




## Battling water-borne disease amongst children

### An assessment of policy options from Uganda

#### Abstract

This CEEPA study from Uganda finds that the incidence of childhood diarrhea is highest among households without any established toilet structure. It also shows that access to a private covered pit latrine brings about the greatest reduction in the incidence of diarrhea amongst children. In light of these findings, it recommends that health information campaigns and local government ordinances should be designed to improve sanitation, as these represent the most effective ways of reducing diarrhea in the country.

The study is the work of Ibrahim Kasirye, from the Economic Policy Research Centre, Uganda. It aims to help policy makers tackle diarrhea and other water-borne diseases. This is vital as these diseases are one of the key health challenges facing people in sub-Saharan Africa. To help address this important problem, the study examines the impact that access to improved water and sanitation has on the incidence of diarrhea amongst children. Its findings will help policy makers to highlight effective projects and prioritise funding. 



**Clean water brings significant health benefits.**

A summary of CEEPA Discussion Paper No. 45: 'Household Environmental Conditions And Disease Prevalence In Uganda: The Impact Of Access To Safe Water And Improved Sanitation On Diarrhea' by Ibrahim Kasirye, Economic Policy Research Centre, Uganda.

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# Report Summary

Water-borne diseases such as diarrhea are one of the key health challenges facing people in sub-Saharan Africa. To help address this important problem, a new CEEPA study from Uganda examines the impact that access to improved water and sanitation has on the incidence of diarrhea amongst children.

The study is the work of Ibrahim Kasirye, from the Economic Policy Research Centre, Uganda. It finds that the incidence of diarrhea is highest among households without any established toilet structure. It also shows that access to a private covered pit latrine brings about the greatest reduction in the incidence of diarrhea amongst children. In light of these findings, it recommends that health information campaigns and local government ordinances should be designed to improve sanitation, as these represent the most effective ways of reducing diarrhea in the country.

## The Water-Borne Disease Challenge

Policy makers and researchers across sub-Saharan Africa are becoming increasingly concerned about the social impact of poor water supply and sanitation, particularly the effect these issues have on health, education and poverty. In particular, it is well known that a lack of access to safe water and sanitation is associated with water-borne diseases—particularly diarrhea.

As a result, governments in the sub-region have increased the resources they provide to help improve water supply and sanitation. However, many households still do not have access to safe water and hygienic toilet facilities. One country that is grappling with this challenge is Uganda. Unfortunately, there is little information available on how the various water supply and sanitation choices being considered by the government actually reduce the prevalence of water-borne diseases.

## Getting a National Picture

To provide this vital information and to try and help maximize the effectiveness of Uganda's disease prevention policy, this study focused on diarrhea illness among young children in Uganda. It uses information from the 2005/06 Uganda National Household Survey (UNHS). The UNHS survey is modeled along the lines of the World Bank's Living Standards Measurement Surveys (LSMS). It is intended to track changes in the welfare status of Ugandans.

The survey is nationally representative and covers 7,426 households containing 41,211 regular household members. The UNHS provides individual and household information on 8,882 children aged below the age of five. It provides information on household demographics and whether people have access to safe water and sanitation. The survey also reports on the distance households are from a water source, the time it takes people to get water, and whether households have a separate kitchen. It also captures data on the type of toilet facilities that people use. From a health point of view, the survey collects information about any illness symptoms, including diarrhea, suffered by household members (in the 30 days prior to taking part in the study). It also collects information on the amount of money that people spend to get illnesses treated and on the amount they pay for transportation to health facilities.

**Uganda, projected expenditures under the WSIP (2000-2015), US\$ Millions**

Major Program	Financial Years			Total
	2001/2005	2005/2009	2009/2015	
a) Water Supply	150.1	190.1	447.4	<b>787.6</b>
b) Sanitation	10.4	21.4	70.1	<b>101.9</b>
c) Environment Assessment, Mitigation and Monitoring	-	6.5	14.6	<b>21.1</b>
d) Capacity Building for Local Governments	15.1	10.3	23.7	<b>49.1</b>
e) Institutional Support and Capacity Building for Central Government	3.1	2.3	4.9	<b>10.3</b>
<b>Total (US \$Millions)</b>	<b>178.7</b>	<b>239.6</b>	<b>560.7</b>	<b>978.9</b>

## Sanitation, Water supply and Illness

The study finds that boreholes are the main source of drinking water for households in Uganda - at least 30% of households in the country use them. The families that use boreholes are predominantly in rural areas. Piped water is mainly used in urban areas, with at least 56% of urban households using water that they get from a tap. The study also finds that the use of unsafe water sources (unprotected springs and wells and streams, rivers and lakes) is most common in Western and Central Uganda. On average Ugandan households are 3.1 km away from their main source of drinking water and households spend an average of 25 minutes waiting to collect water.

When it comes to sanitation, the majority of households (41%) use private covered pit latrines. Shared pit latrines are used by 33% of the population. It is also worth noting that about 10% of households in Uganda use the bush as their main method of disposing of human excrement.

Childhood diarrhea is concentrated in the poorest regions of Uganda. Eastern and northern Uganda have the highest diarrhea prevalence rates among children — 8.9% and 10.7%, respectively. The situation in northern Uganda has most likely been made worse by the prolonged civil war in the region. This has meant that many people have been displaced to refugee camps. These camps are congested and are consequently a fertile breeding ground for disease.

## How Best to Deal with Diarrhea?

Comparing the effect of access to water and sanitation facilities on diarrhea is difficult because any observed differences between households may be affected by a number of other factors. Because of this, the study uses statistical analysis to make sure that all the factors that might influence children's health are taken into account.

The study finds that piped water within a household and access to private covered pit latrines significantly reduces the prevalence of diarrhea. In particular, increased access to piped water within a dwelling reduces diarrhea prevalence among infants by about nine percentage points. Having a private pit latrine reduces diarrhea prevalence by 20%. The study also finds that water facilities such as boreholes and protected springs have no appreciable impact on diarrhea in children. These, initially surprising, results may be explained when water quality issues are taken into account. Community-based water facilities (e.g., protected springs) often have poor water quality due to poor maintenance. Water can also be contaminated during transportation.

## How Much Will Clean Water Cost?

In order to help place its results in a policy context, the study looks at the cost effectiveness of two key methods of providing households with clean water. To do this it considers a hypothetical poor urban town in Uganda with a population of 50,000. Improvements in people's health due to the supply of clean water were measured in disability-adjusted life years (DALYs). The DALY is a widely used measure of overall [HYPERLINK "http://en.wikipedia.org/wiki/Disease\\_burden"](http://en.wikipedia.org/wiki/Disease_burden) disease burden.

The study calculates the reduction in diarrhea cases among young children in the hypothetical town as a result of two different initiatives: first the connection of households to a piped water supply; and second, the provision of a community standpipe. The estimated program cost for a household connection would amount to US\$816,000 compared to US\$367,000 for a community standpipe. The cost for reducing the overall disease burden amongst children by one DALY is US\$1,090 for a household connection and US\$650 for a standpipe. The results for the cost-effectiveness analysis show that for a poor urban town, providing community standpipes provides the largest gains in terms of reducing the prevalence of diarrhea at the lowest cost. However, the estimated costs suggest that other interventions, such as vaccinations, may be cheaper if the government's goal is only to control diarrhea illness among children.

Nonetheless, the provision of water sources offers benefits beyond controlling the spread of diarrhea illness; indeed, water is essential to life. However, because of the high costs of water infrastructure, the potential for cost sharing in providing water interventions to treat diarrhea will be minimal. This means that countries like Uganda (which are faced with tight budgets) will have to rely on development partners in order to meet water supply infrastructural costs, if they choose this path to tackle diarrhea.

## Promoting Private Pit Latrines

Overall, out of all possible water and sanitation improvements, access to a private covered pit latrine has the greatest effect on the burden of diarrhea among children. Consequently, the study recommends that national policies that address the lack of hygienic toilets in households in Uganda have the best potential of reducing diarrhea-related diseases amongst children. This is a big challenge as studies from other developing countries show that providing proper sanitation can be problematic, even for households willing to adopt the required facilities. For example, in West Africa, misunderstandings about how latrines function, coupled with cost issues, have placed major obstacles in the way of improving sanitation in the region.

In Uganda itself, the study highlights a number of key problems that must be overcome if sanitation is to be improved. Overall, there is a targeting dilemma because, although water in Uganda is publicly provided, the construction of sanitation facilities is considered a private matter. In addition, it is clear that as a nation Uganda pays more attention to the treatment of diarrhea than to its prevention.

## Future Challenges and Solutions

Other problems include the fact that the funds currently earmarked for sanitation improvements are not adequate; as a result, sanitation has, so far, received minimal attention. Furthermore, steps to improve sanitation by other parties, such as non-governmental organization, have been few and far between and have been undertaken in an ad hoc manner. What is more, providing adequate sanitation services to a large population of displaced and nomadic people in Northern Uganda will be a particular challenge.

There are a number of ways in which Uganda's government can encourage the use of proper toilets. First, the government needs to publicize the risks associated with diarrhea through health information campaigns. The main target group for these campaigns should be mothers. These campaigns could be carried out either through various media, especially radio, or by health workers.

The second option is to enforce the mandatory construction of toilets at the district level. Although this appears radical, there is evidence from other social service projects in the country that ordinances work. What's more, it is clear that if the necessary ordinances are not introduced in the water sector, a significant number of households will remain without good toilet facilities, to the detriment of the health of household members. 🌐

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### Research Sponsors



*CEEPA gratefully acknowledges the support provided by the key sponsors for the research summarised in this policy brief. They are the International Development Research Centre (IDRC) and the Swedish International Development Cooperation Agency (Sida). The findings, interpretations and conclusions expressed herein are those of the author(s) and do not necessarily reflect the views of the Board of Executive Directors of IDRC, Sida or our other sponsors. IDRC and Sida do not guarantee the accuracy of the data included in this work.*

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