38th WEDC International Conference, Loughborough University, UK, 2015

WATER, SANITATION AND HYGIENE SERVICES BEYOND 2015:
IMPROVING ACCESS AND SUSTAINABILITY

Promoting sustainability in refugee and IDP responses

A. Bastable (UK) & T. Wise (USA)

BRIEFING PAPER 2223

The majority of refugee and internally displaced camps are set up as a temporary measure to accommodate people fleeing from conflict or natural disasters. However, in many conflict-related camps, the duration of the camp is longterm, resulting in high operation and maintenance costs arising from the installation of short term emergency water and sanitation facilities. While there are real constraints to agencies adopting long term approaches from the very start, such as government policy, land or funding issues, agencies setting up camps should have a thorough analysis of the most probable scenarios and design, plan approaches and use technologies with that scenario in mind. With the right choice of technology, which may have higher up-front costs, huge savings can be made over time on operation and maintenance costs making the systems more sustainable and resistant to external shocks.

Introduction

Refugee and internally displaced persons (IDP) camps in areas of conflict are frequently not short term events, yet they are designed this way. The average life time of a refugee camp is 17 years[1] but more often than not initial camp designs, implementation approaches or choices of technologies to provide WASH facilities do not reflect this longer term perspective. Based on a good analysis of the probable duration of the camp, approaches and technologies could be used that would save money on operation and maintenance costs in the longer term, therefore increasing the sustainability of the camps.

Perceived reasons for lack of emphasis on sustainability

- Lack of good analysis of the likelihood of people returning home: In the rush to quickly provide facilities for the displaced people a good analysis of the likely duration of the camp is often left until after the initial works have been carried out. This analysis should include cultural and environmental factors, future scenario planning and the inclusion of the community in the whole process.
- Lack of political will: Many countries do not want a protracted camp for the displaced and therefore discourage or do not permit any "permanent" structures
- Short term funding cycles: Donors often have a 6 month or 1 year funding period and therefore are reluctant to fund any more than the initial provision of facilities. It is normal for the money available for a refugee or IDP response to decrease radically over time. It is only the longer term donors such as UNHCR, for refugees, that have a specific stake in approaches that will decrease operation and maintenance costs for the future.

Examples of the consequences of this short term approach

- Camps are often established without substantial consideration of water supply recharge and replenishment (particularly aquifers and hafirs). Depletion of fragile aquifers, the high costs of prolonged

[1] *G.Loescher & J.Milner Forced Migration Review, No. 33.*

water trucking and conflict with host communities over scarce water resources all add to high transaction times and high long term operational costs.

- Over reliance on expensive, high maintenance systems, particularly motorised water supply systems, generators and pumps. Inefficient system design, based on an emergency quick fix that doesn't take into account population growth or suitably sized storage, leads to inefficient extensions to the system involving higher operational cost.
- Toilets are often made with relatively shallow pits or storage volumes, due to high water tables or hard rock conditions, requiring a 3- 6 monthly desludging frequency which becomes costly over time. Pits are also not pre designed for desludging and therefore collapse requiring new pits to be dug. Latrine superstructures are also often made with poor quality plastic sheeting which needs to be replaced after 6 months.
- A short term approach often means that there is insufficient consultation with the population needing the facilities which leads to lack of community ownership and in some cases, like Za'atari camp in Jordan, increased looting of materials.
- The land the Government allocates for IDP's or refugees is often land which the local communities do not want. There are numerous examples, Albania, Maban in South Sudan, Gambella in Ethiopia, where camps have been set up on flood plains. While, it may not be politically possible to find better land it is rare when the responding agencies design the camp and facilities in a way to reduce the impact of flooding. Agencies need to take environmental risk more into account both at the design and construction phase.

Considering sustainability in WASH: alternatives

If the analysis suggests a high probability that the camp will be there for the long term then the overall design and implementation needs to reflect this: by mitigation of environmental hazards; allowing for expansion/modification of the water system at the emergency setup stage; incorporating approaches for such things as cleaning communal 1st phase toilets and water point attendants that will not cause tension when evolving to an increasingly community or family owned system; and lastly reducing long term operation and maintenance where ever possible. Below are a number of technical options that help reduce overall operation and maintenance costs.

Technical options

Water

'Firefly' technology. If for some reason, such as modifying an existing system, space or cloud cover solar is not possible then there are technologies that use the fact that generators are producing more electricity than the pump/appliance requires for normal running and is able to save a small proportion of the running energy into batteries. The generator time can therefore be reduced while making use of the energy stored in the battery.

Solar pumps. While photovoltaic's have not significantly increased their efficiency over the last 5 years there have been advances in electric submersibles pump technology which mean they require less energy to start up and run. An analysis of Oxfam pumping systems is that the extra initial costs of buying the solar panels pays for itself in 6 to 10 months by eliminating the fuel and maintenance cost of generators. It is not just that the solar systems are more cost effective in the long run: In South Sudan 2014 , Maban, Gendrassa camp, when Oxfam had to withdraw due to fighting the water supply continued from the solar pumps as it was not reliant on diesel deliveries which were halted.

Photograph 1. Solar panels powering a submersible, Gendrassa Camp, Maban South Sudan

Elevated Tanks: For large camps on flat terrain the most efficient way of providing a water network is pumping directly to an overhead tank and distributing the water by gravity. There is seldom the political will or funding available for this expensive task, however, Oxfam managed to do this is with funding from UNHCR in , Dabaab in Kenya and Dolo Ado in Ethiopa, both are long term Somali refugee camps.

Photograph 2. Elevated tank, Dadaab

Photograph 3. Blue Pump, South Sudan

Hand pumps. In an attempt to reduce the operation and maintenance costs of pumped water systems, where the hydrogeology allows it more sustainable and cost effective to install as many hand pumps as possible. Many agencies are put off by the high number of handpumps required, in Sphere the figure is 500 people per handpump, however, over time shallow wells and boreholes with hand pumps are cost effective. Oxfam is installing the Blue Pump in emergency camp settings as it is the most sustainable hand pump (spare part free for 20 years) yet produced.

Sanitation

Tiger worm toilets. Oxfam is now using Tiger worm toilets in Liberia, Ethiopia and Myanmar and currently, at a family level, it is proving to be the nearest thing to a virtually desludging free toilet. After 2 years in a slum in Monrovia the build up of waste in the wormery from a family of 5 is only 2 handfulls. It remains to be explored if we could use this technology in more traditional camp settings.

Designing latrines for desludging. Although agencies often know that a pit latrine would have to be replaced or desludged a number of times over a 5 year period, due to the extra cost involved in lining the latrine, designing a latrine to be desludged is a rare occurrence. This short term thinking costs considerably more in the long run. Where latrines need to be desludged they should be designed with the appropriate lining and opening for the suction hose.

Urine diversion /eco san latrines. Oxfam started installing urine diversion toilets in flood responses in Bangladesh in 2004 as displaced populations could not dig pits due to the high water table. SOIL with Oxfam built and operated a number of camp UD toilets in Haiti as part of the 2010 earthquake response in Port au Prince. Oxfam then began installing them in Dolo Ado in Ethiopia in a camp for Somali refugees in 2012 and 2013 in the South Sudanese camps in Maban south Sudan. The feedback from the beneficiaries about having non smelly latrines has been very positive. The cost savings with this approach in camps, saving on desludging or having to dig another pit, was found to be considerable in Haiti but has yet to be evaluated in Ethiopia and South Sudan as the toilets are only getting to a stage where both vaults are full.

Photograph 4: Double vault urine diversion latrines, Dolo Ado, Ethiopia

Locally made slabs and superstructures. With the success of plastic latrine slabs it now seems the enabling of local production for slabs is now less common. In Maban, Oxfam was producing dome slabs locally and supporting people to make their own superstructures with local materials. After the intial supply of emergency slabs and superstructure this approach not only saves long term costs but builds local capacity too.

Photograph 5: Locally made dome slab, South Sudan

Financial. While, most of the "new" technologies require a higher than normal initial investment there could be ways to pay the suppliers over time to lessen the burden of the large initial expenditure.

Conclusion

There may not be the political will or acceptance from donors but that should not stop responding agencies from carrying out their own analysis of the duration of the camp and designing the facilities with long term sustainability in mind. Agencies also need to properly assess different technological options over a 5- 10 year life span depending on the situation. Obtaining costings is for these options are now considerably easier as there are solar suppliers in the majority of countries these days as well as contractors who can build elevated tanks. There are also enough trials of urine diversion type toilets to mean this is not a risky

unpredictable strategy but a viable option even when there is no prier experience with UD toilets as shown in Dolo Ado.

Adopting these strategies will undoubtedly save money on operation and maintenance costs in the long term and give an increased resilience to both environmental and conflict related shocks. In order to make this approach the norm both donors and implementing agencies need to be realistic about the time frame the camp is likely to be there and produce a detailed cost analysis over a longer timeframe. The reduced costs over time should speak for themselves.

Contact details

Andy Bastable
Oxfam, Oxford, UK
Tel: 01865 473858
Email: abastable@oxfam.org.uk

Tracy Wise
CARE US, USA
Tel: +001 404 932 3607
Email: twise@care.org