

# Developing and Monitoring Protocol for the Elimination of Open Defecation in Sub-Saharan Africa

## Authors

Ann Thomas<sup>1</sup> and Jane Bevan<sup>2</sup>.

## Abstract

Eliminating open defecation is increasingly seen as a key health outcome, with links to reduced stunting, improved educational and positive health outcomes for children. In Sub-Saharan Africa (SSA), over 35 countries are implementing some form of CLTS, ranging from TATS in Tanzania to CLTSH in Ethiopia. Since the introduction of CLTS in 2005 in the region, rapid scale-up has been achieved with suggested numbers of ODF communities in the range of 30,000 affecting over 15 million people in Sub-Saharan Africa. Several countries have set aggressive targets for elimination of Open Defecation in rural areas for the next five years which often include not only safe disposal of feces, but handwashing facilities, cleanliness and solid waste management. Sustaining the progress made through the application of the CLTS process is emerging as a challenge with experience suggesting that sustainability is determined by the process followed to achieve ODF. Rapid scale up in SSA is arguably linked to the fact that CLTS is based on the concept of triggering community-wide behavior change, requires no subsidies and integrates easily into existing health programming structures. Current focus is on 'triggering' communities into action; while there are considerably less resources and emphasis on following up and mentoring of communities 'post-triggering'. This paper reviews the process and protocol for defining, reporting, declaring, certifying ODF and sustaining ODF, highlighting where the process varies between countries and potential determinants of sustainability within the process itself. Critical questions include what elements (should) constitute an ODF protocol, what are the determinants of sustainability and what impact does target-setting have on achievement of ODF goals in a country?

## Keywords

Sustainability, Total Sanitation, Open Defecation, Sub-Saharan Africa, Protocol

## Introduction

Eliminating open defecation is increasingly seen as a key health outcome, with links to reduced stunting, improved educational and positive health outcomes for children. In 2012, the importance of the elimination of open defecation was recognized within UNICEF and promoted to be a 'corporate priority' to improve sanitation coverage. In Sub-Saharan Africa (SSA), over 35 countries are implementing some form of Community

---

<sup>1</sup> UNICEF Eastern and Southern Africa Regional Office, anthomas@unicef.org.

<sup>2</sup> UNICEF Western and Central Africa Regional Office, jbevan@unicef.org.

Approaches to Total Sanitation (CATS<sup>3</sup>), ranging from Tanzania Approach to Total Sanitation (TATS) in Tanzania to Community Led Total Sanitation and Hygiene (CLTSH) in Ethiopia. These programs differ primarily in how Open Defecation Free (ODF) status is defined, the scope of outcomes (i.e. elimination of Open Defecation alone or plus handwashing, environmental cleanliness etc.) and also in terms of the process by which the program is implemented.

Variations in programming offer an opportunity to learn about what may be determinants of sustainability of ODF programming. This paper reviews the variation in implementation of ODF across 20 countries in SSA and what should be learned from the experience to date.

### **Key elements of an ODF Protocol**

A protocol, as defined by the Oxford English Dictionary, is an ...”accepted or established code of procedure”..., and in this context is usually a printed and widely distributed national-level document that sets out the steps to achieve ODF status.

The key elements that make up an ODF protocol, based on this review of country processes include:

1. A process for identifying communities and developing baselines
2. A clear and agreed upon definition of ODF plus indicators
3. A process for triggering communities
4. A mechanism for reporting ODF achievement
5. A process for verification of ODF status
6. A process for certification of ODF status/ recognition of ODF achievement and
7. A plan for post-ODF monitoring/follow up.

### **Identifying communities and setting baselines**

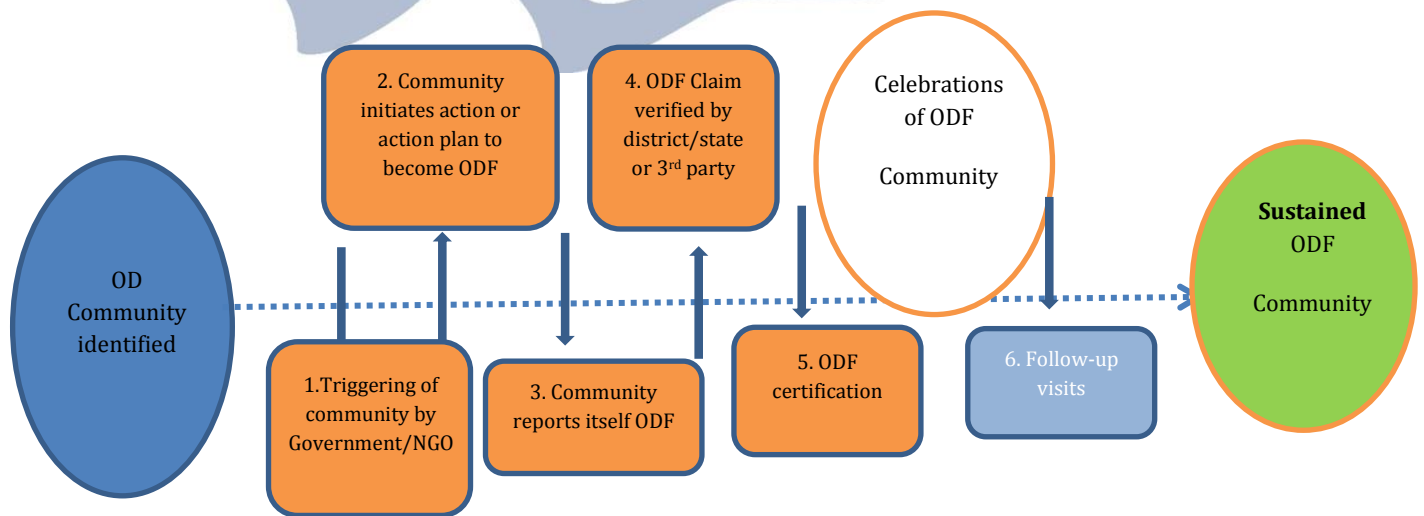
Selection of communities to work with is a critical step. The CLTS Handbook<sup>4</sup> outlines factors which may predispose some communities towards successful triggering. Consideration of timing and social factors are also critical first steps in helping to identify local champions that can support expansion of the program and provide insights into what works in a given context. A key parameter of these pre-triggering meetings is to establish baselines of current practice in the community so as to be able to gauge progress and impact of the program. This often includes recording population and household numbers and existing latrine coverage.

---

<sup>3</sup> CATS = Community Approaches to Total Sanitation – see CATS Field Note, UNICEF 2009

<sup>4</sup> CLTS Manual, Kar & Chambers, IDS, 2008.

Figure 1 Typical flow of ODF process.



## 2. ODF Definitions and Indicators

Open defecation free is defined most basically as the absence of the practice of open defecation in a prescribed community, region or nation. Implicitly it means that all members of that community have access to and are using a latrine. The translation of the definition into monitorable indicators is where we see the reflection of priorities

Photo 1: Simple latrine with hand washing facility in Nyakach district in Kisumu, Kenya.



Source: UNICEF Kenya.

and nuances in definition. It is critical that at the national level, there exists a clear and agreed upon definition of ODF and set of indicators that will be used to declare and monitor ODF status.

In terms of the **'primary' definition of ODF**, almost every country surveyed in the region includes an indicator of 'use of latrines'. This can mean either each household having a latrine and/or evidence of no open defecation. Cameroon, Cote d'Ivoire, Kenya, Mali, Nigeria, Sierra Leone and Togo insist that every

household in the community have a latrine. Others: Gambia, Ghana and Mauritania are more concerned with the elimination of the practice of open defecation and hence shared latrines and the 'cat' method (burying feces in the ground) are acceptable options. Similarly, almost all countries require that children's feces must be safely disposed of and that there are handwashing facilities.

Many countries include **'secondary' elements** of personal hygiene and environmental cleanliness in order to leverage the CLTS process to achieve broader outcomes – this is

often referred to as an ODF + status. In Ethiopia for example, the CLTSH protocol, developed in 2012 uses a flag system to promote the extent to which a village has achieved ODF status:

- Yellow flags show that a community has met minimal standards towards ODF (i.e. at least 50% of households have completed latrine construction) – expected at approximately 2 months post-triggering
- Green flags show that 100% latrines are constructed and in use and that latrines have been built in public areas – expected at about six months post-triggering
- White flags indicate 100% latrines in use with working handwashing facilities, / safe water handling and water sources are protected from potential contamination with good drainage – expected about one year post-triggering.
- A red flag indicates relapse of a community to a previous lower standard of sanitation and hygiene practice: OD, low handwashing rates<sup>5</sup> and poor household water management<sup>6</sup>

Some countries impose an additional requirement about the design of the latrine. In Niger, for instance, the protocol specifies that latrines are expected to have a superstructure to ensure dignity and privacy to the user, while in Mali, latrines must have covers to keep out flies.

Secondary ODF requirements may involve general environmental sanitation requirements and evidence of personal and domestic hygiene practice. In India, schools in the village also need to have toilets, and households need to have functional garbage disposal systems if the community is to be declared open defecation free. In Niger, verification teams are asked to look at whether the roads in the village are clean, while in Nigeria, health centers and markets are expected to have latrines with handwashing facilities. Essentially, while ODF verification has primarily targeted open defecation, the facilitation process used to achieve ODF has been very effective in promoting the adoption of other critical hygiene behaviors and hence we frequently find governments are leveraging the triggering process for enhanced health outcomes.

---

<sup>5</sup> Usually measured by the proxy indicator of the presence of HWWS facilities in use.

<sup>6</sup> Federal Democratic Republic of Ethiopia CLTSH Verification and Certification Protocol, Ministry of Health, January 2012.

Country	Primary Indicators					Secondary Indicators								
	Environment is completely	Each household has access to their own latrine	All latrines must be fully functional and clean	Each household has access to HHMWS facilities	Children's feces are disposed of effectively	Each household has access to a shared latrine	Each member of the community understands the	WASH Committee, Community Action Plan	Institutional WASH facilities (schools and health centres)	All latrines must have a tight fitting cover	All latrines must have sanitary bins	The community must be	By-laws imposed at Local Government/community level	Communities practicing safe water handling at home.
Chad			X	X										
Cote d'Ivoire	X	X	X						X					
Ethiopia		X	X	X				X	X					X
Ghana		X	X	X	X	X		X			X			
Kenya	X	X	X	X										
Madagascar	X	X		X				X	X	X	X	X		
Malawi	X			X		X								
Mali		X	X	X					X					
Mozambique	X	X	X	X							X			
Niger	X						X				X			
Nigeria		X		X					X		X			
Sierra Leone	X	X	X	X		X	X	X	X	X	X			
Somalia (proposed)	X	X	X		X				X		X			X
Togo		X		X						X	X			
Zambia		X	X	X						X				

### Triggering ODF behavior

The aim of triggering is to use elements of disgust and pride/dignity to elicit a strong reaction from the community to change OD practices, using established CLTS tools <sup>7</sup>. There may be slight differences in the emphasis put on particular tools (i.e. the mapping of 'shit' was seen to be particularly effective in Somalia) in some countries or the development of new tools in others (e.g. the 'Shit and Shake' (hands) for highlighting the importance of handwashing, developed in Malawi). School children are often involved in the triggering process as 'whistleblowers', but due to cultural differences pertaining to the role and conduct of children vis-à-vis adults, this approach may not work across all countries.

<sup>7</sup> See CLTS Manual, Kar & Chambers, IDS, 2008

The experience to date of working at scale shows that one of the biggest challenges in triggering behavior change is the quality of facilitation. Not all community facilitators are effective at igniting behavior change – much of this involves natural inclination and talent to engage with people. This aspect needs to be considered carefully during the program design phase: how will you monitor facilitator performance and make corrections to either strengthen or identify facilitators who are not effective? In some

Photo 2 Transect walk in South Sudan.



Source: P. Otieno, UNICEF South Sudan.

countries, Zambia and Sierra Leone for example, strong natural leaders from the communities are identified and these champions are often much more effective at leading the triggering process than maybe a stranger coming in from the government or an NGO.

Another key element of the triggering process is the initiation of a community action plan for reaching ODF. This may be led and developed by the community with support from an

external facilitator or completely led by the community. Implementation of this plan will likely be strengthened by ongoing support and follow up from external resources that can bring in expertise in latrine construction, facilitating access to latrine artisans, etc.

### Reporting of ODF

Reporting of initial ODF attainment is generally conducted by the community itself either in collaboration with a facilitator, a neighboring community (peer review) or by themselves and submitted in a spreadsheet-type format that can be used by facilitators and villagers alike. Once the community leaders and follow-up facilitator (can be community health worker, natural leader or NGO representative) agree that the criteria are met, they will declare ODF and will report this at the same time as asking for verification. This is usually done informally, but in some countries such as Ghana, a ‘self-assessment’ date is agreed with all stakeholders supported by the local Environmental Health Assistant. Only when all community members are satisfied that the ODF criteria have been met will a verification visit be requested.

### Verification of ODF

After the community reports ODF status, a government or NGO team from the district level usually conducts a preliminary verification exercise. The composition of this team varies considerably. In densely populated countries like India, requiring senior district-level officials to be on the team could slow down the process of ODF verification considerably. Likewise, an overly in-depth verification process could impede the process when CATS is being implemented at scale. **Verification generally seeks to validate the submission of communities and builds on the key indicators of ODF – namely, that there is no evidence of open defecation, that households have access to**

*latrines, that handwashing with soap facilities are present and that children's feces are disposed of safely. A small sampling of households may corroborate a visual inspection of the community, however, a full survey of all households is likely to be impossible to achieve at scale* and therefore verification processes should consider what can realistically be rolled out on a broader scale and be sustained given available resources.

Countries also differ on the requirements for how long a community has to remain free of open defecation before it can receive ODF status, the period ranging from 1 to 6 months. In Sierra Leone, for instance, the status is conferred after a community has been ODF for at least three months, whilst in Nigeria a 6 month period is required. Many countries require two separate visits from government authorities to verify ODF status.

Photo 3 Sign of ODF in Ngamboula Village, Cameroon



Source: UNICEF Cameroon.

However, only India and Kenya have independent bodies survey the applications for ODF status. **Third party verification** helps remove any subjectivity in the process and the likelihood that communities are granted ODF status simply to make a district official able to claim his district has high ODF rates.

While most countries follow the same basic template of verification of ODF status by authorities at successively higher levels of government, the details of the procedure

vary widely. Communities are almost always expected to apply for ODF verification to local or district-level officials. For example in Ghana, the community is expected to have first completed a rigorous self-assessment, as detailed above (section 4). In these countries, districts that present unprepared communities to the regional verification teams can be penalized, creating an incentive for communities to take the self-assessment seriously. Remembering the participative roots of CLTS, it is important that the community members are not passive 'recipients' of verification, but are fully involved in the process, ideally including natural leaders and other (adjacent) community representatives in the verification team.

### **Certification of ODF**

Once verified, a certificate is usually given to the community leaders to establish their status as ODF. These certificates vary from country to country, but usually are simple documents bearing the signatures of the key members of the verification team. A date is commonly set after this to celebrate ODF status – this event varies but can be done collectively (between several newly ODF villages) at district level, or locally.

Celebrations have proven very important for recognizing the communal pride and for the sustainability of the status – evidence shows that a community is less likely to renege on an agreement that has been publicly commemorated and witnessed by local

dignitaries and neighboring communities<sup>8</sup>. Often a plaque is erected in the village which serves to remind the community of their commitment, as well as to act as an announcement to visitors. In some countries, rewards are given for the attainment of ODF. These rewards are generally not advisable as they are difficult to sustain at scale and they undermine the idea that communities should become ODF in their own best interest rather than to receive an external ‘prize’. Rewards can also confound implementation efforts similar to the way subsidies have undermined programming in the past – by creating expectations and competition amongst communities. While recognizing communities for ODF attainment is critical, rewarding them is not.

In Somalia, it has been proposed that the ODF protocol includes a secondary action plan during the certification process that details how ODF status will be maintained. The proposal suggests that at the time of certification the community is required to make a pledge or a statement of some kind that shows that there is a plan and intent to maintain the ODF status.

### 7. Post-ODF monitoring/follow up

While the initial focus of a CATS program is behavior change and elimination of OD, a

*Photo 4: Shit mapping exercise in a community in Malawi.*



*Source: J. Maulit, UNICEF Malawi.*

secondary and equally critical component is sustainability of that behavior change. The experience of CATS to date has shown that the most critical factors for sustaining behavior change are post-ODF monitoring and follow-up visits to support communities in developing sustainable facilities, access to needed technical support and to develop plans for the long term upkeep of ODF status. It is in this phase that sanitation marketing efforts and access to technical expertise, sanitation

products etc. may be most effective in supporting communities’ long term plans for improved sanitation.

In some countries, e.g. Ghana and Mali, the protocol includes provision to spot-check communities’ ODF status so that in principle certification can be removed if the criteria are subsequently found not to be met. Including a second tier of ODF status in the protocol, such as ‘ODF +’ helps to ensure continued follow up and vigilance after the initial verification.

---

<sup>8</sup> The ‘Rule of Commitment’ or public pledge: See Social Norms literature e.g. C. Bicchieri & H. Mercier, 2013.

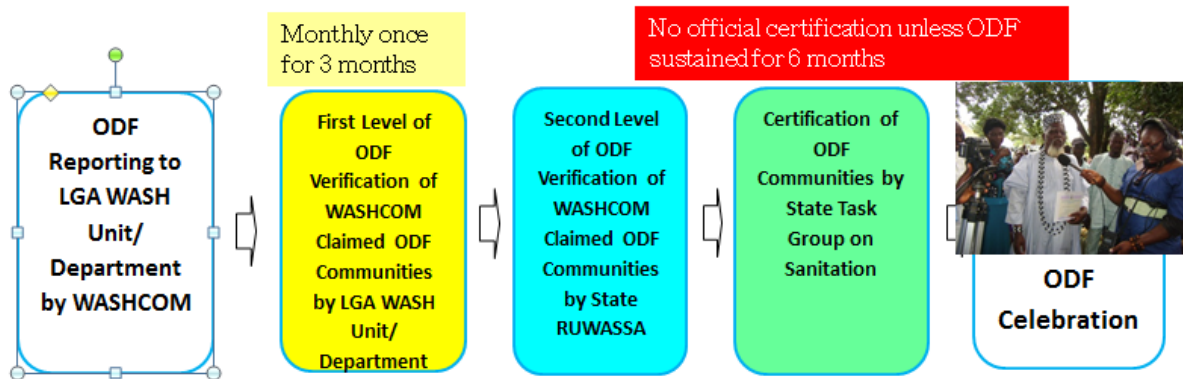


*Box 1: ODF Protocol in Nigeria.*

In Nigeria, the definition of ODF includes two distinct outcomes, reflecting the consensus of a national level group of stakeholders: elimination of OD and the secondary level status of Total Sanitation, defined as personal and domestic hygiene and environmental sanitation. The process encompasses four essential components as shown in the figure below. Celebrations of ODF with communities are done in partnership with state level government. Monitoring and data flow occurs at four levels: community self-reporting, verification by local government, certification by state and national level analysis, with compilation and dissemination occurring on a monthly basis. Excel spreadsheets are generally used to compile data and to assess key indicators of progress such as triggering rates, % of triggered communities that are achieving ODF, TS etc.

(Except from presentation by Bisi Agberemi, UNICEF Nigeria 2012).

*Photo credit 1*



*Source: UNICEF Nigeria, 2012.*

### **Sustaining ODF**

In part, the exercise of compiling and reviewing the protocols was to answer the question of which elements of design may be considered as the most important determinants of sustainability and *how can they be measured/monitored?*

Unsurprisingly, the critical elements of sustainability have shown to be those related to good programming design – i.e. how well thought through was the protocol? The two key determinants which have been identified through a West Africa review of CLTS were post-triggering visits and monitoring as well as the quality of facilitation<sup>9</sup>. These determinants have also surfaced in subsequent discussions and evaluations of CLTS programs across the Region (Kenya, Zambia). Many programs simply don't budget or have the timelines to support post-triggering follow on and see an ODF declaration as the chief outcome. However, in most cases, post certification is exactly the point at which communities are looking for support to access sanitation products and services and advice. Current programming and review processes are looking at including innovations such as post-ODF sustainability plans (Somalia) and linking post-ODF

<sup>9</sup> Roll-out Evaluation of CLTS in West & Central Africa, Bevan 2011.

monitoring with Sanitation Marketing efforts (Malawi, Zambia, Ethiopia). The frequency of post-certification visits will vary depending on need, but should ideally be at least once per month during the first year. This is often helped when there is a secondary phase of verification such as 'ODF+' or in Ghana the 'Model Clean Community' (Ghana ODF Protocol, 2011).

A recent impact analysis of the Mozambique 'One Million Initiative' found a 10% loss of ODF status in 3 years across a program area covering over one million beneficiaries. The report concluded that the status was largely sustainable but will depend heavily on strengthening of local monitoring capacity to maintain the current levels of awareness and commitment (More than water, 2011). Similar conclusions have been drawn from reviews of CLTS programs in Bangladesh and East Java (WSP, 2011).

Quality of facilitation is a determinant of sustainability in that it is a measure of how fully engaged the community was in the triggering and thus, how effective the process was. Monitoring quality of facilitation is a challenge, but indicators have been suggested which include: number of triggered villages which have become ODF (per facilitator), emergence of natural leaders, extent to which communities are developing improved latrines, degrees of collective actions undertaken as a result of a heightened 'awareness' of the community following triggering, degree of rapport created (by observation) etc.<sup>10</sup>

Ultimately sustainability relates to quality programming and other indicators of quality relate to the following factors:

- ***How well defined and organic to local structures are the roles of stakeholders in the process?*** A critical element of the CATS process is to be clear on the roles and responsibilities of various stakeholders in the process, both in terms of action and in terms of the type of data and support they are expected to provide. Traditional leaders or chiefs in Zambia have provided the backbone of the national CLTS program, ensuring that communities have the support and also the motivation to move towards ODF. In Malawi, the communities in collaboration with Health Support Workers are instrumental in providing quality monitoring and feedback on ODF attainment and sustainability. Of critical importance is the fact that health extension workers (HEW) are assigned to a specific set of villages in Malawi and therefore there is a sense of accountability of the HEW to the community and vice versa which supports effective monitoring and sustainability of the ODF progress. In Ethiopia, the health extension workers also play a key role in supporting monitoring and verification of ODF. In Ghana, the Output Based Aid 'performance related pay scheme' for environmental health officers (EHOs) incentivizes performance of EHOs tied to community ODF outcomes. CLTS interventions must be well integrated into government programming so that health workers are not paid additional stipends for CLTS so that this work becomes an add-on or project-like intervention.

---

<sup>10</sup> See UNICEF Sanitation monitoring toolkit \*under development

- **Timing and spacing of the ODF certification process.** In many countries, a time lag between reporting and verification can impose additional criteria for communities to sustain the ODF status longer. This has reportedly been very effective in countries such as Ghana, Nigeria and India, in that communities are forced to consider options for sustaining the behavior and the facilities that would support a positive certification and at the same time support long term sustainability.
- **Modernizing Monitoring Methods.** Traditional paper based reporting can be cumbersome and time consuming, particularly as more countries move to scale with ODF campaigns. Sustainability in some part lies in a reliable and scaleable monitoring system that can further be leveraged for post-ODF action planning (i.e. mapping of ODF communities, assessing sanitation demand and supply needs, etc). To date, there have been pilot experiences of mapping ODF in some countries, including Malawi, using GPS technology. At present, the use of this type of technology offers the promise of real time reporting, simplification of data and enhanced use of data for mapping and other presentational purposes. SMS based monitoring has been used successfully in Indonesia and could be an effective mechanism to explore in SSA given the cell phone usage rates and affordability. Further exploration is needed on how to enhance this type of reporting at scale in a cost-effective manner.

### Monitoring Towards National ODF Targets

National target setting has been an impressive trend in SSA, reflecting strong government motivation to improve sanitation coverage, with the following countries now having declared national/rural ODF targets:

Zambia (2014), Kenya (2013), Rwanda (2020), Madagascar (2018), Malawi, Mozambique, The Gambia, Burkina Faso and Ethiopia (2015).

Several other countries have declared regional and/or district targets, such as Nigeria, Ghana and Sierra Leone. Zambia was the first African country to declare a fully ODF District – Choma - in 2011.

Target setting has offered many positive advantages to ODF efforts:

- Generally resulted in national strategy documents which propose an ODF protocol which should be followed (resulting in a common approach for CATS program implementation)
- Allow for assessment of resource needs and mobilization to reach goals
- Have underlined the need for improved monitoring and coordination of data/management of national programs (e.g. Kenya developed the national CLTS 'Hub' which serves as a clearing house for monitoring data, program benchmarking etc.)
- Have galvanized the sector into a common pursuit and approach around which all partners can be coordinated and act coherently

- Provided regional, inter-country pressure to accelerate efforts, particularly when combined with regional sanitation monitoring and tracking processes (e.g. AfricaSan, e-Thekwini)

While many positive benefits are associated with target setting, efforts are needed to ensure that as countries scale up, data collection remains accurate, reliable and objective. In the desire to scale and reach targets, there is always the potential for districts and provinces to exaggerate results or compromise on quality of programming and this is the real concern in terms of sustainability. Lessons have been learnt from Asia in this regard, for example with the Indian Total Sanitation campaign (Spears, 2012).

### **Final Points**

CLTS has taken hold across SSA since its introduction in the last six years and is a very credible strategy for eliminating open defecation. Due to the speed with which it is being scaled up, its use as a primary vehicle of elimination of OD and the newness of the approach in SSA, it is essential to take note of key lessons which impact on effectiveness and sustainability. The process of developing an ODF protocol allows for reflection on what works and to build on the experience of neighboring countries. While the experience and lessons of CLTS in Asia have been illustrative, the rapid scale up of CLTS in SSA must be understood contextually in terms of the unique circumstances that enable and challenge its rollout in this Region.

Some of the key points to consider in developing an ODF protocol include:

- Leverage the ODF protocol to yield enhanced health outcomes such as handwashing with soap and safe disposal of children's feces which can easily be incorporated into the triggering process and which are key elements of the definition of maintaining an ODF environment.
- Develop one consistent protocol for the WASH sector in-country. Host an ODF protocol workshop to discuss key issues and develop consensus on a common approach for defining ODF, monitoring tools, etc.
- Investigate the use of mobile /smartphone /GPS technologies which may enable more 'real-time' monitoring of the situation on the ground and allow for increased versatility in data presentation and mapping.
- Develop a monitoring framework that includes both process and output outcomes to reflect such parameters as facilitator quality, data reliability, etc.
- Consider ways of recognizing communities that do not involve subsidized awards or ceremonies to communities so as not to undermine the CLTS approach.
- Include a time lag between reporting of ODF by communities and certification
- Aiming for a second level of 'ODF +' ensures continued follow up after certification and increases sustainability.
- Consider, include and budget for follow-up visits with communities as part of the CLTS process and attainment of sustainable/improved latrines not as an add-on.

- 
- Consider the certification and sustaining of ODF as the chief outcome, not initial ODF reporting.

## References

- Kamal Kar with Robert Chambers (2008). Handbook on Community-led Total Sanitation, IDS and Plan UK.
- CLTSH Protocol Document, Ethiopia, 2012. Ministry of Health, Government of Ethiopia.
- Community Approaches to Total Sanitation: Based on case studies from India, Nepal, Sierra Leone and Zambia. UNICEF Field Note, 2009.
- Workshop report: Moving Ahead with CLTS: Strengthening Process and Protocol in Somalia, October 9-10, 2012, Nairobi, UNICEF.
- ODF Malawi Strategy Document 2011, Ministry of Agriculture, Irrigation and Water Development, Government of Malawi.
- Ghana: Ministry of Local Government & Rural Development, 2011. Checklist For ODF Verification And Certification.
- Dean Spears, 2012, Policy Lessons from Implementing India's Total Sanitation Campaign, India Policy Forum. Available at: <[http://www.ncaer.org/popuppages/EventDetails/IPF\\_2012/DeanSpears.pdf](http://www.ncaer.org/popuppages/EventDetails/IPF_2012/DeanSpears.pdf)>.
- C. Bicchieri & H. Mercier, (2013) Norms and Beliefs: How Change Occurs. To appear in B. Edmonds (ed.) The Dynamic View of Norms, Cambridge University Press. Available at: <<http://upenn.academia.edu/CristinaBicchieri/Papers>>.
- J. Bevan, 2011. A review of the UNICEF roll-out of the CLTS approach in West and Central Africa, 35th WEDC International Conference, Loughborough, UK.
- UNICEF/Ministry of Foreign Affairs, the Netherlands, 2011, More than Water: Impact Evaluation of Drinking water supply and sanitation interventions in rural Mozambique.
- WSP (2011) Long term Sustainability of Improved Sanitation in Rural Bangladesh, WSP Research Brief.
- WSP (2011), Achieving and sustaining Open Defecation Free Communities: Learning from communities in East Java, WSP Research Brief.