders and informed persons between 19 and 27 May 2015.

⁶⁸ KII with host community leader in Northern Bahr el Ghazal on 26 May 2015.

⁶⁹ FGDs and KIIs with relevant stakeholders and informed persons in host communities between 19 and 28 May 2015.

Migrant community members also list poverty as the primary reason why community members are drawn into violent conflict, and their reasons are similar to those of host communities⁷⁰:

1. Poverty
2. Lack of sufficient food
3. Lack of job opportunities for youth
4. Theft of cattle
5. Water access
6. Dispute over farming lands

With regards to water access there is regular conflict, often daily or weekly, at water points during the dry season, mainly in the form of quarrelling between women and girls in line to fetch water.⁷¹

Occasionally, however, larger conflicts occur. In early 2014 “there was a fight at Roshuk pond which resulted in the killing of the guard at the pond.”⁷² This incident in Renk County in Upper Nile involved a group of Dinka youth who were attempting to access the pond with a large herd of cattle.⁷³ Fortunately such severe incidents are rare, and the culprits of this particular case were arrested.⁷⁴

In the event of intra-communal conflicts in the three states of focus, community members usually turn to local community leaders, elders and/or the chief.⁷⁵ In severe cases the police may become involved.⁷⁶ Cases of conflict between host communities and nomadic communities, however, are resolved differently across states: in Upper Nile the police and occasionally the army are brought in to resolve the conflict, whilst in Unity community leaders from the disputing communities will meet and resolve the problem together; in Northern Bahr el Ghazal conflicts are brought to the Peace Committee, the paramount chief, payam administrators, government officials or the police.⁷⁷

⁷⁰ Listed in order of importance.

FGDs and KIIs with relevant stakeholders and informed persons in migrant communities between 19 and 28 May 2015.

⁷¹ FGDs and KIIs with relevant stakeholders and informed persons between 19 and 28 May 2015.

⁷² KII with nomadic community leader in Upper Nile on 22 May 2015.

⁷³ KII with nomadic community leader in Upper Nile on 22 May 2015; KII with nomadic community leader in Upper Nile on 23 May 2015; FGD with host community members in Upper Nile on 20 May 2015(a).

⁷⁴ Ibid.

⁷⁵ FGDs and KIIs with relevant stakeholders and informed persons between 19 and 28 May 2015.

⁷⁶ KII with local official in Northern Bahr el Ghazal on 22 May 2015; KII with host community leader in Northern Bahr el Ghazal on 25 May 2015; KII with nomadic community leader in Upper Nile on 23 May 2015; FGD with host community members in Northern Bahr el Ghazal on 28 May 2015; FGD with nomadic community members in Upper Nile on 23 May 2015.

⁷⁷ KIIs and FGDs with relevant stakeholders and informed persons in Northern Bahr el Ghazal State between 21 and 28 May 2015; KIIs and FGDs with relevant stakeholders and informed persons in Unity State between 19 and 28 May 2015; KIIs and FGDs with relevant stakeholders and informed persons in Upper Nile State between 19 and 27 May 2015.

TABLE 5: SUGGESTED WAYS TO PREVENT CONFLICT WITHIN COMMUNITIES, BY STATE

NBeG ⁷⁸	Unity ⁷⁹	Upper Nile ⁸⁰
<ul style="list-style-type: none"> • Conducting peace conferences at boma, payam, county, and state level • Building of schools and better education for young community members • Creations of more jobs for these jobless youths • Distribution of food items to the poor rural population • Construction of additional water sources • Stricter enforcement of laws 	<ul style="list-style-type: none"> • Construction of additional water sources • Cultural activities to form social bonds within communities • Building of schools and better education for young community members • Regulation of movement of nomadic pastoralists 	<ul style="list-style-type: none"> • Creation of additional water points • Stronger police presence in rural areas and around water points • Stricter enforcement of laws • Ensuring cattle grazes far from farming areas

Respondents in Unity State were particularly vocal on the issue of insufficient water access, which they say is the main cause of conflict in the state.⁸¹

7.2.2 Migration patterns and their local impacts

Nomadic pastoralists migrate from Sudan to South Sudan, normally spending a period of five to six months in border communities in South Sudan during the dry season: “We migrate from Sudan to South Sudan here for pasture for our animals, because Sudan is a desert area and there is no pasture during dry season”.⁸² However, even when in South Sudan, nomadic pastoralists identify the lack of sufficient water points along their migration routes as one of the main challenges in moving through the country.⁸³ A number of migrating groups visit each of the three states concerned in this report, as shown in table 6 below.

⁷⁸ KIIs and FGDs with relevant stakeholders and informed persons in Northern Bahr el Ghazal State between 21 and 28 May 2015.

⁷⁹ KIIs and FGDs with relevant stakeholders and informed persons in Unity State between 19 and 28 May 2015.

⁸⁰ KIIs and FGDs with relevant stakeholders and informed persons in Upper Nile State between 19 and 27 May 2015.

⁸¹ Concordis Market Assessment and Water Research, Fieldwork Report for Unity State (08.06.15).

⁸² FGD with nomadic community members in Upper Nile on 19 May 2015; FGDs and KIIs with relevant stakeholders and informed persons between 19 and 28 May 2015.

⁸³ Concordis Market Assessment Research FGD with pastoralists in Upper Nile on 25 May 2015; Concordis Market Assessment Research FGD with nomadic pastoralists in Unity on 23 May 2015; Concordis Market Assessment Research FGD with nomadic pastoralists in Northern Bahr el Ghazal on 27 May 2015(a); Concordis Market Assessment Research FGD with nomadic pastoralists in Northern Bahr el Ghazal on 27 May 2015(b).

TABLE 6: MIGRATING GROUPS PRESENT IN THE BORDER AREAS ACCORDING TO LOCAL COMMUNITIES, PER STATE

Northern Bahr el Ghazal	Unity	Upper Nile
Misseriyia	Fellata	Deju
Rezeigat	Nuba	Fahma
Fellata	Baggara	Fellata
Darfurian traders	Darfurian traders	Fatha
Baggara	Nuer	Islamiah
-	-	Masalid
-	-	Misseriyia
-	-	Darfuran nomads
-	-	Arab traders

This migration affects the local community as the influx of additional groups of people and livestock puts additional strain on the already limited water sources in the border regions of South Sudan.⁸⁴ Tension between host and migrating communities over access to these water sources is not uncommon, and occasionally results in violent conflict.⁸⁵

Unity State in particular faces significant problems with regards to the relationship between host and migrant communities; community members of both sides report cases of theft and murder related to raiding of cattle.⁸⁶ Quotes from nomadic pastoralists in Unity include *“they steal our cattle including killing of our people like this year 4 people from us have died”* and *“South Sudanese are killing us and taking our cows every day”*, whilst the settled community reports that *“we are fighting with Arabs Baggara also known nomadic people on the river bank”* and *“there is insecurity of cattle stealing like yesterday one of our men was killed by unknown gun man and we suspected the nomadic pastoralist.”*⁸⁷

7.2.3 Roads and infrastructure

Migrating groups travelling from Sudan to South Sudan take varying routes depending on their traditional paths and intended destinations. Nomadic pastoralists travelling from Sudan to Northern Bahr el Ghazal pass through Makuei, Gok Machar, Kiradam and Jaach, whilst pastoralists travelling to Upper Nile *“follow the Nile and Gezira area because of the availability of water for the livestock.”*⁸⁸

In general, road conditions in the border areas of South Sudan are very poor, and there is severe flooding in the wet season with only 40 percent of roads across the country deemed accessible between June and October.⁸⁹ Although most pastoralists groups only spend the dry season in South Sudan, the generally poor road conditions are most likely a great impediment to their ability to move around, as most people move by foot.⁹⁰ Travelling between communities in the wet season is

⁸⁴ KIIs and FGDs with relevant stakeholders and informed persons in Unity State between 19 and 28 May 2015; KIIs and FGDs with relevant stakeholders and informed persons in Upper Nile State between 19 and 27 May 2015.

⁸⁵ FGD with nomadic pastoralists in Unity on 28 May 2015(b); FGD with nomadic pastoralists in Unity on 28 May 2015(a); KII with nomadic community leader in Unity on 25 May 2015; KII with host community leader in Unity on 19 May 2015.

⁸⁶ FGD with nomadic pastoralists in Unity on 28 May 2015(b); FGD with nomadic pastoralists in Unity on 28 May 2015(a); KII with nomadic community leader in Unity on 25 May 2015; KII with host community leader in Unity on 19 May 2015.

⁸⁷ FGD with nomadic pastoralists in Unity on 28 May 2015(b); FGD with nomadic pastoralists in Unity on 28 May 2015(a); KII with nomadic community leader in Unity on 25 May 2015; KII with host community leader in Unity on 19 May 2015.

⁸⁸ KII with nomadic community leader in Upper Nile on 22 May 2015; KII with nomadic community member in Northern Bahr el Ghazal on 23 May 2015; KII with nomadic community leader in Northern Bahr el Ghazal on 21 May 2015.

⁸⁹ Implementation of integrated, coherent and coordinated support to South Sudan by the United Nations system”, United Nations Economic and Social Council (18 September 2014), accessed 24 June 2015, http://www.un.org/en/ecosoc/docs/adv2014/south_sudan_ecosoc_report.pdf.

⁹⁰ Market Assessment, KIIs and FGDs with relevant stakeholders and informed persons in Northern Bahr el Ghazal, Unity and Upper Nile between 18 and 28 May 2015.

challenging, essentially isolating certain areas, and is problematic for migrating traders who face limitations in the movement of goods.⁹¹

Additionally, transporting water by tanks to needing communities is likely to be a serious challenge because of the general road conditions.



Picture 3: Well in Majok Yin-Thiu, Norther Bahr el Ghazal State

⁹¹ Concordis Market Assessment Research KIIs with relevant stakeholders and informed persons in Northern Bahr el Ghazal, Unity and Upper Nile between 19 and 28 May 2015.

Conclusions & Recommendations

Indicator	Finding	Recommendation
<i>Availability/usage of water points by local communities and nomadic pastoralists</i>	Generators used to pump water from wells in Malakia Boma in Northern Bahr el Ghazal are broken.	Provide training to local community members on inspecting and repairing generators.
	Contamination of water sources, particularly during the rainy season.	Invest in education and training of community members on home water purification methods, such as water boiling. Investing in the distribution of chlorine tablets ⁹² , and the training in their use.
	Need for regular cleaning and maintenance of wells and boreholes.	Invest in training the local community in inspection, maintenance and cleaning of wells and boreholes.
	Water sources in Unity are contaminated by petroleum, and contain high concentrations of salt and heavy metals.	Investigate working with petroleum companies operating in the area such as Sudd Petroleum Operating Company, which works at the Thar Jath oil field, to help clean water sources, or provide training on how to clean water contaminated by oil.
<i>Prevalence of demand for more water points in the border areas, and their preferred location</i>	Essential need for additional water sources to be created in the border areas of Unity State.	Invest in construction of wells and boreholes in the border region of Unity State, particularly in around Crundi. ⁹³
	Significant shortage of water during the dry season across Northern Bahr el Ghazal, Unity and Upper Nile States.	Hold training workshops on how to create hafirs using local tools and materials in order to enable local populations to store rainwater for longer. These workshops should be held in ⁹⁴ : <ul style="list-style-type: none"> • Gok Machar, Aweil North, NBeG • Warawar, Aweil East, NBeG • Emtidad El Gidim, Renk, Upper Nile • Aruch, Pariang, Unity If adequate tools and materials are not locally available, look into subsidizing these.

⁹² Chlorine tablets for water treatment cost approximately 1000 – 1500 USD per metric ton (<http://www.alibaba.com/showroom/chlorine-tablets.html>).

⁹³ Crundi, Unity state cited by many interview subjects as a key lacking water access.

⁹⁴ These are the most populated bomas of their respective counties according to 2014 data from the South Sudan National Bureau of Statistics. Look into strategies for expanding the workshops out to more rural areas.

<p><i>Prevalence of demand for more water points in the border areas, and their preferred location</i></p>	<p>Substantial need for additional water sources to be created across Northern Bahr el Ghazal and Upper Nile States.</p>	<p>Initiate programme for training individuals from each state in skills needed to create additional water sources such as boreholes and wells, as well as water storage areas. This training should include how to identify suitable locations in a conflict sensitive way; in general, large population centres and areas frequented by a high number of displaced persons should be prioritised.</p> <p>Following completion of training, employ them to construct additional boreholes/water storage areas in key locations across their respective states. Priority locations should include⁹⁵:</p> <ul style="list-style-type: none"> • Shimodi town in Upper Nile • Rural areas of Gozrom, Gosfomi, Warbala, Kulang, Jerbelat and Duk Duk in Upper Nile • Market and town centres in Warawar, Wanyjok and Gok Machar in Northern Bahr el Ghazal
<p><i>Frequency of tension and conflict over water points</i></p>	<p>Conflict around water access largely caused by youth.</p>	<p>Help to create specific ‘youth groups’ to form part of the local peace committees, in order to engage youth in dialogue about peaceful conflict resolution.</p>
	<p>Conflict over water access is a critical issue in Unity State.</p>	<p>Conduct a peace conference with representatives from the various communities in the state to identify measures that can be taken to resolve the issues.</p>
<p><i>Migration patterns and their local impacts</i></p>	<p>Conflicts occur between nomadic community members and host community members in Unity State over water access.</p>	<p>The creation of additional water sources in Unity should prioritise areas along routes most often travelled by nomadic groups. Conduct trainings for host communities and nomadic groups (where possible) on peaceful dispute resolution, and effective communication. During these trainings, provide education on knowledge, attitudes and practices on communication for peace and social cohesion.</p>

⁹⁵ These locations are based on areas that local and migrating community members interviewed for this report identified as being the most in need of new boreholes. Shimodi, Warawar, Wanyjok and Gok Machar are also located in some of the most densely populated areas of their respective counties (South Sudan National Bureau of Statistics 2014 Data).

