

**34th WEDC International Conference, Addis Ababa, Ethiopia, 2009**

**WATER, SANITATION AND HYGIENE:  
SUSTAINABLE DEVELOPMENT AND MULTISECTORAL APPROACHES**

**CLTS: Lessons learnt from a pilot project in Timor Leste**

*E. Noy & M. Kelly*

**REFEREED PAPER 146**

---

*Timor Leste, emerging from conflict ridden independence is one of the poorest countries in Asia, with major challenges in rebuilding infrastructure, particularly water and sanitation in rural areas. Community Led Total Sanitation is a relatively new approach to eliminate open defecation through community mobilisation and behaviour change, rather than subsidy and latrine construction. This paper discusses CLTS in the Timorese context, and highlights some key challenges in assessing the potential of CLTS to address sanitation issues. Some problems identified include a lack of coherence between the integration of water supply and sanitation, and the promotion of CLTS in isolation of any project activities that utilise any form of incentive or subsidy. The knock-on effect of the long term sustainability of latrine usage and maintenance CLTS is questioned unless further research clarifies the demand responsiveness of CLTS in conjunction with subsidy driven water supply.*

---

## **Introduction**

According to the 2007/8 UNDP Human Development Index (HDI), Timor Leste ranks 150 and is the lowest ranking country in all of Asia. The most recent data available from the WHO-UNICEF Joint Monitoring Programme found that in 2004, rural water supply coverage in Timor Leste was found to be at 56%, while rural sanitation coverage was markedly lower at only 33% (WHO-UNICEF 2004). Timor Leste is a small country with a total population of roughly 1 million (UNFPA census 2004). Ninety two percent of this population are rural inhabitants (WHO-UNICEF 2006), and as such, despite significantly improved coverage statistics in urban areas (77% for water supply and 66% for sanitation), overall national water supply and sanitation coverage remains low, at 58% and 36% respectively (WHO-UNICEF 2006).

Timor Leste gained its full independence in 2002, after a 1999 referendum in which the vast majority of East Timorese voted for independence. The majority of the country's infrastructure was destroyed in militia-led attacks following the referendum, and much of the country's pre-existing water and sanitation infrastructure was destroyed. Timor Leste is now undergoing the difficult process of state building and developing national government capacity to run the newly independent state. As such, a key challenge is to recover, expand and manage its water and sanitation infrastructure, particularly in rural areas. The Government of Timor Leste developed its first National Development Plan (NPD) in 2002 and set a target for 80% coverage of water supply and sanitation for the rural population by 2020 (Connell Wagner n.d.). The Government of Australia is currently supporting a large multi-million, 10-year national rural water supply and sanitation program (RWSS) in Timor Leste. The objective of the program is to augment and build the capacity of national government to lead the sector to meet their targets.

There are currently a multitude of international and national NGOs operating in the water and sanitation sector in East Timor. One of the objectives of the RWSS program is to identify best practices and integrate them into a more harmonized approach to service expansion. In 2007, WaterAid Australia piloted the Community Led Total Sanitation (CLTS) approach in five rural villages in the Liquica district<sup>1</sup>. Following some apparent initial success, the approach is now under consideration for adoption into the new national rural water and sanitation strategy that will be developed as part of the national RWSS program.

This paper will review CLTS through a discussion of a pilot project in which CLTS was implemented in five villages in Timor Leste. We focus on this program as it raises many issues that are relevant to the discussion of CLTS in theory and practice around the world. The paper concentrates on a little discussed

and, in the author's opinion, critical issue regarding the effectiveness of CLTS in real world contexts where project activities in the WATSAN (or more recently, WASH) sector are integrated activities in sanitation, health, hygiene and water supply. A second and related focus is on the issue of subsidy or incentives. The paper briefly reviews the key aspects of CLTS as practiced to date, discusses the Timorese pilot project, and analyses the implementation strategy and results of the program in order to derive recommendations for potential broader application of the approach within the Timorese context. It will also highlight challenges and other important considerations that must be discussed and addressed before the approach can be implemented more broadly.

### **Overview of the community led total sanitation approach**

CLTS was first practiced, or created as a new approach in Bangladesh in 1999 in response to failures to eliminate open defecation (OD). Collective decision making, rather than subsidies for sanitation hardware, was identified as the key driver in achieving Open Defecation Free (ODF) status in a village or community (Kar and Chambers, 2008). CLTS has developed over the intervening time, both in how it is understood and practiced, and has been trialled or used across various countries in Asia, into Africa and more recently in South America and the middle east (Kar and Chambers, 2008).

CLTS “*involves facilitating a process to inspire and empower rural communities to stop open defecation and to build and use latrines, without offering external subsidies to purchase hardware such as pans and pipes*” (Kar and Pasteur, 2005:1). Kar and Chambers identify the following sequence of steps in CLTS (whilst cautioning against the uncritical following of these steps!):

1. Pre triggering in which a community is selected – current work is underway to try and identify favourable and unfavourable conditions for CLTS triggering (Bongartz, 2008)
2. Triggering, in which community appraisal and analysis of defecation behaviours are facilitated –
3. Post triggering where essential follow-up and support is provided to communities that have responded to the triggering phase by planning actions to tackle OD.
4. Scaling up. This step has several aspects to it, one is the scaling up of CLTS regionally or nationally with intent or action to mobilise increasing numbers of communities with CLTS, and also potentially adoption by differing organisations (NGOs, Multilaterals etc). A second aspect of scaling up is in a much more local sense, with lateral spread of CLTS between communities – with local “Natural Leaders” (Kar and Chambers, 2008:73).

A final aspect to CLTS, which is discussed in little detail but is receiving some recent attention, is the longer term impact of this process. Bearing in mind that total sanitation is more than just the elimination of open defecation through the construction of latrines, there is a requirement for further actions to promote hand washing, food preparation, and clean drinking water and so on. There are underlying assumptions of empowerment and social capital building as a result of engaging in community led local actions. There are claims for CLTS to have more broad reaching consequences including more community capacity to engage in community based initiatives (Kar and Chambers, 2005), and also recent claims for CLTS to act as an entry point for effective sustainable livelihoods activities (Pasteur, 2005).

The key aspects of CLTS are: the focus on changing attitudes rather than latrine construction; whole of community focus; no hardware subsidies; local innovations on latrine design and construction rather than prescription of latrine construction; focus on outcome of behaviour change rather than quantification of latrines built (Kar and Pasteur, 2005; Kar and Chambers, 2008; Deak, 2008). The philosophy behind CLTS is firmly rooted in participatory development and PRA. Some of the approach is more confronting than much of the PRA work, in that triggering is actively designed to provoke disgust in peoples own behaviour. A 2008 handbook (Kar and Chambers, 2008) actively encourages different methods of triggering disgust, shame and embarrassment both in terms of actions that include passing round a glass of water contaminated with faeces, to learning and using local words for shit and shitting – essentially the key ingredient in provoking change of behaviour.

Some of the challenges identified with CLTS include issues of going to scale, (Kar and Pasteur, 2005; Deak, 2008) challenges of community selection (pre-triggering), ongoing use and long term sustainability of CLTS outcomes. Interestingly, Kar and Pasteur (2005) engage with some of the methodological criticisms of scaling up of PRA, and warn of similar pitfalls with CLTS. They or indeed any other authors that we have reviewed do not engage with any of the theoretical criticisms of PRA which have mounted over the last decade (Cooke and Kothari, 2001) and some of which at least could be of direct relevance to CLTS. The issue of subsidies is debated by most of the authors currently discussing CLTS with an open

acknowledgement that communities who have an expectation of subsidies from previous experience or hearsay are far less likely to be open to CLTS approach.

### Methodology for village selection

The Timorese government has prioritized all rural villages for assistance in the water and sanitation sector based on need. This list was used in order to select villages for participation in the pilot project, and only villages that were ranked as priority one, according to this list were considered. Several additional selection criteria were then used to select the initial five villages from the priority one list. These selection criteria are summarized in the table below.

<b>Selection criteria</b>	<b>Indicator</b>
Water supply Technology	<ul style="list-style-type: none"> <li>• Gravity-fed water system must be a feasible option</li> </ul>
Population	<ul style="list-style-type: none"> <li>• Small community of less than 100 households</li> </ul>
Distance	<ul style="list-style-type: none"> <li>• Greater distance from main road was preferred</li> <li>• Communities that were closer together were preferred</li> <li>• Communities that had to walk greater distances for water were preferred</li> </ul>
Previous assistance	<ul style="list-style-type: none"> <li>• Community should not have received any prior assistance</li> </ul>
Community willingness to participate	<ul style="list-style-type: none"> <li>• Communities must indicate interest in participating</li> </ul>

Both a technical feasibility assessment and social feasibility assessment were conducted in order to evaluate the factors listed in Table 1. The technical assessment evaluated the feasibility of installing a gravity-fed piped water supply system. It involved identification of potential spring sources, determination of flow rate, water quality analysis, and surveying. The pilot project restricted its intervention to sites where gravity-fed water supply was a technically feasible option since the poorest households in the Liquica district tend to be located in the mountainous region where gravity-fed water supply is typically a feasible option. Furthermore, it is a locally-accepted and embraced technology as evidenced by numerous traditional gravity-fed water supply systems constructed from bamboo using exclusively local knowledge and labour. Finally, there was no clear alternative water supply for this region because it has a very deep water table thus making wells an impractical and expensive alternative, and also endures a long dry-season, making rainwater harvesting largely unfeasible.

The social feasibility assessment aimed to introduce the project in the communities, gain an understanding of the village, assess whether the community met social-selection criteria, and ascertain interest. Small remote communities, with difficult road access and no previous assistance were chosen for two reasons:

1 – they were the most un-serviced regions and most in-need of assistance, and 2 – it was believed to be easier to implement the approach in villages with these characteristics. A small community was assumed to have stronger social capital and cohesion which was thought to ease efforts towards collective action. Another benefit would be that it would facilitate the monitoring aspect of the project, particularly as communities are largely highly dispersed and accessible only by foot over hilly terrain. In addition, the further that community members had to walk to obtain water, the higher the need and the more willing community members would be to participate in our initiative. Furthermore, if road access to the community was difficult and they had received no or very limited prior assistance, they were less likely to challenge our approach, which might include: comparing their latrines with those in which materials had been subsidized, demanding subsidies for materials, or demanding pay for local labour. Finally, communities were chosen in the same geographical region to facilitate project implementation in 5 simultaneous villages.

### Project implementation methodology

The pilot project implemented an integrated water, sanitation and hygiene education program in selected villages. The CLTS methodology was used for the sanitation component of all projects. In general, project implementation following a staged approach, whereby the water supply intervention was only initiated after

all latrine construction was completed. Communities were informed of the project approach during initial community meetings, which occurred during the community selection phase.

Once villages were selected for participation for the pilot project, project implementation steps were as follows:

1. Triggering event
2. Action plan developed
3. Community meeting and technical guidance provided
4. Ongoing monitoring of latrine construction
5. Simultaneous hygiene promotion
6. Initiation of water supply phase (once latrine construction complete).

The triggering event that was conducted in each village was referred to as an “ignition” PRA as its objective is to “ignite” or start the CLTS process. The “ignition PRA” was aimed at raising awareness regarding the amount of faecal material generated in the community, and directly identifying and observing inappropriate sanitation practices. It specifically aimed to cause disgust and embarrassment of local practices with the assumption that the community would then be motivated into action. Activities aimed to embarrass and disgust community members included: transect walks around their villages where faecal material left in public spaces was identified, calculations of the volume, supported by visual representation of faecal material generated in a community, and discussions using language specifically geared to cause embarrassment.

The outcome of the “ignition PRA” was the development of a community action plan and timeline for the construction of household latrines. A separate meeting was then held shortly thereafter, to provide technical options and guidance regarding latrine construction. This meeting did not prescribe the type of latrine or method for construction, but rather provided various options of different types of latrines that community members could consider and provided some technical guidance, for example on the length of time that it might take to fill the pit as a function of its dimensions. Finally, the meeting aimed to answer any questions that arose from community members.

Project staff then began simultaneously monitoring latrine construction and implementing the hygiene education component of the program. House-to-house visits were made on a weekly basis to inspect the progress of latrine construction, query any delays, encourage and motivate continued progress towards latrine construction, and observe the quality of construction and make suggestions for any improvements that could be made. The hygiene education program was run through community meetings, house-to-house visits and through the schools. Ultimately, it aimed to incite behaviour change by raising awareness of faecal-oral transmission routes and providing education on safe hygiene and sanitation practices. The underlying assumption was that the hygiene education program would continue to build upon the awareness generated during the “ignition PRA”, and continue to provide a more in-depth understanding of the health implications of inappropriate hygiene and sanitation practices. Furthermore, ongoing hygiene promotion would re-enforce key messages and provide a broader range of safe hygiene and sanitation practices that could be adopted. Finally, continued presence of project staff in the field and re-enforcement of key sanitation messages also encouraged sustained progress towards realization of the action plan, which had been developed during the ignition PRA.

Once the majority of household latrines had been constructed in each village, the project then began the community water supply phase. In contrast to the CLTS approach used for the sanitation phase, the water supply intervention provided full subsidy for all external infrastructure materials. The water supply phase restricted its reliance on community participation to unpaid local labour for construction and provision of local materials. All water supply systems that were constructed relied on high spring sources and delivered water to the community through gravity-fed piped water system to multiple, shared tap stands located throughout the village. The design of all gravity-fed systems, engineering surveying, and location of the tap stands were determined by project engineers. Local project engineers also supervised community members during construction of the water supply systems. The hygiene education program continued through the entire project, including the water supply phase. However, monitoring of the sanitation component tapered off and was conducted more sporadically, typically once per 4 – 6 weeks.

### **Comparison of sanitation component of pilot project with CLTS theory**

The actual design and implementation of the pilot project deserves critical reflection, both from the perspective of how closely or not it conforms to the philosophy and practice of CLTS (as put forward and

promoted primarily by the original innovator – Kamal Kar), and further discussion or indeed speculation as to possible shortcomings and potential benefits of CLTS in the Timorese context, as well as the potential for scaling up in light of these issues.

In pre triggering – the selection of communities, the Timorese pilot uses selection criteria that are in line with CLTS criteria – primarily the lack of previous hardware incentives (or other intervention based on incentives), community size and location. More in-depth work is underway at the IDS to identify favourable and unfavourable conditions and the selection criteria could be refined further as a result of this work (Bongartz, 2008). In the triggering phase, the process employed in this pilot again adheres fairly strongly to CLTS methods. The post triggering follow-up provides support and assistance, including the hygiene education process and monitoring of the construction of latrines.

So to this point the methodology utilised appears to very closely correspond to CLTS as promoted by Kar and other CLTS proponents. Later discussion raises some questions about CLTS methodology, particularly with respect to its integration with water supply, and also the broader issue of scaling up.

### **How did the pilot project do?**

One year has now passed since the implementation of the pilot projects and results have raised questions regarding the efficacy and sustainability of results emerging from the approach used. The pilot project showed some promising initial results with five villages cited as ODF in 42 days (Bajracharya, 2008), as most households completed the construction of their latrines according to their action plan with only minor delays. However, as the objective of CLTS is behaviour change, its success, and indeed ODF status, should not be measured simply in terms of latrine construction. The usage pattern and associated behaviours are thus more critical.

Community members were asked about latrine usage on multiple occasions and by several means. Anecdotal evidence suggests that regular latrine usage a year after construction amongst all villagers might be quite low, perhaps lower than even 50% in some cases. During house-to-house visits, community members were probed regarding their sanitation practices. Community members tended to respond affirmatively initially when asked if they use their latrine. However when asked if they used it every time they defecated, the responses were predominately negative. Even when a positive response was provided, when asked if other members of the household also use their latrine each and every time they defecate, the response was almost unanimously negative for all houses surveyed. In addition, when asked collectively, during community meetings, if community members were using their latrine, a negative response was also frequently elicited. This anecdotal evidence suggests that open defecation practices are particularly prevalent among women and children. No hard data was collected during house-to-house visits or during community meetings. We strongly urge a broader and more rigorous range of data collection methods be used in the future in order to better understand the long term impact of latrine construction via CLTS.

One point that is important to highlight here is that it is yet unknown how behaviour change rates using the CLTS methodology compare with the behaviour change rates of other methodologies. While we have already suggested that existing evidence may indicate less than 50% uptake in latrine usage following construction, there is no evidence to suggest that this result is inferior to results obtained using other methods. We simply highlight that at least in the Timor context, CLTS has not appeared to be the panacea for achieving ODF that some of the literature seems to claim it can be. Behaviour change is known to be a complex and lengthy process and there are no existing studies that compare the efficacy resulting from CLTS as compared with other methodologies aimed at behaviour change related to hygiene and sanitation practices (such as PHAST, social marketing, or other education programmes). The purpose of the following discussion is thus simply to discuss the effectiveness and challenges of CLTS in hopes that critical analysis; continued discussion and debate, field trials and innovation can improve overall project methodologies and impacts in the area of sanitation. This call is echoed by Kar and Pasteur (2005).

### **Demand-responsiveness of CLTS pilot programme in Timor Leste**

As we have seen, the CLTS methodology resulted in a significant improvement of sanitation coverage in the 5 villages included in the pilot project, as represented by number of accessible latrines, within a very short period of time. Despite this, there is reason to question the actual long term usage of these latrines. This gap between availability and usage raises the question of demand-responsiveness. Two hypotheses emerge. The first postulates that community demand is present but that the latrines constructed are not meeting their needs leading to non-use. The second hypothesis postulates that, in fact, the methodology has failed to build

demand and community members continue to resort to traditional sanitation practices because of a lack of perceived need to use the new structure. Both of these hypotheses will be considered in turn.

The first hypothesis that will be broached is that latrines constructed as part of the pilot programme, might not have met the needs of community members. CLTS encourages local innovation in latrine design and construction rather than more prescriptive approaches. During the pilot project, a technical guidance meeting was held to provide some possible design options and suggestions for household consideration but did not dictate the way in which latrines were to be constructed or where they should be sited. Non-prescriptive approaches to latrine construction can lead to inferior quality or poorly sited latrines; and in the worst instance, unsafe latrines. While people may indeed want to change their behaviour, the final product may be difficult to access, possess a deterrent smell, attract flies, other insects and possibly animals, be difficult to use, require significant time investment for maintenance, or be non-durable.

Anecdotal evidence corroborates the presence of several of these factors. Some of the latrines observed during monitoring visits were indeed sited poorly, such as on the edge of a cliff, half way down a steep ravine, or where it was necessary to walk through tall shrubs and long grasses to access it, making access difficult, particularly at night. Some of the latrines constructed had very shallow pits which could fill quickly. Others possessed oversized dimensions; on one occasion a pit nearly three meter square was observed. In addition, one monitoring visit after the rainy season revealed that several latrines had collapsed and had not been rebuilt.

Community members also directly expressed a desire for better quality latrines during community meetings and indeed asked if construction materials could be subsidized for these improvements. In response to this request, demonstration latrines were constructed, using materials such as concrete and pre-fabricated pans, to raise the capacity of the community to build higher quality latrines should they desire. Nonetheless, no hardware subsidies were provided and no households replicated the demonstration latrine. Construction materials could not be purchased locally in the villages, and as villages tended to be quite remote and fairly inaccessible (as per the selection criteria), community members would simply not have had the means to obtain more sophisticated or higher quality materials even if the demand existed. As a result, all latrines constructed were made of entirely locally available materials, primarily bamboo and banana leaves. One idea that was under consideration was whether the project could facilitate the purchase and transport of materials for community members who were willing to contribute the necessary funds. This would have facilitated the improvement of latrine quality and perhaps assist with improved satisfaction of existing demand. However, the provision of transport in itself can be considered a subsidy. It can also be argued that the provision of transport would reduce the sustainability of the latrines as community members would not be able to purchase materials for repair, as required, after the project's conclusion. The issue of subsidies is already an issue of current debate in the CLTS literature. A detailed examination of this issue is beyond the scope of this paper. However, the authors agree that more research and discussion should be conducted in this area.

The second hypothesis is that the CLTS methodology, as implemented in Timor Leste, failed to significantly raise demand for latrine usage. To take a critical look at this hypothesis it is now essential to discuss key issues in relation to the broader context – namely the integration of sanitation and water. CLTS, as outlined above, treats sanitation in a vacuum. There are discussions around the potential of CLTS to provide an entry point for further activities (Pasteur, 2008). Pasteur's work specifically discusses CLTS as an entry point for sustainable livelihood activities, concentrating solely on the notion of empowerment, pride and esteem as a form of social capital, and therefore is examining CLTS as an entry point for further community based activities. The underlying assumptions and philosophy here are essentially participatory processes that fall somewhere between a means (eliminating open defecation) and participatory processes as an end in itself whereby the community becomes empowered and motivated to pursue further collective action.

This in itself strikes us as very problematic for a number of reasons. The first is that practically most interventions include water, sanitation and hygiene promotion. In the pilot project the water supply component is integrated into the project from the beginning, as soon as latrine construction is complete the water supply phase begins. Given the importance of no subsidy in CLTS, the water supply component does involve hardware subsidy. Both the provision of water, dependant on latrine construction (but not behavior change as behavior change can only be monitored over a period of time), and the provision of hardware subsidy for water supply must provide an incentive to cooperate with the CLTS. The question therefore must be asked - given the discussion of incentives above, how does the integration of sanitation with water supply change/effect incentives?

A second and equally problematic point is the issue of the sustainability of the CLTS approach given the previous discussion around incentives in an integrated approach. It is very unclear whether the construction of latrines is in response to demand for water supply (and associated subsidies and incentives) or whether CLTS is a genuinely transformative process in this context where behavior change is a majority outcome and long lasting. The discussions above surrounding longer term use of latrine would tend to argue the former. Although the information contained in this paper is primarily anecdotal, at the very least we would argue that there needs to be critical monitoring and evaluation of latrine use, and maintenance over a period of time before it can be assumed that ODF is indeed the outcome.

How can CLTS be applied in this context? If CLTS is to be used in isolation with a goal of ODF and community empowerment then should or could water supply, and possibly hygiene be decoupled? If an integrated approach is to be used, then surely a much more informed and critical review of the role of CLTS, and the role of subsidies and incentives needs to occur. This type of analysis, monitoring and evaluation are essential for the determination of whether demand has successfully been developed within a community thus leading to sustainable, long-term behavior change. Following the analysis provided above, the authors believe that there is likely some truth to both of the hypotheses presented. As such, it is quite likely that the combination of factors, as presented above, has led to the low rate of sustained latrine usage.

### **Next steps**

Some direct recommendations do emerge from the preceding analysis. At this point, we believe that it would be quite useful for a detailed KABP survey to be conducted at the household level in the 5 initial villages included in the pilot project. A KABP survey would provide detailed and more accurate information about the existing behaviors and practices in the villages. The results from this survey could then form the basis of PRA activities that could follow, which could examine the underlying causes for the current attitudes, behaviors and perceptions and identify gaps. As well, the hygiene education programme should continue. However, the content of this program should now be revisited and informed by the results of the KABP survey.

It is recommended that the implementation approach be varied somewhat across the new villages where it is trialed in East Timor. For example, implementation in several villages could incorporate the facilitation of purchase and transport of materials. Later results would then assist in identifying if demand was better met with this approach leading to wider-spread behavior change. In addition, the project could be attempted whereby sanitation follows water supply in order to ascertain the degree to which the incentive of water supply motivates the construction of latrines. CLTS remains a fairly new methodology and by experimenting with the implementation methodology, based on the results of previous trials, it is hoped that the factors that lead to sustained improvement in hygiene and sanitation practices can be identified, within the context of the selection criteria.

Finally, we would argue that the above issues present a vital point of reflection before any attempt at scaling up of CLTS should occur in Timor. Scaling up of CLTS assumes that the selection criteria as used to date are appropriate and will apply to future projects; otherwise the spread of CLTS outside these selection criteria becomes ever more problematic. Scaling up of CLTS in the absence of a deeper understanding of subsidies, incentives, and the issue of the integration of CLTS with other project based activities which operate under very different philosophical and methodological approaches in the opinion of these authors is an absolutely essential next step both in the Timorese context, and more broadly in debates concerning CLTS.

### **Conclusion**

CLTS is a relatively new concept, adopting a participatory approach to sanitation, facilitating community led demand for sanitation, rather than supply (subsidy) driven latrine construction. Experiences from through Asia, and into Africa show promising early potential for CLTS to increase sanitation coverage. However this paper, by focusing on a particular CLTS project in Timor, raises the little discussed but absolutely critical issues of the role of subsidies, the role of incentives and the strongly related issue of whether CLTS can or should operate in a vacuum, or, as is much more normal, is part of an integrated water and sanitation project. We argue that before CLTS is scaled up, much more rigorous and critical evaluation and discussion of these issues need to occur.

## References

- Bajracharya, D. (2008) A journey from subsidy to Community Led Total Sanitation: The experience of WaterAid Australia and Plan in Timor Leste In WaterAid Australia and International WaterCentre. (2008). Sharing Experiences: Sustainable Sanitation in South East Asia and the Pacific. Brisbane, Australia. Pp 38-42.
- Bongartz, P. (2008) Favourable and Unfavourable Conditions for Community Led Total Sanitation (CLTS), Paper of work in Progress, Available: <http://www.livelihoods.org/post/Docs/CLTSfav-unfav.doc>, Accessed 24th October, 2008.
- Connell Wagner (n.d.) Rural Water Supply and Sanitation in East Timor. <available online at: <http://www.conwag.com/news/news.asp?pgID=77#Rualwater.>>
- Cooke, B. and Kothari, U. (eds) (2001) Participation, The New Tyranny?, Zed Books, London
- Deak A. (2008) Taking Community Led Total Sanitation to Scale: Movement, Spread and Adaptation IDS Working Paper 298, Brighton: Institute of Development Studies, Sussex.
- Kar, K and Pasteur, K (2005) Subsidy or Self-Respect? Community Led Total Sanitation. An Update on Recent Developments (Including reprint of IDS Working Paper 184) IDS Working Paper 257 , institute of Development Studies, Sussex.
- Kar, K. (2003) Subsidy or Self-Respect? Participatory Total Community Sanitation in Bangladesh, IDS Working Paper 184, Institute of Development Studies, Sussex.
- UNDP (2008) 2007/8 Human Development Index Ranking. Human Development Report. <available online at: <http://hdr.undp.org/en/statistics/>>
- UNFPA (2004) Population Issues: Meeting Development Goals <available online at: <http://www.unfpa.org/ods/census.htm>>
- WaterAid Australia and International WaterCentre. (2008). Sharing Experiences: Sustainable Sanitation in South East Asia and the Pacific. Brisbane, Australia.
- WHO-UNICEF (2006) Coverage Estimates: Improved Sanitation – Timor Leste <available online at: <http://wssinfo.org>>
- 

## Note/s

<sup>1</sup> This project was trialled by WaterAid Australia, The first author was employed as part of this project. The views in this paper are those of the authors in their entirety and do not reflect the views of WaterAid Australia.

---

## Contact details

Evelyn Noy  
Canadian Red Cross  
Jl. Ajun Jeumpet No. 18B  
Darul Imarah, Aceh Besar, 23353, NAD, Indonesia  
Tel: +62 812 6999553  
Email: [evelynnoy@hotmail.com](mailto:evelynnoy@hotmail.com)

Dr. Max Kelly  
Deakin University  
Geelong VIC 3217  
Australia  
Tel: +61 409 350719  
Email: [kellymax@gmail.com](mailto:kellymax@gmail.com)

---