

Human Waste Management in South Sudan

A Comparative Analysis of Policy Options for Addressing Open Defecation



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Abstract

The Republic of South Sudan faces a profound public health crisis due to widespread open defecation, with approximately 93% of the population lacking access to improved toilets and 63% practicing open defecation. This practice contributes to the spread of waterborne diseases and gives rise to secondary issues such as child stunting and mortality, sexual violence, and illiteracy. This paper considers the socio-political context of South Sudan and subsequently explores policy strategies for information dissemination and toilet construction. Following a comprehensive evaluation with specific criteria, the study recommends that International Organizations prioritize education dissemination and community-led approaches to mitigate open defecation in South Sudan.

1. Introduction

Open defecation contaminates water sources, directly leading to disease outbreaks. Acute watery diarrhea (AWD), a disease contracted through contaminated water, accounts for 42.9% of the annual mortality rate for children under 5 in South Sudan (William et al., 2023). Furthermore, increasing numbers of floods caused by climate change are amplifying the spread of feces in bodies of water, and with that, disease and mortality rates. This paper will elucidate the dangerous health impacts of open defecation as well as its secondary consequences spanning across multiple social aspects. Next, it will examine how South Sudan's political and economic instability prompted a lack of sanitation infrastructure. Accordingly, it will propose potential policies to end open defecation and highlight the best option according to an evaluation of criteria specific to the country and the issue at hand. Conclusively, the paper explains how educational campaigns and community-based approaches best address open defecation.

1.1 *Open defecation near water sources*

People often defecate near waterways and rivers due to the false belief that water washes away waste. Cultural norms compound the problem, as people's familiarity with open defecation leads to a discomfort with using latrines, and cultural beliefs suggest that defecating in the home is 'dirty'. As such, contaminated water ends up in water sources used for drinking and cooking.

1.2 *Fecal-oral route for pathogens*

Human excreta contains bacteria, viruses, and protozoa that infect people via direct or indirect contact with contaminated liquids. Human feces are the primary source of pathogens that cause diarrheal diseases like cholera, typhoid, and amoebic dysentery. 1 in 10 South Sudanese children die as a result of contaminated water before they turn 5 (*The Trumpeter Community Health Project*, 2023). Exposed feces also cause soil-transmitted helminths such as roundworm

and whipworm (Giribabu et al., 2019). Furthermore, South Sudan's lack of road infrastructure means there is little access to hospitals, making illnesses oftentimes fatal.

1.3 *Malnutrition and stunting in children*

Children under the age of 5 are especially susceptible to disease due to lower immunity. Those nearby open defecation ingest bacteria, viruses, fungi that cause intestinal infections, which are linked to stunting and anemia (Worley, 2014). Childhood stunting is the most prevalent form of malnutrition; studies show that extreme levels of malnutrition inflamed by the lack of clean drinking water and increased amount of illness will likely cause the deaths of over one million children in South Sudan in the first half of 2024 (Nikolova, 2023).

Rank	Country	% of population without access to an 'improved' toilet (2015) ¹⁶	Gross national income per capita (\$)(2014) ¹⁷	Average life expectancy, at birth ¹⁸ (2013)	Maternal mortality rate, sepsis-related (per 100,000 births) ¹⁹	Child deaths, under five, from diarrhoea (per 1,000; 2013) ²⁰	% of children stunted (indicator of malnutrition) ²¹
1	South Sudan	93.3	940	55	75.2	9.8	31
2	Niger	89.1	420	58	64.9	11.8	44
3	Togo	88.4	570	56	46.4	7.1	28
4	Madagascar	88.0	440	65	45.3	5.2	49
5	Chad	87.9	980	51	100.1	17.9	39

TABLE 1: TOP 5 WORST PLACES IN THE WORLD TO FIND A TOILET
SOURCE: *IT'S NO JOKE: THE STATE OF THE WORLD'S TOILETS 2015*

1.4 *Secondary Implications of Open Defecation*

Open defecation impacts the wellbeing of girls and women, exposing them to sexual abuse and exploitation. It also forces women to walk further away if they wish to search for clean water, taking them away from children and weakening familial relations. Another major consequence is that children cannot attend school when they are sick, which increases illiteracy rates. Illnesses also lower overall productivity, worsening South Sudan's economic situation.

2. The Context of South Sudan

2.1 Political instability: the Civil War and overcrowding

As the newest nation in the world, South Sudan is a fragile country that has experienced extreme conflict since its birth in 2011. Violence on an intercommunal and governmental scale has prevented the establishment of infrastructure on all fronts, including sanitation. A civil war that began in 2013 and lasted 7 years caused 2.3 million people to be internally displaced, with 65% of refugees being under the age of 18 (*South Sudan Refugee Crisis, 2023*). This mass wave of displacement—which had begun even prior to the Civil War—resulted in overcrowded refugee camps where diseases run rampant as bodies exist in close contact. Most of these camps have virtually no latrines or facilities for handwashing, aggravating outbreaks of waterborne diseases. The effort to fund the war also turned government resources away from sanitation services, leaving the sector to the hands of humanitarian and development partners (World Bank, 2019). However, violent conflicts, natural disasters, and the absence of roads have made it highly difficult for non-governmental organizations (NGOs) to provide services in South Sudan.

2.2 Biophysical conditions: flood impact

South Sudan's geographical location makes itself vulnerable to the consequences of climatic pressures. It is a landlocked country that spreads across vast floodplains and experiences seasonal flooding. In recent years, extreme, unprecedented floods have submerged large areas of the country, displacing over half a million people in 2021 (*Floods, Displacement and Violence in South Sudan, 2022*). Still, displaced peoples continue to move into wetland areas that are more susceptible to floods because these areas are less accessible to armed groups. In these conditions of high population density and elevated waters, open defecation becomes deadly; mass amounts

of people trudge through contaminated waters, making physical contact with excreta and other individuals, consequently contracting and spreading diseases.

2.3 *Economic insecurity and corruption*

The oil sector dominates South Sudan's GDP. However, this sector's instability only contributes to the country's economic insecurity. For example, in 2008, a surge in oil prices doubled South Sudan's oil revenue, but in 2009, a sudden drop in oil prices prevented expenditure commitments from actualizing, so budget expenditures in the infrastructure sector declined from \$390 million in 2008 to \$230 million in 2009 (*AfDB Financial Report 2018*, 2018). The mass displacement of people due to conflict and climactic pressures also uprooted non-oil businesses in agriculture, trade, and other services. This economic insecurity has turned away private investment capital needed for sustained economic growth. Corruption further exacerbates the issue. Government officials pocket large sums of money meant to fund public services. In the indicator 'Control of Corruption,' South Sudan scored a mere 0.48 out of 100 (Frahm, 2015). Consequently, South Sudan faces extreme economic stagnation and is unable to provide sufficient financial aid in addressing sanitation concerns.

	Education	Health	Infrastructure	Resources	Security	Administration	Other
2012-2013 (6.7B)	7%	7%	9%	8%	28%	8%	33%
2013-2014 (17.3B)	3.8%	2.4%	3.2%	2.6%	17.8%	5.7%	64.4%
2014-2015 (11.3B)	5.5%	3.2%	3.5%	3.2%	35%	7.7%	42.9%

TABLE 2: SOUTH SUDAN PROJECTED NATIONAL BUDGET ALLOCATIONS ACROSS SECTORS FROM 2012-2015
SOURCE: [HTTPS://BIBALEX.ORG/BAIFA/ATTACHMENT/DOCUMENTS/RSIWL50EXT_2017042413542274.PDF](https://bibaalex.org/baifa/attachment/documents/rsiwl50ext_2017042413542274.pdf)

3. Potential Policies to Address Open Defecation

This paper posits that a dual-approach addressing both information provision and toilet construction is needed to effectively combat open defecation in South Sudan. The author poses 2 information policies: education dissemination and advertisement, and 3 toilet construction policies: community-based approach, government intervention, and building of private latrines. To evaluate the aforementioned policies, the paper utilizes the following 3 criteria (See Table 3):

1. How likely is it to be a cost-effective solution that is financially viable?
2. How likely is it to encourage people to end open defecation?
3. How likely is it to be implemented and maintained in a community?

3.1 Information provision: education dissemination and advertisement

1. Education dissemination could be headed by members of NGOs or International Organizations (IGOs). Various International Organizations IGOs like UNICEF have already successfully eliminated open defecation in certain villages using information-based campaigns that teach about proper sanitation and hygiene. In Marol Aken, an initiative raising awareness on the importance of latrines and how feces end up in water led villagers to prioritize the construction of latrines, prompting the village to eventually become open defecation free.

2. Advertising that involves highly visual and aural headlines can evoke emotional urgency to end open defecation. In India, where over 48% of the population practices open defecation, UNICEF has headed a “Take the Poo to the Loo” social media campaign that incorporates an anthropomorphic mascot named “Mr. Poo.” The mascot appears in songs, commercials, and posters, pointing the public’s attention to the hazardous practice of public defecation.

3.2 Toilet construction: community-based approach, government funding, private latrines

1. The community-led total sanitation (CLTS) methodology involves community mobilizers promoting a shared contribution of materials for constructing communal latrines. The CLTS approach enables communities to collectively internalize the negative impact of open defecation and address their village's health. In Northern Bahr El Ghazal, CLTS improved latrine establishment and usage from 0% to 97% in 20 months (*Case study: Community-led total sanitation in Northern Bahr el Ghazal, South Sudan, 2017*).

2. Since 2020, the World Health Organization (WHO) has worked with South Sudan's government to achieve universal health coverage. In recent years, the country has spent less than 2% of the national budget in the health sector (*Strengthening primary health care in fragile settings, 2022*). A redistribution of government funding to construct and maintain latrines can have significant health benefits, but high levels of corruption make the process difficult.3. The establishment of private toilets would lead to improved sanitation practices at the household level. While initially expensive, the WHO estimates that every \$1 invested in water and toilets returns an average of \$4 in medical cost savings, prevented deaths, and increased productivity (*'Transformational benefits' of ending outdoor defecation, 2019*).

	Cost of implementation	Likelihood of improving human waste management	Administrative feasibility
Education dissemination	4 - Requires resources for educational materials	4 - Likely to impel people to change behaviors	4 - Likely that IGO workers head campaigns
Advertisement	5 - Highly feasible/cheap to spread advertisement	2 - Unlikely to have direct impact on behavior change	4 - Likely to make and spread advertising
Community-based approach	3 - Requires community engagement	5 - Would encourage further construction	4 - Community shares responsibility to maintain
Government funding	2 - Unlikely that gov. allocates funds	5 - Would have highly effective results	1 - Difficult for gov. officials to maintain
Constructing private latrines	2 - Large costs for families to build private latrines	4 - Likely to encourage more latrine usage	2 - Unlikely that families have time to maintain

TABLE 3: EVALUATION OF POLICIES UNDER CRITERIA / SOURCE: CREATED BY AUTHOR

NOTES: THE NUMERICAL VALUES REPRESENT THE LIKELIHOOD OF A POLICY ALIGNING WITH A CRITERION (1= HIGHLY UNLIKELY; 2= UNLIKELY; 3= NEUTRAL; 4= LIKELY; 5= HIGHLY LIKELY).

4. Recommendation and Conclusion

Upon thorough evaluation of potential policies addressing open defecation in South Sudan, it is recommended that IGOs prioritize the implementation of education dissemination and community-based approach campaigns throughout the country. This recommendation is substantiated by the policies' alignment with criteria pertaining to cost of implementation, propensity to motivate behavioral change, and feasibility of administration and maintenance. Moreover, an analysis of the policies indicates that introducing an information-based policy followed by a toilet construction policy elevates the likelihood of success for the latter.

4.1 Education dissemination

The strategy of disseminating education has exhibited promising outcomes in raising both awareness and action for proper sanitation. This policy received a score of 4 in all criteria, deeming it likely to be cost-effective, as most of its financial costs are educational materials; likely to improve waste management, as information on the danger of feces in water combats cultural norms and prompts intrinsic desires to use latrines; and likely to be administratively feasible, as the information-based campaigns motivate people to upkeep the latrines. It is suggested that IGO members take the followings steps to most successfully achieve education dissemination:

- Step 1: IGO members plan educational campaigns raising awareness on dangerous effects of open defecation on health. Programs would include conversations and demonstrations.
 - Pathway demonstration ex: facilitator asks villagers for a glass of water, but before drinking it, they dip used toilet paper with feces into the water, then ask villagers if they would drink it. The unanimous response is “no” (Seth, 2017).

- Step 2: IGO members meet with community leaders to set a time, date, and place to have the program. Community leaders gather and motivate members to attend.
- Step 3: While impressing intensive educational messaging, IGOs encourage construction of a communal latrine to actualize the discussed health benefits, giving way to CLTS:

4.2 *Community-based approach*

The CLTS methodology has garnered attention for its efficacy in mobilizing communities towards constructing communal latrines and fostering a sense of shared responsibility. Its achievement in Northern Bahr El Ghazal affirms its potential to increase latrine establishment and usage rates. The policy would be implemented as follows:

- Step 1: Identify willing communities—likely those that participated in educational campaigns—and organize meetings to strategize the construction of communal latrines.
 - Foster ethos of shared responsibility to encourage contribution of funds, materials, and labor from members to build and upkeep latrines.
- Step 2: IGO members should extend support during the construction phase and empower community to assume ownership of the facilities.
- Step 3: Institute regular assessment of utilization and condition of constructed latrines. Gather data to illuminate the health benefits of latrines, encouraging the construction of more latrines until a village is open defecation free.

In confronting South Sudan's dire open defecation crisis, prioritizing education dissemination and community-led approaches emerges as imperative. These strategies, aligned with essential criteria, offer pathways toward behavioral change and sustainable solutions, essential for mitigating health risks and fostering societal well-being amidst this sanitation crisis.

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