Is there a role for external technical support in the Community-Led Total Sanitation (CLTS) approach? Nikolaos Papafilippou¹, Michael R. Templeton²**, and Mansoor Ali²**

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Abstract
The Community-Led Total Sanitation (CLTS) approach involves creating community health awareness, changing behaviours, generating a demand for sanitation, and finally the design and construction of sanitation solutions (e.g. latrines), and avoids any up-front external subsidies or technical support throughout the process. By excluding technical support, the CLTS philosophy argues that community people innovate and develop a sense of ownership for the latrines that they build, which in turn leads to sustainable use of the latrines. This Panel Debate paper questions this complete exclusion of technical support. Specifically, the paper summarizes the CLTS approach, identifies innovative designs that have been implemented by CLTS communities and discusses the technical weaknesses of some of these designs, and provides a viewpoint regarding the potential need for technical support in CLTS. It is suggested that community innovations resulting from CLTS are not always satisfactory in terms of hygiene and quality of physical construction and may restrict the pathway to long-term sustainable improved sanitation. The paper also suggests how and when technical support may be needed in the CLTS process, without compromising the core principles of the approach.

Keywords: Sanitation, Community-Led Total Sanitation (CLTS), public health.

Introduction
In 1999 the community-led total sanitation (CLTS) approach was introduced by Kamal Kar in a small rural community in Bangladesh (Kar, 2005). Aiming to bring an end to open defecation (OD) in low-income communities, the CLTS philosophy is centred around making community members aware of the health hazards associated with OD, thus incentivizing them to take action to address the problem. A trained CLTS facilitator and his team visit the community practicing OD and trigger the community into action. From that point, the community accepts responsibility and starts building their latrines without further external technical support. This exclusion of technical support is intended to give the community members a sense of ownership over their sanitation solutions, which can be sometimes lacking when external support, such as subsidies and technical guidance, leads sanitation implementation.

This Panel Debate paper raises questions surrounding whether the CLTS approach correctly excludes technical support and to what extent it needs to be excluded. Specifically, the following questions are suggested for debate at the conference:

1. Is there a role for technical support in the CLTS approach, or do community members cope well enough with the design and implementation of appropriate latrines on their own?
2. If technical support is needed, to what extent should community members be assisted with the planning, design, and construction of latrines?
3. Should community members only be trained to design and construct latrines on their own initially? Or do they need technical support in terms of hands-on assistance in design and construction, as well as continuous consultation after the initial implementation?

Selected CLTS case studies
In a CLTS case study in Indonesia (Jamasy & Shatifan, 2008) where nine villages from three districts were examined, community people reported that they did not possess the necessary knowledge to deal with their latrines in the long-term, for example in dealing with full septic tanks, blockages, and other problems that affect decomposition of faeces. It was concluded that it is important to safeguard the basic principles of CLTS, that is, to exhort people to build simple latrines as a start, and then provide support to move up the sanitation ladder with a focus on appropriate technologies (Jamasy & Shatifan, 2008).

In another recent case study which concentrated on the impact of rural sanitation on water quality and waterborne diseases (Khale & Dyalchand, 2009) and which was carried out in three villages in India, it was concluded that it is of critical importance to assess whether the technology used for sanitation is in fact ensuring safe disposal of excreta or whether it is creating a further environmental...
hazard. This suggests that latrines constructed solely by CLTS community members are not always of an adequate standard and sometimes do not even serve the main purpose for which they were built, which is prevention of disease in the community. In the same study, women complained that they believed leaching pit toilets were a risk for contaminating a nearby water source. As a result, some households were not using these toilets. Indeed, it is impossible for community members to be able to assess the protection (or lack thereof) of groundwater resources relative to latrines without any technical knowledge of the hydro geological and soil characteristics of the area.

Another important issue is the maintenance of the latrines that is required following seasons with extreme rainfall. For example, in Bangladesh after the monsoon season, low-cost latrines made of various local materials such as bamboo, plastic pans, superstructures, and alternative gas pipes are often in need of significant repairs (Haq & Bode, 2008). Technical support at the initial construction stage could help to produce more robust latrines, minimizing the extent of repair needed, and thus also improving their sustainability.

The principle of self-help of the CLTS approach is central, and to try to evaluate the extent to which it is possible is a challenge. When building latrines however, it is common that people forget, neglect, or simply dismiss some points of the design that are of utmost importance. A relevant and very interesting example in Nigeria shows that of the latrines that were built less than 50% had a cover over the squat hole and very few were found to be adequately ventilated (Evans et al., 2009). Ventilation is a key issue in latrine design, as it reduces odours and insects. Ventilation can therefore improve sustainability by keeping the users happy with their latrine and preventing them from reverting to open defecation. This fact once again highlights the need for technical support, as the seemingly easy task of screening the vent pipes was totally dismissed by the community in this case. Another report from Nigeria indicated that communities that experience latrine failures due to poor soil characteristics (i.e. preventing waste infiltration) often abandon critical aspects of CLTS and revert to open defecation practices (WaterAid, n.d.).

An important consideration that is often overlooked is defining the expected lifetime of the latrine. A design calculation based on the volume of the tank, the daily per capita excreta, temperature, and infiltration rates can be used to estimate the capacity of the pit and hence the lifetime of the latrine. Without such a calculation, community members will not know when to expect to need to empty their latrines or build new ones, which can often be a point when open defecation returns as a common practice. Technical support may be especially important in areas with soil with low infiltration rates and where there is a high water table.

Selected sanitation innovations resulting from CLTS

According to the CLTS philosophy, no subsidies for hardware are given to the population; instead, the community people use low-cost materials that are easily found in their locality or produced by people in the community in order to design and implement innovative sanitation solutions (Darteh & Appiah, 2008). A relevant question is whether these solutions are constructed in a way which will ensure their primary purpose, namely to provide improved sanitation, by avoiding human contact with excreta and spread of disease. Do the sanitation methods satisfy the reason they were built in the first place? Do they promote sanitation and how sustainable can they be? If not, to what extent do these communities need technical support?

Bangladesh. In the case of Bangladesh, variations of innovative latrine designs were found in greater numbers than other countries, such as Nigeria and Nepal (Evans et al., 2009). This may be attributed to the fact that the spread of CLTS in Bangladesh was rapid and widespread, and also the availability of supply chains, such sanitary ware shops in the vicinity. An example of an innovation was the use of the flexible polythene seal at the outflow. The seal opens whenever there is a discharge and then seals back again when the discharge is over. Thus, the traditional water seal is no longer needed (Evans et al., 2009). Kar (2003) also noted a number of other innovations, including:

- Plastic cylindrical socket replacing the prescribed conical one in tube well repairs.
- Re-installable rings in single ring latrines designed to suit poor families’ requirements.
- Homemade offset pit (tin pan) toilets with use of bamboo as gas pipe.
- Homemade earthen pit with bamboo gas pipe.
- Bamboo lining inside latrine pit as replacement of cement concrete rings.
- Rexene cloth seal pit latrine to avoid contacts with flies.
- Earthen pit/bamboo gas pipe and RCC platform/squatting plate.
- Use of old and used rickshaw van body as latrine platform.
- Use of earthen pot in latrine construction.
- Use of earthen pot pitcher in latrine.
In Nigeria, in villages in Benue and Bauchi states, where latrines were in danger of collapsing due to high water table and extended rainfalls, different lining techniques were adopted (WaterAid, n.d.). Due to local availability, bamboo lining is the main option for communities in Benue state. This demonstrates the adoption of appropriate building techniques, which require nothing more than local materials. The bamboo sticks were cut a little longer (25mm) than the pit depth and made sharp at one end to render it possible to nail them into the pit floor until they were made level with the soil surface. The sticks were finally tied together with a piece of flexible softwood on top. Possible voids between the soil wall and the lining are filled with water-resistant clay (WaterAid, n.d.). On the other hand, in more arid areas such as Bauchi, bamboo is less available. Thus, people use another innovation, lining their pits with local hardwood sticks. The process is much the same as described above with bamboo, but another factor comes into play here: as these sticks are not that straight as bamboo is, the result is that voids between them and the wall are larger. The clay filling material is thus very important and bitumen can be added to increase performance (WaterAid, n.d.).

Cambodia. In Cambodia various locally available materials are being used for latrine construction (DRHC, 2008). The superstructures included the following components: frame - wood, wooden poles; walls - plastic sheet, reed, coconut leaves, rice straw or thatch, palm leaves, Khlong leaves (northern Cambodia tree), palm stems, empty cement bags, bamboo, reed Theb mat, tarpaulin, clay mixed with cow dung and dry straw; doors - plastic sheet, reed, coconut leaves, rice straw or thatch, palm leaves, Khlong leaves, empty cement bags, bamboo, reed Theb mat, tarpaulin; roof - plastic sheet, reed, coconut leaves, rice straw or thatch, palm leaves, Khlong leaves (northern Cambodia tree type), tarpaulin, palm leaves. Slabs are implemented in the following ways:

- Bamboo slab with a layer of clay (can be thin or thicker) on top of it and sometimes a plastic sheet over the clay layer to ensure protection of clay from liquids.
- Slab made of clay with bamboo reinforcement.
- Bamboo beams, jute, hessian or rice sack over it and bamboo mat as the top layer
- Wooden poles spaced, plastic sheet and slab of wooden poles
- Wooden beam with bamboo slab
- Wooden slab

Technical weaknesses of some CLTS-implemented sanitation innovations

While sanitation solutions in CLTS communities clearly demonstrate the ingenuity and creativity of the community members, there are sometimes technical weaknesses that mean that the solutions are either not effective in the short-term and/or not sustainable in the long-term. For example, the plastic used for latrine superstructures in some CLTS communities (e.g. in Cambodia) can be easily torn during storms, resulting in the latrine being exposed to rain and flooding. This could bring unwanted water into the pit, making the decomposition of faeces less efficient and/or making the pit fill faster.

Bamboo used in many of the innovations loses structural strength when exposed to humid conditions and can crack, thus letting unpleasant smells enter the latrine (e.g. when used as a slab). In the extreme situation latrine collapse due to breakage of bamboo could be possible. Bamboo can also be weakened by termites (DRHC, 2008). Another issue is that bamboo is not easy to clean. When used as lining, it also degrades quickly leading to possible pit collapse and latrine failure. As with bamboo, any kind of wood used in community innovations is affected by humidity, fluids and termites (DRHC, 2008).

Concrete can also retain the smell of urine spilt onto it by accident, and needs to be cleaned to avoid the smell becoming offensive.

Old oil drums that are being used for lining pits get rusty quite fast when exposed to the contents of the pit. The pit is then not properly supported anymore and might collapse under the weight of the slab and the users due to unstable soil.

The materials most frequently used for the superstructure top, such as leaves of different kinds of trees, need frequent maintenance, as they are impacted by rain, wind, sun, and climatic conditions in general. If the required attention is not given by the community people, the latrine might become unprotected, affecting sustainability not only directly, i.e. due to inflow of water filling the pit, but also indirectly, i.e. due to people feeling no protection or less privacy and therefore stopping using it.

Is CLTS ultimately effective at reducing diarrhoea?

The impact of CLTS implementation on reducing diarrhoea has been investigated in several countries, with mixed results. Findings in Bangladesh and India are summarized below.

Bangladesh. Prior to CLTS implementation, diarrhoea was already regarded as a serious health concern in many communities in Bangladesh, however the perception of its causes were often wrong; people thought that the types of food consumed and the ways it was prepared, handled, and stored were primarily responsible for diarrhoea (Howes et al., 2009). Because the significance of latrines in preventing diarrhoea was not recognised, latrines were largely perceived as a luxury, especially by the poor or extreme poor, who would rather wait to earn more money instead of building the simplest latrine. On the other hand, more well-off households already in possession of a latrine were not aware of the fact that they could get diarrhoea just because neighbours or other people in their

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community did not have a latrine, and thus would not provide support or try to convince others to construct one. After CLTS was implemented, feedback indicates a 70% reduction among male respondents and a 50% reduction among female respondents (Howes et al., 2009). However, there were difficulties in determining a trustworthy overall conclusion since the expected cases of diarrhoea fluctuated year by year, irrespective of whether a sanitation programme was in place.

India. An interesting study was conducted in three different states in India (Maharashtra, Haryana, Himachal Pradesh) in 2008 (Khale & Dyalchand, 2009). In each state, villages where CLTS has been implemented examined. The results for worm infestation and diarrhoea in children under six years of age revealed that except for in Himachal Pradesh, the number of incidents did not show a decrease as a result of the CLTS sanitation programme being implemented; in some cases incidence of these illnesses have even increased (Howes et al., 2009). Although the sample size was small, the results could be a strong indicator of the need for technical support to ensure proper latrine design and construction. If the sanitation technology used is not ensuring the safe disposal of excreta, then it is done in vain. A similar point was made in the study of Haryana, where septic tank overflows were emptied into the village ponds regularly (Howes et al., 2009).

Conclusions
Several suggested conclusions for debate in the conference are the following:

1. CLTS community innovations are not always adequate in terms of hygiene and do not always provide improved sanitation, from a disease-reduction standpoint.
2. Technical support is necessary for the CLTS approach if improved sanitation is to be achieved and long-term sustainability is to be ensured.
3. Support is almost definitely essential at the beginning of the CLTS approach, after initial sanitation demand generation. Whether it should be provided later as well depends on the nature of the technical challenges that the community faces on a case-by-case basis.
4. Encouragement of local entrepreneurs, latrine component supply chain development, and training of masons are highly desirable.
5. The important thing is to ‘do what works’ and not just follow the CLTS methodology dogmatically if there are instances where technical support is clearly beneficial.
References


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