

CROSSFIRE: The key focus on challenging environments should be technological, paying special attention to physical design and construction

In our Crossfire debate, Sam Godfrey and Libertad Gonzales discuss the proposition: The key focus on challenging environments should be technological, paying special attention to physical design and construction.

Dear Libertad,

It's 10 a.m. on Saturday morning and I am sitting in my office in central Maputo making urgent logistical arrangements for the Minister of Finance and the Minister of Public Works to travel to Washington DC to represent Mozambique at the upcoming High Level Meeting at the World Bank. The idea of the meeting is to present the findings of the GLAAS (Global Annual Assessment of Sanitation and Drinkingwater) 2010 report and to ensure government financial and political commitments in countries that are off track in water and sanitation coverage. Clearly, this is critical for the sector as a whole and may result in improved funding streams which in turn could help countries in challenging environments reach the Water and Sanitation MDGs.

One of the proposed outcomes of the High Level Meeting is to increase budget allocation from the state GDP for water, sanitation and hygiene-related activities. This outcome highlights the fact that there are a number of country and global initiatives that are being taken to try and allocate more funds to countries to assist them in accelerating their progress towards the Millennium Development Goals (MDGs).

However, in order to ensure effective utilization of these funds, there is a need for the water and sanitation sector to also invest strongly in advocacy at a senior level on technological solutions for challenging environments. To illustrate this fact, I want to give you two clear examples from my own professional experience. Firstly, whilst working in India, the Government of India allocated significant funds and programme resources to address the needs of tribal communities living in drought-prone districts of the central Provinces of Madhya Pradesh and Rajasthan. The initial proposal was to recharge

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deep aquifers in granitic formations affected by geo-chemical contamination from leached fluorites from interspersed hornblende geological layers. However, after five years of funding allocation, 80 per cent of the resources were returned to the Central Government treasury due to an inability of the provinces to find technical solutions for these complex aquifers.

Another example comes from my work in Mozambique which is a country with a coastline of more than 2000 km (accommodating 70 per cent of the country's population). Due to global climate change factors, many of the coastal groundwater aquifers in Mozambique are becoming contaminated with saline ingress water. Despite significant investment from international donors, technological solutions have not been adequately explored and water supplies continue to be commissioned despite the high level of conductivity identified during the process of construction.

These two examples, clearly indicate to me that there remains a gulf between policy, advocacy and financial dialogue and actual technological design and construction.

*Yours,
Sam*

Dear Sam,

I celebrate all the great effort you are doing with the inter-

national donor community to increase the funding for the water, sanitation and hygiene promotion sector, and I agree that there is the need to advocate in general for innovative technology for this area.

Comparing the sanitation and the water components, I believe water has attracted considerable attention from the donors in the past decades and in consequence, it has been technologically developed to a great extent, improving significantly the water coverage worldwide – as showed in the last global monitoring report for the MDGs. On the contrary, the donor community has neglected the field of sanitation and nowadays the lack of innovative and environmentally appropriate technologies is much more significant than in the water domain. As we write, sanitation engineers currently working for different aid agencies in Haiti are facing enormous challenges in providing sound technical sanitation designs for the earthquake-affected population, displaced in crowded camps and located in urban environments, with limited land and a high water table. The urgent response that is expected from these agencies in emergency situations like Haiti is often delayed and technically limited by the challenges encountered in such difficult environments.

The need for heavier investments in new sanitation technologies is a critical step towards

offering better services to the developing world today, not only after natural disasters but also during non-emergency time, as the globe is becoming more and more urbanized and populated, especially in emerging countries like China, India, Brazil or South Africa. Today, at least 1 billion people live in crowded tenements or in shanty settlements around urban peripheries, and have no toilet of any kind.

However, technological challenges can be overcome when financial and institutional commitments are in place, as shown by the extraordinary accomplishments of the nineteenth and twentieth century sanitary heroes in Europe, who pushed for the spread of sewerage connections and water closets that are still extensively used worldwide today. For me, the real key challenge is not merely technological but more related to the usage of those toilets, their correct operation and effective maintenance, without which all the investment will be wasted. The very term 'sanitation coverage', widely used by the MDG reports, has been extensively confused with 'toilet usage', which is where the real key focus should be placed in my opinion.

In that vein, I agree that advocacy with donors is critical but it should be directed towards increasing funding for the 'software' aspects (behaviour change, customer demand and appreciation of the new facili-

ties) of sanitation programmes. Otherwise, the construction of expensive and technologically complex solutions (in the form of aid or public provision, and included in national coverage counts) are likely to fail.

*Yours,
Libertad*

Dear Libertad,

There is clearly a distinction between the approaches required for water coverage as opposed to sanitation coverage. Likewise, there is, as you note, a need for clear and well articulated strategies and implementation of software-related activities (social mobilization) as opposed to just hardware activities. Nonetheless, the issue of this Crossfire relates to the needs in challenging environments. I would therefore continue to argue that whether it be for water or sanitation coverage in challenging environments, the need and clear focus should be on technology.

Let's take your specific reference to sanitation. Challenging environments can be defined as areas of the world intensely affected by negative climatic and natural conditions. These may be flood-prone or drought-affected zones of the world where conventional approaches to water and sanitation provision are not appropriate. For example, in 2004, much of the south coast of India (like many other countries in the region) was severely affected by a catastrophic tsunami. In order to

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address the immediate sanitation needs, as well as the long-term needs of the high water table, flood-prone zones of the State of Tamil Nadu required innovative technical solutions. Due to the sandy soil conditions and high water tables, conventional on-plot and off-plot sanitation technologies were not appropriate. As noted in my previous submission, the support required from the Government of India was not for finance but rather for technical solutions. Ecosan technologies, wet and dry composting, small reticulation sewerage and rapid sludge digesters were a number of technologies that were explored. Although some of these technologies were not new to the region, there was a need to find innovative material solutions such as alternatives for sand-intensive cement/concrete due to the saturation/salt contamination of alluvial soils.

Additionally, in non-emergency zones of the world, many developing world governments are increasingly looking for technological solutions for areas affected by the negative impacts of climate change. Recent initiatives undertaken by the Government of Mozambique illustrate the desperation faced by countries at risk from these negative impacts. In the central province of Sofala, Mozambique, the government is insisting that no new boreholes should be drilled in rural areas and that investment should be made in

rainwater/groundwater dilution technologies to bring levels of salinity in the groundwater down to levels acceptable to the WHO Guidelines. Due to the success of the interventions, large international donors are requesting the replication of similar solutions across East and Southern Africa to address semi-arid and coastal aquifers affected by geo-chemical contamination.

In conclusion, increased financial sector investment and greater emphasis on social mobilization and behaviour change are only as good as the technological solution that they seek to promote. I would recommend that we as water and sanitation sector professionals should not lose focus of this fact and should continue to invest in both educational institutions, as well as innovative service delivery programmes to ensure appropriate technological solutions.

*Yours,
Sam*

Dear Sam,

I totally agree that software activities (that create up-front demand and encourage ownership) should go hand-in-hand with appropriate technology options. I recognize the need and the challenge for our sector in developing innovative technical designs for water and sanitation infrastructures in difficult environments, like the ones you described in India and Mozambique. However, I strongly

We need an effective balance between social mobilization and technology

disagree with the opinion, as stated in the initial proposition, that the key focus should be technological. The key focus should be ensuring an effective balance between both, social mobilization and technology, regardless of the context and its environmental difficulties.

Rural flood events, such as the severe episodes experienced in Asia during the tropical cyclone season in 2008 (cyclone Sidr in Bangladesh, cyclone Nargis in Myanmar, Kosi floods in Nepal, and Bihar/Kosi floods in India) nowadays present to our agencies exceptional challenges in sanitation response. These challenges include restricted excreta and waste disposal options on account of limitations in land availability and a high groundwater table. The collective review, undertaken by the WASH Cluster after that series of large operations in Asia, showed that the technical solutions for excreta disposal in flood situations are at present incredibly limited, and highlighted the need for exploring further specific designs that involve new modalities of raised latrine pits. Currently, some agencies are looking at innovative solutions for flooding like ecosan or simple

composting latrines, and with an active engagement of the private sector and donor community. The first prototype of pre-fabricated urine diverting slabs will soon be integrated into our emergency equipment stocks.

In the same flooding scenario, the review revealed that software was considered as an optional supplement to the programme and, in some cases, limited to the dissemination of messages about handwashing. However, hygiene promotion, or my preferred term 'software', should also ensure the optimal use, care and maintenance of facilities. All we water and sanitation professionals welcome solutions to our sector but we should at all times advocate for equal and evenly balanced answers on both sides – technology and equipment, but also users' acceptability and ownership. And I firmly believe that this advocacy effort should be even more intense in difficult scenarios, where new technologies may bring up additional difficulties about users' acceptance and add greater technical complexity to operation and maintenance activities.

*Yours,
Libertad*

New technologies may bring up additional difficulties about users' acceptance
