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A094957940 ISN: 961712 PERIODIEK OPGEHAALD 2011-06-10

Aanvraagidentificatie: john butterworth **Verzoeke te behandelen voor:** 24-06-2011 **Ingediend door:** 0003 **Datum en tijd van indienen:** 10-06-2011 15:50 **Datum plaatsen:** 10-06-2011 15:50 **Type instelling:** overige (non-profit) **Ingediend via:** NCC **Geplaatst bij:** WWW

Titelisn: 52977 **PPN: 242890997**

Water science and technology : a journal of the International Association on Water Pollution Research, Voortz. van: Progress in water technology = ISSN 0306-6746

Gewenst: 2011-00-00 **Deel:** 63 **Nummer:** 5 **Elektronisch leveren(EMAIL)** (EMAIL) **Email adres:** westerhof@irc.nl

Auteur:	**Titel van artikel:**	**Pagina's:**
harvey	zero subsidy strategies for accelerating access to rur	1038-1044

WWW			Vol. 29 no. 10(1994)-
FORUM	STACKS	NN40039	Vol. 13(1981)-

zoek fulltext

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Fakturen zenden aan: IRC Int. Water and Sanitatation Centre
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Zero subsidy strategies for accelerating access to rural water and sanitation services

Peter A. Harvey

ABSTRACT

Community-Led Total Sanitation (CLTS) and Household-Led Water Supply (HLWS) are zero subsidy approaches to water and sanitation service provision that have been recently piloted in Zambia. The increases in access to sanitation and toilet usage levels achieved in one year under CLTS were far greater than any achieved in subsidised programmes of the past. Similarly, HLWS has shown that rural households are willing to invest in their own infrastructure and that they can increase coverage of safe water without external hardware subsidy. The promotion of self-sufficiency rather than dependency is a key component of both approaches, as is the focus on the development of sustainable services rather than the external provision of infrastructure. Zero subsidy strategies have the potential to deliver far more rapid increases in service coverage and higher levels of sustainability than the conventional subsidised approaches that predominate in low-income countries.

Key words | rural, sanitation, water

Peter A. Harvey
Chief,
Water, Sanitation and Hygiene,
UNICEF,
PO Box 33610,
Lusaka,
Zambia
E-mail: *pharvey@unicef.org*

INTRODUCTION

Sub-Saharan Africa is not on track to meet the Millennium Development Goal (MDG) targets for water supply and sanitation (UNICEF/WHO 2008). This lack of progress suggests that current strategies are ineffective in delivering services. The situation is compounded by low levels of sustainability; it is estimated that more than one-third of rural water systems in the sub-continent are non-operational (RWSN 2008). Business as usual, therefore, will not increase service levels sufficiently to meet the MDG targets. Providing safe water and basic sanitation to meet the MDGs will require substantial economic resources, sustainable technological solutions and courageous political will (Moe & Rheingans 2006). It also requires innovative implementation strategies which challenge the status quo.

Conventional approaches to rural water supply and sanitation service provision in Africa focus on subsidised provision of facilities. The predominant water supply technology promoted is the community owned and managed handpump-equipped borehole and the predominant sanitation technology is the household simple or ventilated-improved pit latrine. Typically, 90–100% of the cost of community water systems is subsidised by the Government or support agency, while anywhere between 30% and 100% of the cost of household latrines is subsidised. Such subsidy levels limit severely the service expansion required to ensure access to safe water and improved sanitation. They also fuel a sense of dependency on external support.

It is estimated that in 2006 only 51% of the rural population of Zambia had access to improved sanitation, while only 41% had access to safe water (UNICEF/WHO 2008). The increase from 1990 to 2006 was 9 percentage points each for both sanitation and water supply. At the current rate of increase the MDG targets for water supply and sanitation will be missed by 20 and 15 percentage points respectively (see Figure 1). This would mean that 44% of the rural population will still lack access to improved sanitation and 54% will lack access to safe water in 2015.

It is clear that conventional strategies are not accelerating access to water and sanitation at the desired rates. Given this situation, in 2007 and 2008 the United Nations Children's Fund (UNICEF) in collaboration with the Government of the Republic of Zambia began piloting two new approaches to increase access to water supply and sanitation respectively, which do not subsidise hardware provision and which are

doi: 10.2166/wst.2011.287

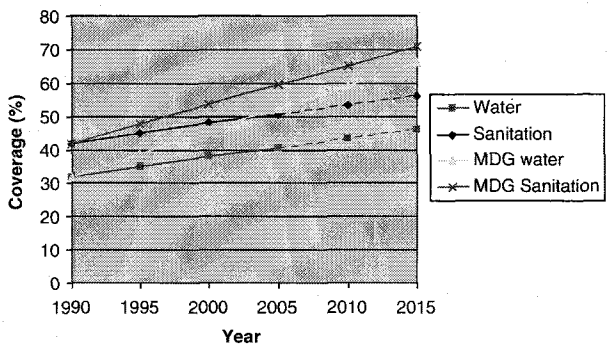

Figure 1 | Water supply and sanitation coverage trends in rural Zambia.

designed to promote self sufficiency and sustainability. This decision was based on increasing evidence from Asia which indicated that hardware subsidies for sanitation were not effective and tended to increase community dependency rather than generate and respond to real demand (Jenkins & Sugden 2006), and that non-subsidised approaches were effective in increasing coverage (Pattanayak *et al.* 2009). At this time, however, there was little experience of such approaches in Africa and almost no experience of non-subsidised approaches for water supply. This paper will outline the experiences of implementing these two zero subsidy strategies in Zambia and will draw lessons that are likely to be applicable to other countries.

METHODS

The two approaches that incorporate zero tolerance to external hardware subsidy are Community-Led Total Sanitation and Household-Led Water Supply. These service provision strategies require investment, but funds are used to mobilise communities and households and to create an enabling environment for indigenous private sector participation, rather than to construct infrastructure. The focus is on facilitating a process through which community members recognise the importance of improved water and/or sanitation and decide to do something about it themselves. This promotes self-sufficiency and the desire to search for sustainable solutions rather than dependence on externally-imposed technologies and strategies.

Sanitation

CLTS is an approach which facilitates a process of empowering local communities to stop open defecation and to build and use latrines without the support of any external hardware subsidy (Kar & Pasteur 2005). CLTS was first implemented in Bangladesh in 1999 and has since spread to other parts of Asia, Africa and Latin America.

CLTS is based on the concept of self-respect rather than on standards or health. Sector professionals all too often place emphasis on engineering standards or construction quality, and the need for charity (i.e. subsidy) for the rural poor. CLTS challenges these norms by placing emphasis on community dynamics and individual perceptions and emotions as the drivers of sanitation provision by communities themselves. Communities are "triggered" by a process led by trained CLTS facilitators, which enables them to see, and feel, the negative aspects of open defecation. One critical aspect of the approach is that the term "shit" or the local equivalent is used. Standard terms such as "excreta", "human waste" or "faeces" detract from the fact that shit is unpleasant and it's not nice to have it lying around in the open, nor is it nice to effectively eat it by failing to break faecal–oral transmission routes. The use of the term "shit" is initially shocking to many participants and it's important that this is the case, as this shock factor is a key part of the triggering process.

The triggering process is one of 'guided discovery' whereby the CLTS facilitators take community members through a series of steps which are designed to provoke a sense of shame, disgust and irresponsibility. This is not achieved by telling people that they are disgusting or irresponsible but by allowing them to appreciate the fact that open defecation is not pleasant or hygienic, and neither is it necessary. Triggering is carried out in a humorous manner and facilitators must be able to lead this effectively. The humour and applause are designed to make people question why they are laughing about such a "private" matter and consequently provoke a sense of discomfort about their current actions. As a result, individuals become motivated to stop open defecation and to build their own toilets. Households are not provided with material or financial support, nor are they expected to follow fixed designs, but some technical advice is provided where necessary. The predominant message is that each household can do something to improve the current sanitation situation without external support in the form of materials, equipment or infrastructure. Communities are encouraged to make a resolution to become Open Defecation Free (ODF) and a Sanitation Action Group is formed in each village to oversee and monitor the process.

CLTS was initially piloted in Zambia in Choma district in late 2007. The district was selected as it had one of the lowest levels of sanitation coverage at 27% and many of the communities had not been subjected to subsidised sanitation projects in the past. The pilot was led by the District Council

with financial and technical support from UNICEF. Stakeholders involved in the pilot and trained as facilitators included traditional leaders (in particular the respective chiefs of the pilot areas), the Mayor, Councillors, and staff from the District Council and relevant line ministries. An initial target of 12 villages was selected to determine whether the approach could be successful; once this was seen to be the case the programme was scaled up rapidly to over 500 villages within the district.

Water supply

HLWS or Self Supply is an approach to water supply which concentrates intervention and management at the lowest level, including 100% self-financing of infrastructure development by the users themselves. This is concentrated at household level and is complementary to conventional community supplies. Evidence suggests that individual households are more willing to invest in their own privately-owned water supply than in a communal one and thereby make incremental improvements to advance up the water supply ladder from traditional unimproved sources to improved sources (Sutton 2006). In order for HLWS to be successful it is essential to create an enabling environment in which there are enabling policies, sufficient private sector capacity to deliver services to households, local access to appropriate technologies and technical advice, and effective financial mechanisms and markets.

Zambia was deemed to be an appropriate country to pilot HLWS since it is estimated that more than 2.3 million people in Zambia (more than 25% of the rural population) rely on water from traditional hand-dug wells. In addition, rural communities are often scattered over large areas, which means that the standard design population of 250 people per handpump cannot be attained. Even where handpumps are installed the sustainability of these is often poor, with an estimated 32% of pumps in Zambia non-operational (MLGH 2008).

In the past, traditional wells had all been considered unsafe and the water quality questioned. However, research in Zambia has shown that water from traditional sources (even without improvement), such as hand-dug wells and scoopholes, is often of reasonably good quality with over 50% meeting the World Health Organization (WHO) faecal coliform guideline value of 0 cfu/100 mL (see Figure 2). The protected hand-dug well has also been included as an improved water supply option in the Government's National Rural Water Supply and Sanitation Programme (NRWSSP) (MLGH 2008), which means that there is a favourable policy environment for the HLWS approach.

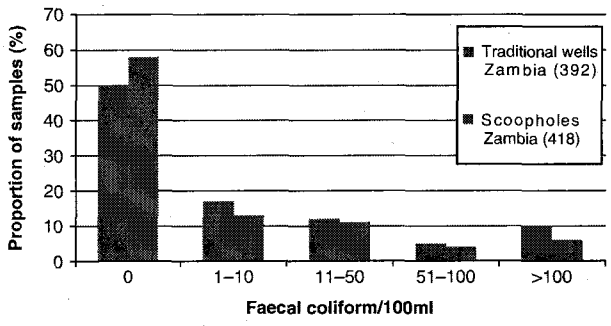

Figure 2 | Microbiological water quality of different sources. Source: Sutton (2006).

The HLWS pilot focused on four districts in Luapula province: Chiengi, Nchelenge, Mansa and Milenge. The geographical area was selected on the basis that the province had the lowest water supply coverage level in the country at 10% (CSO 2003) as well as large numbers of traditional hand-dug wells. Two Non-Governmental Organizations, WaterAid and Development Aid from People to People (DAPP), were engaged by UNICEF to manage the process in collaboration with the relevant District Councils. In order to create an enabling environment, initial efforts focused on assessing and stimulating householder demand, assessing the interest and capacity of the private sector, developing artisan skills and capacity, and identification of demonstration households.

To assess household demand and potential a baseline survey of 440 water sources and respective users was carried out in the project districts in Luapula province. This survey revealed that over 80% of traditional water sources were owned by individual households and that almost all of these were shared with neighbouring households without obligation (see Figure 3). Over 70% of water sources served between one and 20 households, with fewer than 10% serving more than 50 households (see Figure 4).

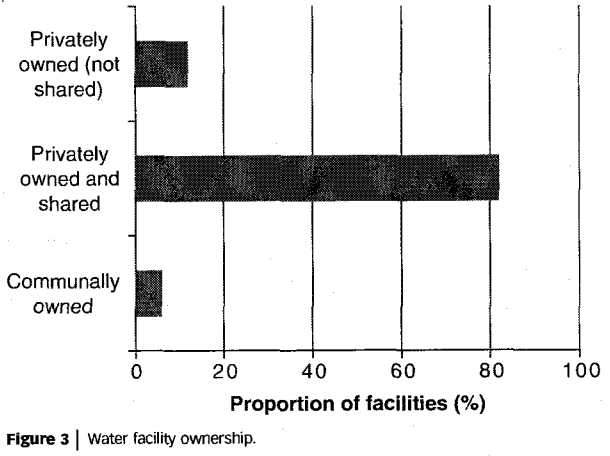

Figure 3 | Water facility ownership.

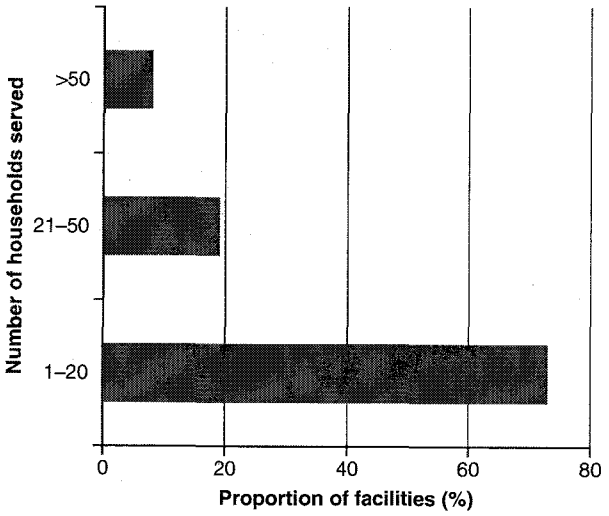

Figure 4 | No. of households served.

Almost 60% of traditional water sources were less than 10 m away from the household and over 90% were less than 25 m away. Meanwhile, over 75% of alternative water sources (most of which were unprotected) were over 100 m away and 60% were more than 250 m away. This shows that people often rely solely on one well as their main water source. Microbiological water quality was acceptable (0 cfu/100 mL) in over 35% of wells without any improvement, and only 15% of wells had faecal coliform levels above 100 cfu/100 mL. This suggested that the vast majority of wells would meet the WHO guideline value following source improvement. The construction quality of the vast majority of wells was relatively poor: 88% had no concrete apron and more than 70% used a plastic container on a rope to lift water. The majority of wells surveyed provide water throughout the year and for those that dry up this problem can often be resolved by deepening, which is one of the improvements included in the HLWS approach.

More than 90% of well owners reported that they were willing to meet the costs of improving their wells. The most commonly stated preferred improvements were improved lifting device, apron construction, re-deepening and lining. Fewer than 15% of well owners said they would be willing to charge their neighbours for drawing water from their well, suggesting that motivation for HLWS is likely to be driven by individual pride and status within the community rather than financial gain.

Following the baseline survey, plans were instigated to raise awareness and understanding of the approach among all stakeholders, build private sector capacity (e.g. through training of artisans and establishment of Artisan Associations and rope pump manufacturers) and mobilise households through social marketing and demonstrations.

RESULTS AND DISCUSSION

CLTS

The initial CLTS pilot in 12 villages showed an astounding increase in sanitation coverage (defined by the ratio of number of toilets to number of households) from 23% to 88% within a three-month period, for a total rural population of 4,536; 75% of communities verified as Open Defecation Free (ODF). The relative increases in sanitation coverage are represented graphically in Figure 5.

In one community coverage increased from 0% to 93%, while in another it increased from 14% to 102%, i.e. there were more toilets than households. Interestingly, two of the three villages with highest initial coverage made the least progress, with no increase in the number of toilets and coverage remaining static at 55% and 65% respectively. This is thought to be because they had experienced previous sanitation programmes which had provided hardware subsidy.

As a result of this initial success, 517 villages were triggered during 2008. Over 14,500 toilets were constructed by households with zero hardware subsidy and approximately 90,000 people gained access to sanitation in less than a year. For the triggered area overall sanitation coverage increased from 38% to 93% and a total of 402 villages were verified as ODF. The only communities in which the CLTS approach had very little or no effect were those in which previous subsidised sanitation approaches had been implemented. It is interesting to note that none of these had 100% coverage and open defecation was still practised in the majority.

Figure 6 summarises the findings of a toilet quality survey in CLTS communities which revealed that 99% of toilets were

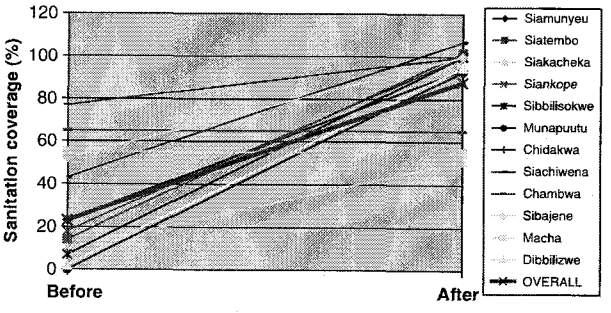

Figure 5 | Sanitation coverage before and after CLTS triggering.

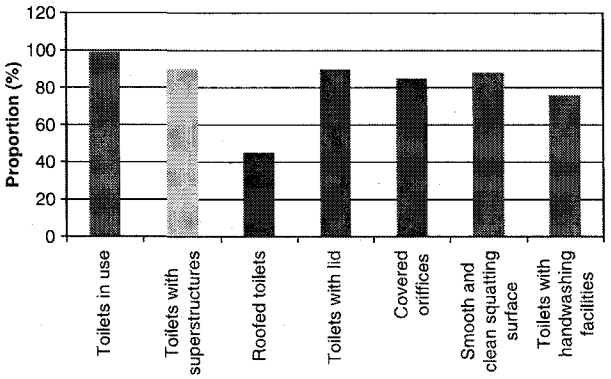

Figure 6 | Toilet quality indicators.

in use and 88% had a smooth and clean squatting surface, thereby meeting the national NRWSSP definition for improved sanitation. Such rapid increases in sanitation coverage and usage have never been achieved in Zambia under subsidised sanitation programmes. It is important to note, however, that even though CLTS involves zero hardware subsidy significant investment is still required. The approach should not be seen as a convenient way for governments and support agencies to abrogate responsibility for sanitation or to reduce sanitation budgets. The cost of CLTS in Choma district was approximately $400 per ODF village, $14 per household using improved sanitation and $2.3 per capita. These costs include sensitisation of community leaders, training of facilitators, triggering of communities, and monitoring, review and evaluation activities. While per capita costs are likely to decrease as the approach expands to more communities, long-term investment for sanitation will still be needed for such activities.

In addition to the increase in toilet coverage and usage, the CLTS approach has led to a range of other community-led initiatives. These include tree planting, health and education promotion, and environmental protection measures. A district Joint Monitoring Team for Sanitation (JMTS) has also been established incorporating multiple stakeholders and chaired by one of the traditional chiefs. The JMTS has set a target for Choma to become an open defecation free district and, to complement the continued CLTS programme, has implemented a programme of legal enforcement to ensure adequate sanitation in institutions, public places and tenant households as specified in the Zambian Public Health Act. These initiatives have arisen due to the self-awareness created by the CLTS approach that the environment can be improved and communities can develop without continued dependence on external support. Given the success of CLTS in Choma district, the programme has now been expanded to neighbouring districts and CLTS has been adopted as one of the Government's key strategies for rural sanitation provision in the recently developed Sanitation Component of the NRWSSP.

HLWS

Initially, the idea of self-financing of water supply was met by a widespread disbelief that householders could improve their water supplies in any way. However, once the HLWS pilot started it became clear that the lack of improvements in the past was primarily because householders did not know what improvements were possible and did not have access to the skills and equipment necessary to make them. The incremental aspect of the HLWS approach is important as it allows households to improve their water sources at a rate which is practical and affordable to them. Once trained artisans began to market their services and community based organisations began to raise awareness of possible improvements this situation changed dramatically as people realised what they could do themselves. It also became clear that households had a strong desire for individual rather than community solutions if they were able to invest or access credit. The average cost of a protected hand-dug well was US$75–100 with an additional annual or bi-annual maintenance cost of US$12–20.

In the space of approximately nine months over 100 households made improvements to their privately-owned water supplies, serving an estimated 7,200 people. This uptake has been relatively slow (especially compared to the rapid results of CLTS) but this is because it took time to establish an enabling environment and it is expected that the rate of expansion will increase as the cascade effect occurs. Incremental improvements promoted included the following (in order of increased risk reduction):

- A raised lip, drum or bottomless bucket to protect and support the top of the well and seal it from inflow;
- A mound around the mouth of the well to avoid ponding of water and seepage;
- A lid to close the well opening and protect it from wind-blown debris and objects/animals falling in;
- A single rope and bucket used by all;
- An old basin to hold the rope and bucket and keep them clean;
- A roof to keep the rain out and the area around the well dry;
- A stand for bucket filling and associated drainage to take away spilled water;

- Well lining using concrete rings or bricks;
- Concrete apron and raised parapet at the wellhead;
- Bucket and windlass installed on concrete wellhead;
- Rope pump installed on concrete wellhead.

So far all responses of households have been achieved without any subsidy or credit. However, many community members have expressed demand for some loan scheme which would help households speed up the rate at which they could progress up the water supply ladder. They expressed preference to invest as individual households and did not favour loans to the community as a whole. Consequently, loan committees (linked to existing neighbourhood or community committees) have been established in some areas and rotating credit funds introduced. These are currently in the early stages but it is hoped that such loans will increase the number of households able to afford improvements as well as increase the size of step that each household can make.

Like CLTS, HLWS requires significant investment. This includes expenditure on community sensitisation, training of artisans, development of micro-credit facilities, marketing and monitoring activities. However, the cost per capita for access to an improved water source is considerably less than that of conventional community water supply approaches. A comparison of costs in the pilot area indicated an average per capita cost of $23 for HLWS and of $126 for a community water supply project installing handpumps on boreholes (incorporating comparable software and hardware costs). This constitutes an 82% reduction in per capita cost, which means that available resources can be channelled more efficiently and effectively where the HLWS approach is feasible. Per capita costs for HLWS are also likely to decrease further as community awareness increases.

Figure 7 indicates the impact on microbiological water quality as a result of full well protection ('protected' means headworks including a raised parapet, top slab, apron and drainage) and partial protection ("semi-protected" means a raised parapet and cover). This demonstrates that source improvement (even partial improvement) has a significant impact on water quality, with 70% of protected wells, 67% of semi-protected wells and only 34% of unprotected wells meeting the WHO guideline.

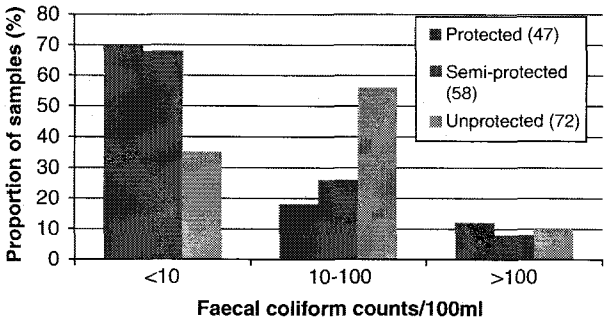

Figure 7 | Well protection and faecal coliform counts in Luapula. (Source: Mansa DHMT 2008).

From the first well owner who decided they could afford cement and a mason's labour for one ring, other householders rapidly began to copy the initiative and to go beyond it by demanding higher levels of improvement. Suppressed demand for water source improvements was thereby unlocked by a cascade effect, stimulated by the desire to enhance individual status within a community and "keep up with the neighbours". Once demand began to increase, the supply market responded, whereby local traders began to stock and sell cement in areas where it had not been available previously. Such is the extent of the cascade effect that some artisans have expressed fear that demand may exceed their capacity to deliver.

The pilot implementation of HLWS has made it possible to see the real driving force of ownership, pride in progress and wish to improve quality of life, and how this can lead to supply improvements. Water quality can then be monitored and thereby the effects of improvements quantified, and different levels of upgrading can be compared with water quality in conventional communal water supplies.

CONCLUSIONS

CLTS and HLWS show that zero subsidy approaches to water and sanitation service provision have the potential to deliver far more rapid increases in service coverage and higher levels of sustainability than the conventional subsidised approaches that predominate in low-income countries. The increase in access to sanitation achieved in one year under CLTS in Zambia was far greater than any achieved in subsidised programmes. The contrast becomes even more marked in terms of usage, as toilet usage levels were also far higher. Similarly, HLWS has shown that rural households are willing to invest in their own infrastructure and that they can increase coverage of safe water without external hardware subsidy. This has led to increased water coverage in areas neglected by conventional community water supply programmes, although increases are at a slower rate than CLTS.

While CLTS uses negative emotions to stimulate positive action, HLWS responds to suppressed demand for improved

living standards. However, while the initial motivating factors differ between the two approaches, there are many commonalities between them. Both approaches:

- Trigger a felt need to improve the quality of life;
- Build on neighbour pressure within a community;
- Focus on action at household level and individual ownership;
- Respond to the desire for enhanced status and esteem;
- Kick-start a rapid cascade effect;
- Promote self-sufficiency rather than dependency; and
- Focus on the development of sustainable assets and services rather than the external provision of infrastructure.

It is important that lessons are learnt from piloting the two approaches and that appropriate strategies are developed for national scale-up. This will require evidence-based advocacy to leverage the required investment and political will. It should be stressed that zero subsidy strategies do not imply zero cost. Sectoral investment is needed for the creation of an appropriate enabling environment, comprising training of facilitators and artisans, community and household sensitisation, development of micro-financing mechanisms (where appropriate), and development of appropriate national strategies and policies.

Given the cascade effect resulting from both approaches, monitoring can be complex. However, it is essential that project lifecycle monitoring is given maximum attention so that the process, progress and impacts can be measured and analysed comprehensively, and the findings used to inform decision-makers. National monitoring frameworks and sector information management systems also need to be developed and implemented. These too require significant investment.

While it is clear that CLTS and HLWS may not be applicable in all rural areas, for example where there is little or no open defecation or where water sources are difficult to access, it is certain that they offer significant potential to increase water and sanitation coverage, especially among the unserved rural poor who are the least likely to be served by conventional water supply and sanitation implementation strategies. These self-sufficiency approaches may also contain important lessons for other infrastructure needs such as energy and shelter. Perhaps most importantly, zero-subsidy strategies move away from the need for charity and "handouts" to true empowerment and sustained development.

ACKNOWLEDGEMENTS

The author wishes to acknowledge the hard work of the implementing partners involved in the implementation of CLTS and HLWS in Zambia. Special thanks are extended to Leonard Mukosha, Sally Sutton and Koji Kumamaru for additional information. Opinions expressed within this paper do not necessarily reflect those of UNICEF, the Government of the Republic of Zambia or any of the implementing partners, but are solely those of the author.

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