

Global Scaling Up Handwashing Project

Enabling Technologies for Handwashing with Soap:

A Case Study on the Tippy-Tap in Uganda

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Executive Summary

Background

Handwashing with soap at key times is believed to be an effective and highly cost-effective means of reducing diarrhea incidence.¹ However, global rates of handwashing with soap are frequently low, particularly among the poor, who also face the greatest threat from infectious diseases.² Access to a convenient handwashing station has been found to be associated with higher rates of handwashing³ and decreased fingertip contamination.⁴

One such handwashing station is the “tippy-tap,” which consists of a small (3 or 5 liter) jerry can filled with water and suspended from a wooden frame. A string attached to the neck of the jerry can is tied to a piece of wood at ground level. Pressing on the wood with the foot tips the jerry can, releasing a stream of water through a small hole. Soap is suspended from the frame beside the jerry can. A tippy-tap located close to a latrine provides a cheap and potentially convenient means of washing hands after latrine use.

A qualitative case study was carried out May 11–18, 2010 in Uganda to learn about two projects, described below, in which health workers and village-level volunteers promoted the tippy-tap, provided health education and carried out household inspections. The purpose of this study was to document the process through which tippy-taps were promoted to qualitatively explore the results and to draw out lessons for future interventions. Data were collected through nine key informant interviews, forty-seven interviews with householders from model and non-model villages, and twenty-two spot-check observations of handwashing facilities.

The first project studied, an Agency for Cooperation and Research in Development (ACORD) water and sanitation project, started in 2008 and is scheduled to run for a total of three years. The second project studied, a Government of Uganda initiative implemented by District Health Authority staff members, started in 2007 and is ongoing. This project established model villages in which households were encouraged to take up a variety of behavior changes including: washing hands with soap at key times; construction of tippy-taps; making and using drying racks for kitchen utensils; building bathing shelters; building or improving latrines; making and using garbage pits; and growing vegetables.

The purpose of this study was to document the process through which tippy-taps were promoted to qualitatively explore the results and to draw out lessons for future interventions.

¹ Curtis, V., and S. Cairncross. 2003. “Effect of washing hands with soap on diarrhoea risk in the community: a systematic review.” *The Lancet Infectious Diseases*, 3, 275–281, May; and Laxminarayan, R., J. Chow, and S. A. Shahid-Salles. 2006. “Intervention cost effectiveness: Overview of main messages” in Jamison, et al. eds. *Disease Control Priorities in Developing Countries*. Second edition, 35–86. The World Bank, Washington DC.

² Scott, B., V. Curtis, and T. Rabie. 2003. “Protecting Children from Diarrhoea and Acute Respiratory Infections: The role of Hand Washing Promotion in Water and Sanitation Programmes.” *Regional Health Forum*, WHO South-East Asia Region, Vol. 7, Number 1.

³ Biran, A., A. Tabyshalieva, and Z. Salmorbekova. 2005. “Formative research for hygiene promotion in Kyrgyzstan.” *Health Policy and Planning* 20 (4) 213–221.

⁴ Pinfold, J. V. 1990. “Fecal contamination of water and fingertip-rinses as a method for evaluating the effect of low-cost water-supply and sanitation activities on fecooral disease transmission. A case-study in rural North-East Thailand.” *Epidemiology and Infection* 105 (2) 363–375.

Changes were promoted through village meetings and house-to-house visits carried out by Health Assistants—visiting health workers employed by the District Health Authorities—and by village-level volunteers. Households were also inspected periodically to see if recommendations are being followed.

The ACORD project differed from the District Health Authority project in that rainwater-harvesting systems, improved cooking stoves, tippy-taps and materials for upgrading latrines were subsidized. The project worked with women's savings groups to provide members with credit on a rotating basis, enabling them to access the technologies being promoted.

Quantitative data (e.g., rates of handwashing with soap or prevalence of tippy-taps in villages) were not collected in this study.

Findings

Tippy-taps are common, though not universal in model villages. Their acquisition seems largely driven by the combination of educational messages and instructions from the Health Assistants and the possibility of inspection.

Awareness of the tippy-tap does not necessarily translate into immediate action to obtain one. Households that were aware of the tippy-tap but had never owned one did not report any barriers to acquisition other than that they either had not lived at their current house for long or that they were waiting for a package of home improvements to be funded (through the ACORD project).

Tippy-taps are acceptable to householders and are thought to have a number of advantages over using a jerry can. The most salient of these is that the foot pedal prevents contamination of the jerry can alone. The main reported drawback of

the tippy-tap is the need to replace components annually. It is possible that over time the need to replace and repair tippy-taps will lead to a decrease in the number of users if households lack the motivation to carry this out after visits by health workers and village health committee members cease.

Dissemination of information about the tippy-tap between villages and even between households within villages is limited. In non-model villages most respondents are unaware of the tippy-tap.

While quantitative data on handwashing rates were not collected, households with tippy-taps believed that their post-latrine handwashing rates had increased as a result of the taps. It seems likely that tippy-taps provide both convenient water and soap and a salient cue to wash hands. Householders also report that children like using the tippy-taps. They may therefore play a useful role in nurturing the handwashing habit in children.

Respondents in non-model villages were largely unaware of the tippy-tap. Scaling up the approach is likely to be challenging, since it would need to rely heavily on the inputs of village-level volunteers.

Conclusions

Tippy-taps were an acceptable means of providing a low-cost enabling technology for handwashing in this population. Anecdotally they have increased rates of handwashing after latrine use. However, uptake appeared driven by the 'push' of the intervention rather than the 'pull' of the technology and the extent to which spontaneous uptake and sustained use can be achieved in the absence of intensive intervention activities is not known. Respondents in non-model villages had little contact with model villages and were largely unaware of the tippy-tap. The interventions were labor intensive and probably difficult to scale-up.

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I. Introduction

1.1 Background

The Water and Sanitation Program's (WSP) Global Scaling Up Handwashing Project is testing whether innovative promotional approaches to behavior change can generate widespread and sustained improvements in household hygiene and sanitation practices in Peru, Senegal, Tanzania, and Vietnam. Among other learnings, the project is seeking to ascertain the key factors that influence handwashing behavior change (also known as *behavioral determinants*).

Enabling products and technologies are some of the “external factors” that influence individuals’ likelihood to perform a behavior, regardless of their ability and motivation to take action.⁵ Availability of enabling products and technologies is often overlooked in the design of handwashing initiatives, although it has been well documented that behavior change is most successful if the behavior is not only intentional, but also feasible for the target population to adopt.⁶ These “external factors” have been shown to facilitate handwashing behavior, in combination with other behavioral determinants such as attitudes and beliefs about handwashing and knowledge about the positive consequences of handwashing, among others.⁷

In the case of handwashing, the tippy-tap is perhaps the best-known enabling technology. It is a low-cost, do-it-yourself technology that has been widely promoted for over a decade, notably in Uganda and Madagascar. The



A tippy-tap is easy to use and commonly constructed near latrines.

tippy-tap provides a controlled quantity of flowing water for washing hands and is made from locally available materials such as gourds or old plastic cooking oil bottles. Variants include a design that can be operated by foot, thereby avoiding contamination of the tap itself. Usual methods for promoting and disseminating the tippy-tap technology within hygiene promotion interventions are through volunteer outreach workers or community resource persons as well as health club activities in schools.

While guidelines and “how-to” instructions are available about tippy-taps and other enabling products, very few evaluations or assessments inform the design of hygiene promotion programs through the documentation of lessons learned, promising practices (including implementation models), or successes and challenges (particularly with respect to changing behavior at large scale).

1.2 The Tippy-Tap

The tippy-tap was initially developed in Zimbabwe by Jim Watt and Jackson Masawi. It consisted of a small gourd suspended on a string. The gourd was filled with water that

⁵ As part of its Global Scaling Up Handwashing Project, WSP developed a behavior change framework to explain handwashing behaviour. The FOAM framework identifies the key factors or determinants that influence Handwashing, organized into four categories—Focus, Opportunity, Ability, Motivation. Enabling products and technologies fall under the Opportunity category of determinants. See *Introducing FOAM: A Framework to Analyze Handwashing Behaviors to Design Effective Handwashing Programs*, available at www.wsp.org/scalinguphandwashing

⁶ For more information on tippy-taps and other enabling technologies for handwashing with soap, see WSP's Enabling Technologies for Handwashing Database at www.wsp.org/scalinguphandwashing/enablingtechnologies.

⁷ Biran, Adam, Anara Tabysaliev, and Zumrat Salmorbekova, “Formative Research for Hygiene Promotion in Kyrgyzstan,” *Health and Policy Planning* 20, no. 4 (2005): 213–21.

could be dispensed in small quantities if the gourd was tipped by means of a string tied to its neck. Soap could be suspended on a string beside the gourd.

Subsequently, the gourd was replaced with a small (3 or 5 liter) plastic jerry can with a hole punched in the side. A more recent addition is a piece of wood at the bottom of string tied to the neck of the jerry can. This allows the tap to be operated by foot, avoiding the need for any hand contact with the jerry can. This variant of the tippy-tap was in use at the study site in Uganda. Soap can be protected from rain by covering it with the base of an old

0.5-liter drinking water bottle. A shallow depression filled with gravel or stones acts as a soak-away and prevents a pool of water from forming below the tap.

Research shows that a person washing hands under a tippy-tap uses 40-50ml of water as compared with 600ml when water is accessed by other means.⁸

⁸ Hurtado E (1993) Dialogue on Diarrhoea Online (54) September–November, pp 6–7.

II. Conducting a Qualitative Case Study in Uganda

2.1 Study Objectives

In March 2010, WSP conducted a qualitative case study in Uganda to learn about the promotion of specific handwashing enabling technology (the tippy-tap) through a particular approach (the use of visiting health workers and village-level volunteers to provide health education and carry out household inspections in model villages) in Uganda. A schedule of activities is included in Appendix 4.

WSP's overall aim is that these findings will inform both WSP's Global Scaling Up Handwashing Project and the wider water, sanitation, hygiene promotion, and health communities on the potential role, value, and limitations of enabling products and provide insights into promising practices to maximize scale and sustainability.

Key objectives included:

- Look for evidence of sustained use of tippy-taps beyond the period of an intervention
- Look for evidence of dissemination of tippy-taps beyond intervention areas
- Look for evidence of the reach of the intervention or promotion
- Understand reasons behind adoption or non-adoption
- Draw out features of the technology and/or the dissemination model that may have contributed significantly to the levels of uptake and sustained use
- Consider how these features might help or hinder future attempts to promote the technology at a greater scale

2.2 Interventions Studied

The case study research focused on two distinct projects: one, a project implemented by the Agency for Cooperation and Research in Development (ACORD), a non-governmental organization; the other, a Government of Uganda initiative implemented by District Health Authority staff members. Both projects established model villages in which households were encouraged to take up a variety of behavior changes. The intention was that model villages would serve as examples of good practices thereby inspiring and encouraging changes in neighboring villages. District



Tippy-taps consist of a jerry can filled with water hung by a rope next to a container of soap. The stones below the tippy-tap act as a soak-away.

Health Authority staff members also worked in non-model villages where the same behavior changes were promoted but at a lower intensity. Each project is described in greater detail in Annexes 2 and 3.

2.3 Methods

Data were collected from May 11–May 18, 2010 using three qualitative approaches: (1) semi-structured interviews with householders, (2) semi-structured interviews with key informants, and (3) spot-check observations of hand washing facilities:

Semi-structured interviews with householders: The author worked through either a District Health Inspector or a Health Assistant who acted as a translator for the interviews. A total of forty-seven interviews were conducted, including in model villages where the projects had been implemented and in neighboring non-intervention villages from the same sub-county.⁹ Of these interviews, thirty-four were with

⁹ Sub-county is the administrative level below district. Below sub-county are parish and village levels.

TABLE 1: DISTRIBUTION OF HOUSEHOLD INTERVIEWS (N = 47)

Village	Interviews
ACORD Intervention	
Model village, Mwizi sub-county	8*
Non-model village 1, Mwizi sub-county	8
Non-model village 2, Mwizi sub-county	8
District Health Authority Intervention	
Model village, Mbarara District	8
Model village, Ibanda District	9
Non-model village, Ibanda District	6
Total	47

*Six respondents were members of savings groups directly involved in the ACORD project; two were non-members.

female heads of household, eight with male heads of household, and five with male and female heads of household together (Table 1).

Semi-structured interviews with key informants: The author worked through either a District Health Inspector or a Health Assistant who acted as a translator for the interviews. A total of nine interviews were conducted to learn about the content and nature of the interventions. Interviews were conducted with: one Project Director and Social Worker (ACORD); two District Health Inspectors; one Volunteer Project Coordinator (from the ACORD model village); two Village Chairmen from model villages; one Chairman, Village Water and Sanitation Committee (from a model village); one Deputy District Health Officer; one Health Assistant.

Spot-check observations. A total of twenty-two spot-check observations of handwashing facilities were carried out in a small, convenience sample. Households were not informed in advance that they would be visited. The spot checks observations were used to look for the presence handwashing facilities, soap, and water beside household latrines (Table 2).

Data collection from the ACORD project took place in one model village and two non-model villages from the same sub-county. The model village visited was proposed by ACORD. Two non-model villages were selected randomly

TABLE 2: DISTRIBUTION OF SPOT-CHECK OBSERVATIONS (N = 22)

Village	Spot-checks
ACORD Intervention	
Model village, Mwizi sub-county	10
Non-model village 1, Mwizi sub-county	10
Non-model village 2, Mwizi sub-county	0
District Health Authority Intervention	
Model village, Mbarara District	0
Model village, Ibanda District	0
Non-model village, Ibanda District	2
Total	22

from a list of villages in the same sub-county. Households for interview were selected randomly from a list of all households in the villages because there was insufficient information available to allow purposive sampling.

Data collection from the District Health Authority intervention took place in two model villages located in Mbarara District and Ibanda District respectively and in one non-model village from a neighboring village in Ibanda District. The District Health Authority proposed the model villages. The neighboring non-model village in Ibanda District was selected randomly from a list of villages within the same sub-county as the model village. In Ibanda District households to be interviewed were chosen randomly from a list of all households in each of the two villages (model and non-model). In Mbarara District households to be interviewed were chosen randomly from a list of twenty households provided by the village chairman.

The average size of the villages studied was estimated to be one hundred households. In each village, the village chairman or a representative visited selected households in the late afternoon or early evening of the day before the interview with a request that an adult from the household be available for an interview on the following day. This preparation was necessary as the study took place during a busy agricultural season and few people were likely to be home during daylight hours. Householders were told that the interview would be about daily domestic life including water and sanitation.

During the Interviews:

Householders were asked about where they washed their hands and what they used for handwashing.

Householders with a tippy-tap were interviewed about when and why they acquired the tippy-tap, how they learned about it and their opinions of it (including ease of construction and use, appearance, maintenance, main advantages and problems, and how it compared with their previous practice).

Householders without a tippy-tap were asked whether they knew about tippy-taps, how they knew about them, what they thought of them, and whether they were happy with their current handwashing practice.

Households in model villages were asked about their awareness of and contact with the intervention. They were also asked about whether they talked about or promoted the tippy-tap to friends and neighbors.

Households in non-model villages were asked about their contact with the model village in their sub-county.

2.4 Study Limitations

This study had a number of limitations that should be borne in mind when interpreting the results:

1. Despite efforts to focus the fieldwork in areas where promotion of the tippy-tap had ceased, interventions were still active in the villages studied. Thus, it was not possible to assess the extent to which tippy-tap use is sustained in the absence of active promotion efforts.
2. Introduction to villages and interpretation during interviews was done through District Health Inspectors. The inspectors appeared to have excellent rapport with householders but were probably perceived by householders as associated with the interventions, potentially increasing the possibility of respondent bias.
3. In order to ensure that respondents were present for interviews it was necessary to make arrangements on the day prior to interview. Householders were aware that the interview would cover different household technologies including water and sanitation. It is therefore possible that householders made efforts to ensure the presence of soap and water at tippy-taps.
4. A quantitative assessment of handwashing rates or prevalence of tippy-taps was not included as part of this study.

III. Findings and Discussion

3.1 Handwashing Facilities in Households

All households that owned tippy-taps had constructed them close to their latrine on the route between the latrine and the house. They reported that they used it exclusively for washing hands after latrine use. When washing hands at other times, such as before eating, before preparing food, or on returning from the fields hands were washed beside the house or in the kitchen using a jerry can of water and sometimes a bowl.

Not all tippy-taps had water in them at the time of the visits. This does not necessarily imply that they were not in use since it may be that they had been emptied through use in the course of the day (observations took place in the late mornings and afternoons).

Almost all tippy-taps had soap beside them or contained small pieces of soap within the water. The type of soap used

was a blue laundry bar either placed on a rack or soap dish on the frame of the tippy-tap or suspended on a cord tied to the frame and covered with a cut-off plastic drinking water bottle.

Very few respondents from non-model villages had tippy-taps. In households without tippy-taps, householders reported washing their hands using soap and a jerry can of water. Practices varied between individuals and between households.

Sometimes water was poured from the jerry can into a bowl for washing and sometimes it was used directly from the jerry can. Some households used a small (3 liter) jerry can for handwashing rather than pouring directly from a 20-liter jerry can. Common practice was to keep the jerry cans and water inside the house and to bring them out for handwashing when needed. However, some households kept a small jerry can with water beside the latrine that was reported to be specifically for handwashing after latrine use.

3.2 Uptake of the Tippy-Tap

Householders acquired tippy-taps as the result of hygiene promotion and inspection efforts or because they came as part of a package of home improvements (offered in the ACORD model village only). That is to say they acquired them because they were told that they should, because they were told about the need to avoid contamination of the jerry can and because they knew that there were household inspections to check on hygiene and sanitation arrangements.

That is not to suggest that households were coerced into acquiring tippy-taps, however there was no suggestion that tippy-taps are seen as a ‘must have’ technology, nor was it clear that the benefits of tippy-taps reported by owners were sufficient to drive adoption without the social pressure resulting from household visits and inspections.

This qualitative study was not able to assess the true extent of diffusion of tippy-taps. The impression gained from interviews was that diffusion of tippy-taps to households outside of the model villages did occur but was very limited. Only one individual interviewed said that she had seen the



Many households reported increased rates of handwashing with soap after constructing tippy-taps.

REASONS TO GET A TIPPY-TAP

'I was told to get [a tippy-tap] and there are inspections.'

—Woman, Mbarara District model village

'I was told to get one because the village is competing.'

—Man, Mbarara District model village

'We got [the tippy-tap] with the water tank, stove and latrine.'

—Woman, ACORD model village

'I built [the tippy-tap] yesterday because I knew visitors (i.e. the interview team) were coming.'

—Woman volunteer, Village Health Team, Ibanda District non-model village

'We were made aware of the advantage [of avoiding contamination of the jerry can].'

—Woman, Ibanda District model village



Tippy-taps are low-cost and can be easily constructed using available materials.

tippy-tap and decided to construct one for herself (rather than being told she should have one). The reason given for construction was that she thought it looked modern and would be attractive for visitors to use. Two other households with tippy-taps were among respondents in non-model villages. One had constructed a tippy-tap four or five years previously, following health education provided by the District Health Authority as part of a cholera prevention campaign. The other was a volunteer in the Village Health Team (VHT) who had been taught about tippy-taps by the Health Assistant a month earlier but had built the tippy-tap the previous day on hearing that she was going to be visited and interviewed. Within model villages, respondents had acquired tippy-taps as the result of direct promotion by health workers rather than diffusion through neighboring tippy-tap users.

Two householders were lapsed users. One from a non-model village said his wife had found the tippy-tap more difficult to use than a jerry can and therefore they no longer have a tippy-tap. He taught adult education classes and had taught a class about the tippy-tap. He learned about the tippy-tap when being trained for the teaching. He believed that only one of his students had constructed a tippy-tap following the lesson and that this was an elderly woman who in his words had *'enough time and money not to be concerned with other things.'* The other

Within model villages, respondents had acquired tippy-taps as the result of direct promotion by health workers rather than diffusion through neighboring tippy-tap users.

‘Is it common? I have not heard.’

–Man, Mbarara District, non-model village

respondent, also male and from a non-model village, had promoted tippy-taps as a volunteer with the Child Health Uganda campaign in 2006 and was now a VHT volunteer. He said that parts of his tippy-tap had been stolen and that he could see no advantage over simply having a jerry can. In his view people construct tippy-taps during campaigns because there are inspections and they fear fines but subsequently drop them.

Another male respondent from a non-model village had a tippy-tap at his other home in Mbarara town. He had it constructed after an inspection from the health department. Although he said he liked the tippy-tap he did not see the need to construct one at his home in the village.

Respondents from households without tippy-taps in non-model villages had not heard of tippy-taps.

In model villages respondents without tippy-taps offered explanations as to why they did not have one. These responses suggest that respondents believed that the interviewers expected them to have tippy-taps but that constructing them was not a high priority for households: Two respondents from the ACORD model village reported that their tippy-taps had been stolen (although inspection beside the latrine found no evidence of their having been constructed). Other respondents who had heard of tippy-taps said that they did not have them because they had only recently moved in (several months ago), were waiting to get the home improvement package (in the ACORD model village), were waiting until they construct a new latrine, or were waiting to hear more about them from the VHT.

The most important advantage was considered to be that it avoids contamination.

3.3 Advantages and Disadvantages of the Tippy-Tap

Householders with a tippy-tap reported that it has advantages over using a jerry can in that it avoids contamination of the jerry can, uses less water, and is easier to use. The most important advantage was considered to be that it avoids contamination.

The possibility of contaminating the jerry can used for handwashing is something that householders were told about by Health Assistants and VHT volunteers during health education sessions (either in group meetings or during household visits). Through health education sessions householders hear that washing hands after using the latrine is important in preventing disease, that provision should be made for handwashing by the latrine, and that the tippy-tap prevents contamination by avoiding contact between hands and the jerry can. They also are informed that the tippy-tap uses less water. Householders who have not been exposed to these health education messages do not mention the need for a solution to avoid contamination of the jerry can. It is not clear whether householders with tippy-taps now felt a genuine need to avoid contamination of their jerry cans as a result of the hygiene education or whether they were simply repeating an explanation given to them by the health workers.

Perhaps unsurprisingly all respondents who had a tippy-tap disagreed with the interviewer’s suggestion that some people thought it did not look very modern.

However, one male respondent (a lapsed tippy-tap user in a non-model village) said he thought the tippy-taps did not look attractive and that this was a problem in promoting them.

Households without a tippy-tap generally had no experience of them and were unable to comment on them. Those that were aware of them said that they believed they are better than a jerry can and that they planned to get one soon. One elderly woman however, reported that she considered the tippy-tap to be childish and unnecessary and suggested that people used to live longer before tippy-taps were invented.

Most tippy-tap users interviewed said that they found the tippy-taps easy to refill. Refilling rates varied according to the size of the household. Reported rates ranged from twice daily to once per week. However, respondents did not want larger reservoirs of water in their tippy-taps as it was thought that these would become stagnant and would allow algae to grow in them.

Most tippy-tap users interviewed also reported having to replace the jerry can, string and wooden frame every year as they wear out and degrade in sunlight. The fact that respondents report making these replacements suggests that they were motivated to continue using them. It is not known if this is because of the ongoing hygiene promotion and inspections or because they have adopted the habit of handwashing with the tippy-tap.

All respondents with tippy-taps reported that they found them easier to use than a plain jerry can. However, all of these respondents continued to use a jerry can

‘Perhaps it is not modern to you but for us it is.’

— Woman from model village

Households without a tippy-tap generally had no experience of them and were unable to comment on them.

REPORTED DISADVANTAGES OF TIPPY-TAPS

Most tippy-tap users interviewed reported having to replace the jerry can, string, and wooden frame every year as they wear out and degrade in sunlight. One respondent suggested that a frame made of metal would be a useful improvement.

Other problems associated with tippy-taps were children playing with them and using all the water and the problem of jerry cans, water, or soap being stolen or used without permission. These problems were particularly acute in villages with severe water shortages and varied depending on the location of the house and the latrine.



‘It is more difficult to dodge handwashing.’

—Woman, ACORD model village

The responses again suggest that tippy-taps are seen as something that is done to comply with the recommendations of the Health Assistants and VHTs.

for handwashing at times other than after latrine use. When asked why, if they genuinely found the tippy-tap easier to use and a means of saving water they had not constructed an additional tippy-tap beside the house, all respondents reacted with embarrassed laughter followed by an explanation such as ‘*We have not been told,*’ ‘*We were not aware of the need,*’ and ‘*If you tell us to we will construct one tomorrow.*’

This suggests two possibilities: 1) despite what respondents reported, there are features of the tippy-tap that make it less convenient to use than a jerry can or 2) that other household handwashing takes place at various locations—meaning that a fixed tap in general or a tippy-tap in particular would not be convenient. The responses again suggest that tippy-taps are seen as something that is done to comply with the recommendations of the Health Assistants and VHTs.

3.4 Effect of the Tippy-Tap on Handwashing Rates

Collecting data on handwashing rates is a challenge and such data are likely to be prone to bias. No data were collected in this study to quantify handwashing. It is likely that the presence of the tippy-tap close to the latrine on the route to the house acts as a salient reminder to wash hands and also facilitates handwashing by providing a convenient source of soap and water. Some households already kept a jerry can beside the latrine to facilitate handwashing but for others the tippy-tap is the first time a handwashing facility has been provided close to the latrine.

Access to a convenient handwashing station has been found to be associated with higher rates of handwashing¹⁰ and decreased fingertip contamination¹¹. However, it is also worth noting findings from rural Bangladesh where the distance from the latrine to the handwashing place was *not* associated with a decrease in handwashing rates¹² and findings from urban Bangladesh where availability of soap at the handwashing place *was* found to decrease with increasing distance from the house¹³. Thus, it may be worth exploring with households the optimal site for a tippy-tap and accepting that this may not be beside the latrine.

Respondents with tippy-taps reported that handwashing after latrine use had increased in their households as a result of having the device.

Respondents with tippy-taps also reported that children enjoyed using them because of the novelty of the foot pedal. The tippy-tap may thus play a useful role in nurturing the handwashing habit among children.

¹⁰ Biran, A., A. Tabyshaliev, and Z. Salmorbekova. 2005. “Formative research for hygiene promotion in Kyrgyzstan.” *Health Policy and Planning* 20 (4) 213–221.

¹¹ Pinfold, J. V. 1990. “Fecal contamination of water and fingertip-rinses as a method for evaluating the effect of low-cost water-supply and sanitation activities on fecoal disease transmission. A case-study in rural North-East Thailand.” *Epidemiology and Infection* 105 (2) 363–375.

¹² Luby, S. P., et al. 2008. “Associations among handwashing indicators, wealth and symptoms of childhood respiratory illness in urban Bangladesh.” *Trop Med Int Hlth* 16 (6) 835–844.

¹³ Luby, S. P., et al. 2009. “Household Characteristics Associated With Handwashing With Soap in Rural Bangladesh.” *Am J Trop Med Hyg* 81 (5) 882–887.

Where homesteads are close together the visibility of tippy-taps may also help to encourage handwashing as a social norm if they become sufficiently common, used, and maintained.

3.5 Implications for Scaling Up

Five attributes of innovations seem to be strongly related to the speed with which they diffuse in populations. These are not objective attributes of an innovation but rather perceptions that the target group holds about it. Additionally uptake of innovations is frequently associated with status seeking.¹⁴

Interviews with householders suggest that the tippy-tap is easy to understand and use; its low cost should make it easy to try out on a limited basis; and users of the tippy-tap identified advantages over previous practices. It should also be reasonably easy to observe the tippy-tap prior to uptake. The tippy-tap does not seem to conflict with existing values; however, the extent to which it addresses a salient perceived need is questionable. Promotion of the tippy-tap aims to create a need amongst householders to avoid contamination of the jerry can when washing hands, and may be successful in this. However, it may be more effective to start with a sound understanding of the existing needs of the target group and to think about how best to address these needs through a facilitating technology. The extent to which the tippy-tap is able to deliver status benefits is also not clear.

The social networks into which innovations are released influenced the speed of diffusion. In the Ugandan context there was little contact between model and non-model villages and, even within villages, homesteads could be fairly isolated from each other. As a result dissemination of knowledge of the tippy-tap was slow and even within model villages not all households were even aware of the tippy-tap.

The projects rely on health education and instruction by Health Assistants or VHT volunteers to create demand for tippy-taps and to give people the skills to make them, and on inspections to encourage and enforce continued maintenance of tippy-taps. The authority of health workers, the

FIVE ATTRIBUTES THAT CONTRIBUTE TO THE DIFFUSION OF INNOVATION

Five attributes of innovations seem to be strongly related to the speed with which they diffuse in populations:

1. The ease with which an innovation can be understood and used;
2. The opportunity to experiment with it on a limited basis;
3. The relative advantage of the innovation over existing practice;
4. The ease with which the innovation can be observed before adoption; and
5. Compatibility with existing values and needs.

use of face-to-face communication and the provision of rewards and sanctions are all factors that have been associated with behavior change and indeed this approach seems reasonably effective, at least in the short term. However there are likely to be problems associated with using this approach at scale because it is very labor intensive, requiring multiple visits to households over an extended period.

Sub-counties vary in size and Health Assistants do not work on a standard schedule. However, typically a sub-county might comprise around fifty villages and a Health Assistant might aim to visit a village two or three times during a year. A village may comprise eighty to one hundred households. In a single day, if households are close together and householders are at home, a Health Assistant might manage to visit thirty households. However, households are often scattered and people are often away from home meaning that the actual number of households reached is likely to be much lower. Radio achieves wider coverage than Health Assistants and VHTs. Most householders in model and non-model villages had some exposure to health and hygiene education through the radio. However, promoting a new technology such as the tippy-tap through a non-visual communication channel is likely to be difficult. This means that the task of promoting the tippy-tap currently falls largely to the volunteer VHTs.

¹⁴ Rogers, E. M. 2003. *Diffusion of Innovations*. 5th edition. Free Press, New York.

VHTs are probably reasonably effective at delivering simple health education messages over limited time periods. They are probably less suitable for delivering motivational or social marketing messages and would probably be unwilling to invest large amounts of time over long periods in promoting handwashing and tippy-taps.

Another issue related to scale is the sustainability of the intervention. As tippy-taps were still being actively promoted in the model villages at the time of this study, it is not possible to comment on the long-term sustainability of their use. However, inspections and the possibility of sanctions appeared to play an important role in promoting and reinforcing the use of tippy-taps. It is not clear if tippy-taps alone will deliver sufficient benefits for households to sustain their use once the possibility of inspections subsides. This problem may be exacerbated by the need to replace worn-out components annually since in the absence of inspections householders may lack the motivation to maintain tippy-taps in working order. On the other hand, it is possible that inspections over a limited period of time will prove sufficient to allow a handwashing habit to develop through repetitions of the behavior, with the presence of the tippy-tap acting as a cue, and that this habit will be sufficiently powerful to motivate maintenance and continued use of tippy-taps. Research on sustainability of hygiene behavior change in schools has found this to be positively correlated with the duration of the intervention.¹⁵ It is not known whether there is an optimal duration for tippy-tap enforcement after which maintenance of the practice becomes stable.

A commercially marketed enabling technology might be able to achieve more widespread coverage in the long run avoiding the need to rely on volunteers for promotion and distribution. In view of the low cost and ease with which households are able to make tippy-taps it is unlikely that they could be commercially marketed in their current form. There might be a market for an improved version of the

tippy-tap that looked more attractive and did not wear out so rapidly.

This is not to imply that a commercial handwashing technology is a necessity. Social (not for profit) marketing of the tippy-tap might also succeed. However, attempts to market a handwashing technology, whether commercially or as part of a social marketing or behavior change communication approach are most likely to succeed if the product promoted is based on a sound understanding of the needs and preferences of the intended consumers. The promotion of the technology must also be based on drivers (such as status) or other behavioral determinants identified through research. Respondents are only able to judge the usefulness and performance of the tippy-tap relative to other facilitating technologies. In this study neither households with tippy-taps nor those without had experience of using an alternative technology besides the jerry can and they could not tell whether the tippy-tap is the technology that best addresses their needs.

3.6 Conclusions

Tippy-taps are a cheap and acceptable enabling technology for handwashing after latrine use in this rural Ugandan population.

The tippy-taps probably increased handwashing after latrine use by providing convenient soap and water, and by acting as a salient cue to wash hands. The tippy-taps were also attractive and easy for children to use and may help foster the habit of handwashing among children.

Tippy-tap users perceived benefits of the tippy-tap but it is not clear if these perceptions motivated adoption of the technology or if they came about as a result of becoming a tippy-tap user. Perception of the tippy-tap among non-users is unknown as they generally had no knowledge of the technology. Some consumer research might be useful to understand the needs of householders in relation to handwashing and whether the tippy-tap is the technology that best meets these needs or whether a different technology, either homemade or commercially produced, might be more desirable. Research of this sort carried out recently in

¹⁵ Cairncross, S. and K. Shordt. 2003. "It Does Last. Some Findings from a Multi-Country Study of Hygiene Sustainability." *Waterlines* 22: 3 4–7.

Vietnam was useful in revealing consumer needs such as a preference for squatting while washing hands and a desire to control the flow of water.¹⁶

Although this study did not collect quantitative data on the prevalence of tippy-taps, diffusion of the tippy-tap beyond the model villages in which it was promoted seemed very limited. This may be because the social networks connecting villages are relatively few and weak and because additional means of promotion are not currently used (radio may not be a suitable medium for this).

The ‘model village’ approach in its current form would be difficult to scale up to cover an entire district and beyond

because it relies on labor-intensive, repeated visits to villages and households. An alternative might be to use radio as a means of stimulating interest and promoting demand for a handwashing technology, and then to use a short, intensive intervention over two or three days in a village in an effort to get uptake in a majority of households, hoping that visible uptake by the majority would create a social norm that would drive uptake in remaining households and help sustainability. This could be supported by efforts such as district level direct consumer contact events and low-literacy comic strips such as these being used or planned for hygiene promotion in Tanzania.¹⁷ Radio could again be used to reinforce the belief that having and using a handwashing technology is a social norm.

¹⁶ Devine, J. 2010. *Insights from Designing a Handwashing Station for Rural Vietnamese Households*. WSP Learning Note, February.

¹⁷ Devine, J and Y. Coombes. 2010. Personal communication. WSP. June.

Appendix 1: ACORD Project

The ACORD water and sanitation project began in 2008 and is scheduled to run for three years. The project is working in eight model villages, each in a different sub-county. These villages were selected by ACORD in collaboration with the district Department of Health as ones in which the project is thought likely to have a reasonable chance of success (i.e., they are not the poorest and they have reasonably well functioning and supportive leadership structures and a need for improvements to water supply).

Scope of the Intervention

The project is not only promoting hand hygiene but a package of home improvements including rainwater harvesting, improved pit latrines, improved domestic hygiene (through use of dish racks, garbage disposal pits, urinals, and bathing shelters) and fuel efficient stoves.

The project uses a combination of community mobilization, health education, and social pressure and enforcement along with a subsidy for the purchase of materials and technical support for construction. The approach followed by the project is to establish model villages at the sub-county level in which the interventions are promoted through a process of community mobilization, construction of demonstration units (latrines, stoves, water tanks, and tippy-taps), technical training of selected individuals and group meetings, household visits, and community events to promote uptake and behavior change. Meetings and community events are open to group members as well as non-group members. Hygiene promotion focuses on education and raising awareness about diarrhea transmission routes, the importance of handwashing with soap after latrine use and before handling food, and the use of the tippy-tap to avoid contamination of the jerry can while handwashing. As described by one ACORD staff member this amounts to *'telling people the do's and don'ts and explaining the key times for washing hands.'*

Additional promotion of technologies and health messages comes from the use of radio by the district health authorities and by ACORD. Since 2009 there have been

fortnightly slots on a private radio station. This is funded 50 percent by ACORD (as part of a different project) and 50 percent from the radio station's corporate social responsibility budget. The talk show slots last for one hour and cover a variety of health topics including water and sanitation and hygiene issues.

In each model village the project works with three or more selected women's savings groups. These groups operate as credit groups and allocate funds to households on a rotating basis to enable them to purchase the promoted technologies. Local materials and labor are provided through the savings groups. Non-local materials are sourced through the project at a 50-percent subsidy through which ACORD matches each household package of technologies funded by the savings groups. A household package comprises a rainwater-harvesting tank, an improved latrine (with cement slab, vent pipe, and iron roof), a fuel-saving stove, and a tippy-tap.

The project is working in a water-scarce area in which women report journey time of an hour or more to collect water. The experience of ACORD has been that rainwater harvesting systems are a priority for households and that provision of these systems serves as an entry point for the project allowing the opportunity for promotion of handwashing and other household hygiene practices.

The project works with the district Department of Health at the sub-county level. In each sub-county one Health Assistant from the Department of Health is active in the model village. In the village the Health Assistant is supported by a volunteer coordinator who acts as a point of contact between the project and the savings groups and households and who coordinates and facilitates meetings and household visits. The Health Assistants work with the savings groups to agree on action plans and to arrange for follow-up support visits as needed. Sensitization visits raise awareness of the project aims and way of working. Subsequent visits to households focus on priorities with

respect to hygiene and water and sanitation as identified by the Health Assistant or village coordinator in discussion with householders. Health Assistants facilitate group meetings with support from ACORD staff as needed. These meetings center on members of the savings groups but are open to all villagers. Progress and plans for implementing changes in households are reviewed, and also an opportunity is provided for the Health Assistant to promote or highlight appropriate health messages. The project employs two social workers and three technical staff (two civil engineers and one plumber) to provide support in the villages as needed.

Selection of Handwashing Technology

There was no formative research to inform design of the handwashing technology promoted in the project. The tippy-tap technology was copied from a UNICEF project in Uganda and was regarded by the ACORD project team as being the only suitable handwashing enabling technology available, mostly due to its low cost.

Schools

The project is not working in schools. ACORD would like to include a schools element in subsequent projects if sufficient funding is available.

Planning for Sustainability

Sustainability is planned for by using existing structures at the sub-county and village levels (Health Assistants and savings groups respectively), and by training masons at the village level. Health Assistants are already trained in technologies and basic promotion techniques. The intention is that Health Assistants will be able to continue the work, spreading to neighboring villages once the project ends.

Baseline

A baseline survey of water coverage was conducted at the start of the project in 2008. At the time of the visit the consultant was unable to obtain the report of the baseline survey.

Monitoring and Evaluation

The 2008 and 2009 annual reports include the following among the activities completed per year:

- Construction of forty-four domestic rainwater harvesting tanks

- Construction of forty-four household ventilated improved pit (VIP) latrines
- Construction of forty-four fuel saving stoves
- Construction of 300 tippy-taps
- Household visits to carry out hygiene promotion in 300 households¹⁸

There had been no evaluation of the project at the time of the study. Anecdotally, villages vary in how much uptake is achieved. It is reported that most success seems to be achieved when the village chairman is actively involved and when the volunteer coordinator at village level is a woman. Success also depends on the social and political interactions that take place at village level.

The ACORD Project in Mwizi Sub-County Model Village

The model village in Mwizi sub-county was visited during this study. The village had a population of 108 households. The project worked with five women's savings groups in this village (the group members are predominantly but not exclusively women and predominantly but not exclusively from the model village). There were fifty-seven households that were members of at least one of the savings groups involved in the project. The savings groups were selected by ACORD for involvement in the project on the basis of their apparent capacity to collect and distribute funds effectively among their members. The opportunity for group members to obtain rainwater-harvesting systems (water tanks and pipes) was the primary motivation for groups to join the project.

A village water and sanitation committee had been formed from members of the five groups. The committee carried out home visits to inspect hygiene and sanitation facilities and can reportedly impose sanctions on households that fail to comply with their recommendations. Sanctions are said to include the possibility of a fine for not constructing a latrine and the social sanction of the transgressing household not being used as a meeting place during the rotating cycle of savings group meetings. Households are reportedly visited approximately every two months.

¹⁸ The project is working in eight model villages. Assuming that these villages are of similar size to those visited during the study, this would equate to a population of around 800 households.

Appendix 2: Government of Uganda Intervention

The Government of Uganda intervention started in 2007 and is ongoing. This intervention uses essentially the same approach as the ACORD intervention, that is, dissemination of a variety of health messages through Health Assistants working with village level volunteers. The main differences are that materials are not provided and the intervention does not work with savings groups.

Each sub-county has a Health Assistant appointed by the District Health Authority. Health Assistants visit the villages within their sub-counties and work with village level volunteers to disseminate health messages. In each sub-county there is a model village in which the work of the Health Assistants is concentrated. However, Health Assistants also carry out similar work to a lesser extent in the other villages of the sub-county.

Messages include but are not restricted to the need to wash hands at key times, the need to have a handwashing facility by the latrine, and the construction and use of tippy-taps. Other messages include construction of drying racks for kitchen utensils, growing vegetable gardens, digging garbage pits, boiling water for drinking, safe water storage, allowing

daylight into houses, constructing and maintaining sanitary latrines, and construction of bathing shelters. There was no indication of any strict hierarchy as to the relative importance of these different messages but rather that Health Assistants were free to use their own judgment as to what was appropriate in order to achieve a suite of changes.

Each village has a Village Health Team (VHT) comprising volunteers trained by the District Health Authority and used to disseminate health messages and carry out inspections to help encourage and enforce changes at household level. These include messages on sanitation and hygiene. Prior to the establishment of VHTs the Child Health Uganda project (a Ugandan Government initiative) operated in a similar way, promoting health messages through village level volunteers and carrying out inspections of sanitary conditions in households.

A limited number of rainwater-harvesting systems is available annually through the sub-county municipal authorities at a 50 percent subsidy. In 2010, forty systems were allocated to Mwizi sub-county in Mbarara district by the district authorities.

Appendix 3: Terms of Reference

1. Objective and Purpose of Consultancy

The objective of this consultancy is to conduct a case study, delving into the innovation process and framework.

The purpose of the case study is to investigate the process in which some of the enabling products have been developed, what results were obtained, and what lessons can be learned. The results will inform WSP's Global Scaling Up Handwashing Project and the wider water, sanitation, hygiene promotion, and health communities on the potential role, value, and limitations of enabling products and provide insights into promising practices to maximize scale and sustainability.

2. Background

The Water and Sanitation Program (WSP) is implementing the Global Scaling Up Handwashing Project with support from the Bill & Melinda Gates Foundation. The project will test whether innovative promotional approaches to behavior change can generate widespread and sustained improvements in household hygiene and sanitation practices in Peru, Senegal, Tanzania, and Vietnam. The project also has a significant learning objective, an important component of which is to ascertain the key factors that influence handwashing behavior change (also known as behavioral determinants).

Enabling products and technologies are some of the “external factors” that influence individuals’ chance to perform a behavior, regardless of their ability and motivation to take action.¹⁹ Availability of enabling products and technologies is often overlooked in the design of handwashing initiatives, although it has been well documented that behavior change is most successful if the behavior is not

only intentional, but also feasible for the target population to adopt. These “external factors” noted above have been shown to facilitate handwashing behavior, in combination with other behavioral determinants such as attitudes and beliefs about handwashing and knowledge about the positive consequences of handwashing, among others.

In the case of handwashing, tippy-taps are perhaps the best-known enabling product. However, there are many others including handwashing stations, soap nets, and soap features themselves. A quick online search reveals several guidelines and instructions on how to construct tippy-taps or other enabling products. However, very few evaluations or assessments, if any, can be found which would document lessons learned, promising practices (including implementation models), successes, and challenges, particularly with respect to changing behavior at large scale, and that might inform the design of hygiene promotion programs. This consultancy aims to fill this void and push the learning envelope forward in this area.

For the purposes of this consultancy, the spectrum of enabling products and technologies to be included is limited to those whose primary purpose is to enable handwashing.²⁰ In this light, technologies that increase water availability, such as rain water harvesting, would be excluded.

Further examples are provided by products and technologies that allow or provide the following:

- Access to water in sufficient quantity to facilitate handwashing, such as use of a *tippy-tap*. *Tippy-taps* are simple and economical handwashing stations made with commonly available materials (e.g., a gourd, jerry can, and so forth) that allow for release

¹⁹ As part of its Global Scaling Up Handwashing Project, WSP developed a behavior change framework to explain handwashing behavior. Called FOAM (Focus on Opportunity, Ability and Motivation), the framework identifies the key factors or determinants that influence handwashing. Enabling products and technologies fall under the Opportunity category of determinants.

²⁰ Both informal and commercially branded products will be considered in the compilation of the resource guide.

of small quantities of water for handwashing, thereby avoiding wasting water.

- Management of soap within a household or institution (e.g., school, workplace). The end purpose is to prevent waste, theft, or spoilage or to facilitate access. Soap nets and dishes are examples.
- Availability of a handwashing station: a designated or mobile space bringing together water and soap to wash hands in the household or an institution that, ideally, is in close proximity to the sanitation facility or the food preparation area.

3. Scope of Work

Conduct a case study on enabling products for handwashing:

The consultant will execute the following tasks:

1. Develop protocol/framework for a case study based on initial research questions to be provided by WSP (see attached for partial list), including rationale and justification for country selection, objectives, methods (including use of knowledge management tools such as emerging learning maps), discussion guides, timeline and budget, and finalize based on comments received from WSP and partners.
2. Conduct case study.²¹
3. Prepare PowerPoint presentations outlining key findings and recommendations.
4. Prepare final report and finalize based on comments from WSP and partners.

Annex

Partial List of Research Questions for Case Studies

1. Implementation Strategy:
 - a. What implementation model was used (e.g., community-based, private sector, etc.)?
 - b. Was effort part of a stand-alone handwashing initiative or part of an integrated/multiple behaviors project?
 - c. What were roles and responsibilities of organizations/agencies involved?

²¹ Peru may be considered as WSP/Peru is currently piloting a handwashing station in collaboration with a plastics manufacturer and soft drink producer. Experiences and emergent learning from this innovative implementation model need to be documented.

- d. How was/were design(s) of enabling product(s) developed? What field/pre-testing was conducted? Did design(s) evolve over time?
 - e. What was the process of innovation and what can be said about its diffusion within the community?
 - f. What communication strategy and tools were used to support the rollout or diffusion of the product?
 - g. What, other “marketing mix” strategies, if any, used (e.g., distribution of the product)?
 - h. How is/was sustainability planned for?
2. Results and Outcomes²²
 - a. What coverage and use were obtained? Were these results maintained or have they evolved over time? Why?
 - b. What effect on handwashing rates and behavior did they have?
 - c. What monitoring supported the diffusion efforts and what did it consist of?
 - d. Was any formative or evaluative research conducted and if so, what are key findings?
 - e. Were spillover effects reported/observed (e.g., on neighboring communities)?
 - f. Were halo effects reported/observed (e.g., interest in other innovations such as improved stoves, other improved hygiene practices, etc.)?
 - g. Were any other environmental factors present that would have influenced outcomes (e.g., cholera outbreak)?
 - h. What perspective do local stakeholders have with respect to results and outcomes?

3. Lessons Learned:

- a. What are key lessons learned from project design, implementation, research, and M&E? What could have been done differently, less, more, or better?
- b. What limitations to achieving greater scale can be reported and how could these have been overcome or overcome in the future?

²² As the case study is qualitative, no survey is expected to discuss results and outcomes. However, it is expected that any secondary data available would be examined.

Appendix 4: Schedule of Activities

Date	Activities
May 10, 2010	Travel to Uganda
May 11, 2010	Travel to Mbarara District Meeting with ACORD
May 12, 2010	Meeting with Chief Administrative Officer Mbarara District Interview with volunteer coordinator for ACORD model village Interviews with households in ACORD model village in Mwizi sub-county
May 13, 2010	Interviews with households in neighboring village 1, Mwizi sub-county
May 14, 2010	Interviews with households in neighboring village 2, Mwizi sub-county
May 15, 2010	Meeting with Assistant Chief Administrative Officer Ibanda District Meeting with Assistant District Health Officer Ibanda District Meeting with Health Inspector, Ibanda District Interviews with households in Mbarara District model village
May 16, 2010	Travel to Ibanda Interviews with households in sub-county model village, Ibanda District
May 17, 2010	Interviews with households in neighboring village, Ibanda District Travel to Mbarara
May 18, 2010	Wrap up Meeting in Mbarara District Travel to Kampala
May 19, 2010	Travel to UK

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Photographs courtesy Adam Biran.

Global Scaling Up Handwashing is a WSP project focused on learning how to apply innovative promotional approaches to behavior change to generate widespread and sustained improvements in handwashing with soap at scale among women of reproductive age (ages 15–49) and primary school-aged children (ages 5–9). The project is being implemented by local and national governments with technical support from WSP. For more information, please visit www.wsp.org/scalinguphandwashing.

This Working Paper is one in a series of knowledge products designed to showcase project findings, assessments, and lessons learned in the Global Scaling Up Handwashing Project. This paper is conceived as a work in progress to encourage the exchange of ideas about development issues.

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